C.L. "BUTCH" OTTER
Governor
ROBERT L. GEDDES
Director
BILL BURNS
Administrator

State of Idaho

Department of Administration

Division of Purchasing

650 West State Street B-15 (83702)
P. O. Box 83720
Boise, ID 83720-0075
Telephone (208) 327-7465
FAX (208) 327-7320
http://purchasing.idaho.gov

SIGNATURE PAGE for Use with a Manually Submitted Invitation to Bid (ITB) or Request for Proposal (RFP) Response

Bids or proposals and pricing information shall be typewritten or handwritten in ink. Originals and copies of the bid or proposal shall be submitted in accordance with the solicitation documents. MANUALLY SUBMITTED BIDS/PROPOSALS MUST INCLUDE THIS SIGNATURE PAGE WITH THE ORIGINAL SIGNATURE (INK or ELECTRONIC SIGNATURE) OF AN INDIVIDUAL AUTHORIZED TO BIND THE SUBMITTING VENDOR.

NO LIABILITY WILL BE ASSUMED BY THE DIVISION OF PURCHASING FOR A VENDOR'S FAILURE TO OBTAIN THE TERMS AND CONDITIONS AND ANY PROPERLY ISSUED SOLICITATION ADDENDUMS IN A TIMELY MANNER FOR USE IN THE VENDOR'S RESPONSE TO THIS SOLICITATION OR ANY OTHER FAILURE BY THE VENDOR TO CONSIDER THE TERMS, CONDITIONS, AND ANY ADDENDUMS IN THE VENDOR'S RESPONSE TO THE SOLICITATION.

The words "SEALED BID" and the bid number must be noted on the outside of your SEALED BID package. To insure that your SEALED BID is handled properly, label the exterior of your package as follows:

"SEALED BID"	BUYER: Chelsea Cameron RFP Lead] SEALED BID FOR: Laboratory Equipment and Supplies BID NUMBER: RFP16000231 CLOSES: ~~November 18, 2015~~ December 3, 2015

Send your sealed bid package via USPS to:
Division of Purchasing
PO Box 83720
Boise, ID 83720-0075

FedEx, UPS or other Couriers/Hand Deliver:
Division of Purchasing
650 West State Street B-15
Boise, ID 83702

This ITB or RFP response is submitted in accordance with all documents and provisions of the specified Bid Number and Title detailed below. By my signature below I accept the terms, conditions and requirements contained in the solicitation, including, but not limited to, the STATE OF IDAHO STANDARD CONTRACT TERMS AND CONDITIONS and the SOLICITATION INSTRUCTIONS TO VENDORS in effect at the time this ITB or RFP was issued, as incorporated by reference into this solicitation; as well as any SPECIAL TERMS AND CONDITIONS incorporated in the solicitation documents (e.g. Software, Telecommunications, Banking, etc.). As the undersigned, I certify I am authorized to sign and submit this response for the Bidder/Offeror. I further acknowledge I am responsible for reviewing and acknowledging any addendums that have been issued for this solicitation.

BID Number: RFP16000231 **BID Title:** **Laboratory Equipment and Supplies**

BIDDER/OFFEROR (Company Name) Nikon Instruments Inc.

ADDRESS 1300 Walt Whitman Rd.

CITY, ST, ZIP Melville, NY 11747

PHONE: 800-526-4566 FAX: 631-944-9370 FEIN: 11-3554845

E-Mail niiorderscontracts@nikon.net

THIS SIGNATURE PAGE MUST BE SIGNED WITH AN ORIGINAL HANDWRITTEN SIGNATURE (PREFERABLY IN BLUE INK) OR AN ELECTRONIC SIGNATURE, AND RETURNED WITH YOUR MANUALLY SUBMITTED BID OR PROPOSAL.

Original Signature (Manually Signed in Ink or ~~Electronic~~ Signature) — Date: 11/30/15

James Hamlin — Printed Name

Vice President — Title

NIKON INSTRUMENTS INC.
1300 Walt Whitman Road, Melville, NY 11747-3064
Tel (631) 547-8500 Fax (631) 547-0299
www.nikoninstruments.com

November 30, 2015

Chelsea Cameron, Buyer
State of Idaho, Division of Purchasing
650 W. State St., B-15
Boise, ID 83720

RE: Cover Letter, RFP16000231 Laboratory Equipment and Supplies

Dear Ms. Cameron,

Nikon Instruments is a large corporation, TIN 11-3554845, with a primary place of business at 1300 Walt Whitman Rd, Melville, NY 11747. Our toll free number is 800-526-4566. We have multiple fax numbers available. The primary fax number for contract related issues is 631-944-9370.

Our Senior Management team accepts and will comply with the requirements of the RFP and attachments, including but not limited to the State of Idaho Standard Contract Terms and Conditions. We will negotiate and additional terms and conditions, including additional administrative fees, as they become necessary with Participating States upon request.

Nikon Instruments is an Equal Opportunity Employer. We comply with all applicable affirmative action and EEO regulations. We use only bona fide employees to complete all bid and solicitation documentation, including all requirements for this contract. Our Contract Administration Manager, Victoria Stolz, has been responsible for initial review of all solicitation documents and for drafting the proposal. We are not currently debarred, nor in any way excluded from participation in any state or Federal procurement or non-procurement programs. We participate in e-Verify to ensure that all employees of Nikon Instruments are legally authorized to work in the United States.

Nikon Instruments is submitting a bid for Band 4 only, which we will keep firm for 180 days and will be open to all fifty states and the District of Columbia. Upon award, Nikon Instruments Inc. will remit the required 0.25% administrative fee and all required reports to NASPO for all orders received which include the Master Agreement Indicator or appropriate contract number.

The internal signatures required at 9.12 and 10.6 in the RFQ document have been included electronically in our Technical Proposal with my express consent as an authorized signer.

Respectfully Submitted,

James Hamlin
Vice President, Nikon Instruments Inc.

NIKON INSTRUMENTS INC.
1300 Walt Whitman Road, Melville, NY 11747-3064
Tel: (631) 547-8500 Fax: (631) 547-8652
www.nikoninstruments.com

Cover Letter Data

Offeror Name:	Nikon Instruments Inc.
Mailing Address:	1300 Walt Whitman Rd. Melville, NY 11747
Telephone Number:	1-800-52NIKON
Fax Number:	631-944-9370
E-mail address:	niiorderscontracts@nikon.net
Authorized Signer:	James Hamlin, Vice President

RFP Title:	Laboratory Equipment and Supplies
RFP Number:	RFP16000231

6.2.1:

Legal Entity Status:	Corporation
Tax ID Number:	11-3554845

6.2.2
Nikon Instruments Inc. accepts and is willing to comply with the requirements of the RFP and attachments, including but not limited to the State of Idaho Standard Contract Terms and Conditions. These will be delineated again on a separate sheet in the attached proposal.

6.2.3
Nikon Instruments Inc. understands that it may be required to negotiate additional terms and conditions, including additional administrative fees, with Participating States when executing Participating Addendums.

6.2.4
Nikon Instruments Inc. complies with all applicable affirmative action and equal employment regulations.

6.2.5
Nikon Instruments Inc. has assigned only a bona fide employee and has not hired any other company or person, to solicit and secure this contract. It has not agreed to pay anyone other than a regular employee or company regularly employed by it any fee, commission, percentage, brokerage fee, gifts, or any other consideration contingent upon or resulting from award of this contract. Nikon Instruments Inc. understands and agrees that the State has the right to annul the contract without liability or, in its discretion, to deduct from the contract price the amount of any such fee, commission, percentage, brokerage fee, gifts or contingencies for breach or violation of this term.

6.2.6
Victoria Stolz, Contract Administration Manager is responsible for writing this proposal.

6.2.7
Nikon Instruments Inc. is not currently suspended, debarred or otherwise excluded from federal or state procurement and non-procurement programs.

6.2.8
Nikon Instruments Inc. agrees that this proposal will be firm and binding for one-hundred-eighty days from the proposal opening date.

6.2.9
By submitting this proposal, Nikon Instruments Inc. warrants that any contract resulting from this proposal is subject to Executive Order 2009-10, that it participates in E-Verify, and that it does not knowingly and willfully employ persons who cannot legally work in this country; it takes steps to verify that it does not hire persons who have entered our nation illegally or cannot legally work in the United States; and that any misrepresentation in this regard or any employment of persons who have entered our nation illegally or cannot legally work in the United States constitutes a material breach and will be cause for the imposition of monetary penalties up to five percent (5%) of the contract price, per violation, and/or termination of its contract.

6.2.10
Nikon Instruments Inc. hereby acknowledges that a 0.25% NASPO ValuePoint Administrative Fee will apply to total sales for the Contract awarded from this RFP as detailed in Paragraph 26 of the NASPO ValuePoint Standard Terms and Conditions (Attachment A) and Section 1, RFP Administrative Information of this RFP, and agrees to assign responsibility for submitting the NASPO ValuePoint usage reports detailed in Paragraph 27 of the NASPO ValuePoint Standard Terms and Conditions to a single person.

6.2.11
Nikon Instruments Inc. is bidding on Band 4 only and intends to participate for all fifty states and the District of Columbia.

State of Idaho, Department of Administration
Division of Purchasing

In conjunction with

NASPO ValuePoint

Amendment 1
RFP16000231 Laboratory Equipment and Supplies

Posted to IPRO November 16, 2015

State of Idaho RFP16000231 is amended as follows (*please note that you must sign and return a copy of this Amendment Acknowledgement* ***with your proposal submittal****, acknowledging that you have received and read the Amendment, or your proposal may be found non-responsive):*

Post answers to questions submitted
Revised RFP document
Revised Signature Page
Change closing date
Amendment Acknowledgement form

I acknowledge that I have received and read this amendment and that failure to return a signed copy of this Amendment Acknowledgement with my proposal submittal may result in my proposal being found non-responsive.

Name of Offeror: Nikon Instruments Inc.

Signature of Authorized Agent: _____

Printed Name: James Hamlin

Date: 11/30/15

NIKON INSTRUMENTS INC.
1300 Walt Whitman Road, Melville, NY 11747-3064
Tel: (631) 547-8500 Fax: (631) 547-8652
www.nikoninstruments.com

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Section 1 RFP Administrative Information

RFP Title:	Laboratory Equipment and Supplies
RFP Project Description:	The State of Idaho, in conjunction with NASPO ValuePoint, is seeking Contractor(s) to provide a full-line catalog as well as three (3) other defined bands of laboratory equipment and supplies for all Participating States.
RFP Lead:	Chelsea Cameron, Buyer State of Idaho, Division of Purchasing 650 W. State St., B-15 Boise, ID 83720 chelsea.cameron@adm.idaho.gov (208) 332-1607
Submit sealed proposal (if submitting manually): MANUAL PROPOSALS MUST BE RECEIVED AT THE PHYSICAL ADDRESS DESIGNATED FOR COURIER SERVICE AND TIME/DATE STAMPED BY THE IDAHO DIVISION OF PURCHASING PRIOR TO THE CLOSING DATE AND TIME. Submit electronically via IPRO:	Address for Courier 650 W. State St. Room B-15 Boise, ID 83720 Address for US Mail P.O. Box 83720 Boise, ID 83720-0075 Electronic Submission https://purchasing.idaho.gov/iprologin.html
Pre-Proposal Conference: Pre-Proposal Conference Location:	Tuesday, October 13, 2015 10:30 a.m. Mountain Time via Teleconference (call in number will be provided when you register for the Pre-Proposal conference)
Deadline To Receive Questions:	Tuesday, October 20, 2015 11:59:59 p.m. Mountain Time
RFP Closing Date:	*See* IPRO Header Document
RFP Opening Date:	10:30 a.m. Mountain Time the following work day after closing.
Initial Term of Contract and Renewals:	Three (3) years. Upon mutual agreement, the contract may be extended or amended. The total contract term, including all extensions, may not exceed five (5) years.
TAKE NOTE OF THE 0.25% NASPO VALUEPOINT ADMINISTRATIVE FEE DETAILED IN PARAGRAPH 26 OF THE NASPO VALUEPOINT STANDARD TERMS AND CONDITIONS WHICH MUST BE INCORPORATED IN YOUR BASE PRICE. OTHER STATES, INLCUDING IDAHO, WILL HAVE AN ADDITIONAL ADMINISTRATIVE FEE.	

Nikon Instruments Inc. acknowledges receipt.

Section 2 NASPO ValuePoint Solicitation- General Information

2.1 Purpose

The State of Idaho, Division of Purchasing (Lead State) is requesting proposals for laboratory equipment and supplies in furtherance of the NASPO ValuePoint Cooperative Purchasing Program. The purpose of this Request for Proposals (RFP) is to establish Master Agreement(s) with qualified Offerors to provide a full catalog as well as three (3) other defined bands of laboratory equipment and supplies for all Participating States. The objective of this RFP is to obtain best value, and in some cases achieve more favorable pricing, than is obtainable by an individual state or local government entity because of the collective volume of potential purchases by numerous state and local government entities. The Master Agreement(s) resulting from this procurement shall be extended to state governments (including departments, agencies, institutions), institutions of higher education, political subdivisions (i.e., colleges, school districts, counties, cities, etc.), the District of Columbia, territories of the United States, and other eligible entities subject to approval of the individual state procurement director and compliance with local statutory and regulatory provisions. The initial term of the Master Agreement shall be three (3) years with renewal provisions as outlined in Section 3 of the NASPO ValuePoint Master Terms and conditions (Attachment A).

It is anticipated that this RFP may result in Master Agreement awards to multiple contractors in the Lead State's discretion.

This RFP is designed to provide interested Offerors with sufficient information to submit proposals meeting minimum requirements, but is not intended to limit a proposal's content or exclude any relevant or essential data.

The Lead State/Sourcing Team, with the assistance as deemed advisable of the relevant Participating State (or relevant group of Participating States), may evaluate and select an Offeror for award in more limited geographical areas (e.g. a single state) where judged to be in the best interests of the State or States involved.

Nikon Instruments Inc. acknowledges receipt.

2.2 Lead State

The State of Idaho, Division of Purchasing is the Lead State and issuing office for this solicitation and all subsequent addenda relating to it. The reference number for the transaction is RFP16000231. This number must be referred to on all proposals, correspondence, and documentation relating to the RFP.

The Lead State Contract Administrator identified below is the single point of contact during this procurement process. Offerors and interested persons shall direct to the Lead State Contract Administrator all questions concerning the procurement process, technical requirements of this RFP, contractual requirements, requests for brand approval, change, clarification, and protests, the award process, and any other questions that may arise related to this solicitation and the resulting Master Agreement. The Lead State Contract Administrator designated by the State of Idaho, Division of Purchasing is:

Chelsea Cameron, Buyer
State of Idaho, Division of Purchasing
650 W. State Street, B-15
Boise, ID 83720
chelsea.cameron@adm.idaho.gov
Phone: 208-332-1607 Fax: 208-327-7320

Nikon Instruments Inc. acknowledges receipt.

2.3 Definitions

The following definitions apply to this solicitation. Attachment A contains definitions of terms used in the NASPO ValuePoint Master Agreement terms and conditions.

Full-Line Catalog means the Offerors Price List is to include at least 95% of the items chosen by the State for purposes of proposal evaluation of Band 1.

Lead State or State means the State conducting this cooperative procurement, evaluation, and award.

Offeror means the company or firm who submits a proposal in response to this Request for Proposal.

Proposal means the official written response submitted by an Offeror in response to this Request for Proposal.

"Request for Proposals" or "RFP" means the entire solicitation document, including all parts, sections, exhibits, attachments, and Addenda.

Nikon Instruments Inc. acknowledges receipt.

2.4 NASPO ValuePoint Background Information

NASPO ValuePoint (formerly known as WSCA-NASPO) is a cooperative purchasing program of all 50 states, the District of Columbia and the territories of the United States. The Program is facilitated by the NASPO Cooperative Purchasing Organization LLC, a nonprofit subsidiary of the National Association of State Procurement Officials (NASPO), doing business as NASPO ValuePoint. NASPO is a non-profit association dedicated to strengthening the procurement community through education, research, and communication. It is made up of the directors of the central purchasing offices in each of the 50 states, the District of Columbia and the territories of the United States. NASPO ValuePoint facilitates administration of the cooperative group contracting consortium of state chief procurement officials for the benefit of state departments, institutions, agencies, and political subdivisions and other eligible entities (i.e., colleges, school districts, counties, cities, some nonprofit organizations, etc.) for all states, the District of Columbia, and territories of the United States. For more information consult the following websites http://www.naspovaluepoint.org and www.naspo.org.

Nikon Instruments Inc. acknowledges receipt.

2.5 Participating States

In addition to the Lead State conducting this solicitation, the following Participating States have requested to be named in this RFP as potential participating entities on the resulting Master Agreement: Arkansas, Hawaii, Louisiana, Maine, Montana, New Mexico, North Dakota, South Dakota, Tennessee, Utah and Washington. Other entities may become Participating Entities after award of the Master Agreement. State-specific terms and conditions that will govern each state's Participating Addendum are included in Attachments H-Y, or may be incorporated into the Participating Addendum after award.

Nikon Instruments Inc. acknowledges receipt.

2.6 Anticipated Usage

The resulting contract(s) is intended for use by NASPO members and will be used by various public (and qualified non-profit) entities throughout the United States (as well as the NASPO member territories). Attachment B contains the historical usage data from the previous contracts and anticipated usage from additional states who have indicated an interest in participating. Historic usage is provided to assist Offerors in preparing their proposals; however, there is no minimum or maximum level of sales volume guaranteed or implied.

Nikon Instruments Inc. acknowledges receipt.

Section 3 Laboratory Equipment and Supplies Overview

The State is requesting proposals on four (4) defined bands ("Bands") of laboratory equipment and supplies (Attachment C), as follows:

Band 1 FULL-LINE CATALOG of laboratory equipment and supplies. Unless otherwise excluded, the resulting contract for this Band will include all laboratory equipment and supplies.
Band 2 Plasticware
Band 3 Gloves
Band 4 Microscopes

Offeror must certify that it can supply a full line of products for each Band for which it submits a response. Offerors will be required to provide pricing and related discounts for a full line of products within each Band Offeror responds to (subject to the unit price limit in Section 3.3, below).

Offerors responding to Band 1, Full-Line Catalog MUST accept orders from and extend contract prices to all members of NASPO ValuePoint.

Offerors responding to Bands 2 – 4 may elect to provide a response limited to a defined geographic region consisting of no less than one state (e.g. "Washington/Oregon/Idaho;" "Texas;" "Louisiana/Arkansas/Georgia/Alabama/Florida;" "Colorado and Wyoming;" etc.). Offerors must identify the geographic region and demonstrate ability to serve the area which they are proposing to serve.

Nikon Instruments Inc. is responding to Band 4 only. We will offer a full line of biologic and research microscopes for all fifty states and the District of Columbia. We currently have sales representatives in place who support all of these regions. Nikon Instruments was separately incorporated in 2000; our history of sales and technical support to all fifty states and DC began while we were still a division of Nikon Inc. and has continued through the present.

3.1 Estimated Quantities

See Section 2.6, above, for historic usage. Historic usage is provided to assist Offerors in preparing their proposals; however, there is no guarantee of any minimum usage.

Nikon Instruments Inc. acknowledges receipt.

3.2 Items Not Included in This Contract

The following items are NOT included in this RFP:
Equipment and Supplies which may be included in a vendor's catalog, but which are not specifically designed or intended for laboratory use (e.g. reception chairs, couches, coffee tables, general office equipment, etc.)

Items costing in excess of $75,000, after discount, are excluded from the resulting contract.

NOTE: When executing a Participating Addendum, all parties are bound by the $75,000/item upper limit. A Participating State may establish a lower limit; however, any language included in a Participating Addendum purporting to increase this amount; or any other attempt to order an item off of the resulting contract which exceeds the unit price limit, will be void.

Nikon Instruments Inc. will comply.

3.3 Back-Orders

Contractor will take every available precaution to prevent back-order and out-of-stock contract items necessary for the operation of the Ordering Entities' facilities.

Nikon Instruments Inc. will comply.

3.4 Additions to the Contract

New items may be included as they become available (when added to Contractor's catalog) during the term of the Contract, after obtaining the approval of the NASPO Contract Administrator, as specified in this RFP, and in accordance with the provisions of the resulting contract.

Minor related services, such as hazardous waste pick-up/removal of Contractor's items; product recycling; etc. may be added to the Contract, after obtaining the approval of the NASPO Contract Administrator.

Nikon Instruments Inc. acknowledges receipt.

3.5 Effect on Other Laboratory Equipment and Supply Contracts

Many Ordering Entities have current laboratory equipment and supply contracts which they may utilize as an alternate to the contract resulting from this RFP, which may affect the frequency of use of the resulting contract (s).

In addition, ordering of items that may be available through other current state or cooperative contracts may be subject to the provisions of individual state statutes and guidelines which govern the use of multiple contracts for the same commodities.

In Idaho, contracts which pre-date those resulting from this RFP for the same products will be utilized by Idaho State agencies as the primary contract for those same products, for so long as those contracts remain in effect.

Nikon Instruments Inc. acknowledges receipt.

Section 4 Solicitation Requirements, Information and Instructions

4.1 RFP Question and Answer Process

This solicitation is issued by the State of Idaho Division of Purchasing via IPRO (https://purchasing.idaho.gov/iprologin.html). The Division of Purchasing is the only contact for this solicitation. All correspondence shall be in writing. In the event that it becomes necessary to revise any part of this RFP, addenda will be posted at IPRO. It is the responsibility of the Offeror to monitor IPRO for any updates or amendments. Any oral interpretations or clarifications of this RFP shall not be relied upon. All changes to this RFP must be in writing and posted at IPRO to be valid.
Questions or other correspondence must be submitted in writing (fax, mail, e-mail) to:

Chelsea Cameron, Buyer
State of Idaho, Division of Purchasing
650 W. State St., Room B-15
P.O. Box 83720
Boise, ID 83720-0075
Fax: (208) 327-7320
E-mail: chelsea.cameron@adm.idaho.gov

Questions relating to this RFP must be submitted in writing to the RFP Lead, by the date and time noted above in order to be considered.

Written questions must be submitted using Attachment E, Offeror Questions. *Official answers to all written questions will be posted on IPRO as an amendment to this RFP.*

*Any questions regarding the State of Idaho Standard Contract Terms and Conditions, found at http://purchasing.idaho.gov/terms_and_conditions.html or the NASPO ValuePoint Terms and Conditions included as **Attachment A**, must also be submitted in writing, using Attachment D, Offeror Questions, by the deadline identified in the RFP Administrative Information. The State will not consider proposed modifications to these requirements after the date and time set for receiving questions. Questions regarding these requirements must contain the following:*

1. *The rationale for the specific requirement being unacceptable to the party submitting the question (define the deficiency);*

2. *Recommended verbiage for the State's consideration that is consistent in content, context, and form with the State's requirement that is being questioned;*

3. *Explanation of how the State's acceptance of the recommended verbiage is fair and equitable to both the State and to the party submitting the question.*

Proposals which condition the Proposal based upon the State accepting other terms and conditions not found in the RFP, or which take exception to the State's terms and conditions, will be found non-responsive, and no further consideration of the Proposal will be given.

Nikon Instruments Inc. will comply.

4.2 Pre-Proposal Conference

A non-mandatory pre-proposal conference will be held at the location and time indicated in ***Section 1****, page 1 of this RFP. This will be your opportunity to ask questions, in person, with representatives of the Lead State and other Participating States. All interested parties are invited to participate either by attending the conference or by an established call in number.* ***Those choosing to participate by phone must pre-register via e-mail to Chelsea Cameron chelsea.cameron@adm.idaho.gov with the name and contact information of participant(s) to receive phone conferencing and meeting details. Offerors are asked to register by Friday, October 9, 2015.*** *Any oral answers given by the Lead State or Participating States during the pre-proposal conference are unofficial, and will not be binding on the States. Conference attendance is at the participant's own expense.*

Nikon Instruments Inc. acknowledges receipt.

4.3 Proposal Due Date

Proposals must be received by the Closing Date and time as described in the IPRO header document ("End Date"). Proposals received after the closing date and time will not be accepted.

Nikon Instruments Inc. will comply.

4.4 Cancellation of Procurement

This RFP may be canceled at any time prior to award of the Master Agreement(s) if the Lead State determines such action to be in the collective best interest of potential Participating States. (See Paragraph 20 of the Solicitation Instructions to Vendors http://purchasing.idaho.gov/pdf/terms/solicitation_instructions.pdf .)

Nikon Instruments Inc. acknowledges receipt.

4.5 Governing Laws and Regulations

This procurement is conducted by the Lead State in accordance with the Lead State Procurement Code, available at http://purchasing.idaho.gov/idaho_code.html.

This procurement shall be governed by the laws and regulations of the Lead State. Venue for any administrative or judicial action relating to this procurement, evaluation, and award shall be in Ada County, Idaho. The provisions governing choice of law and venue for issues arising after award and during contract performance are specified in Section 35 of the NASPO ValuePoint Master Agreement Terms and Conditions in ***Attachment A.***

Nikon Instruments Inc. acknowledges receipt.

4.6 Firm Offers

Responses to this RFP, including Offerors proposed Price List, will be considered firm for one-hundred-eighty (180) days after the proposal opening date.

Nikon Instruments Inc. will comply.

4.7 Right to Accept All or Portion of Proposal

Unless otherwise specified in the solicitation, the Lead State may accept any item or combination of items as specified in the solicitation or of any proposal. (See Paragraph 20 of the Solicitation Instructions to Vendors http://purchasing.idaho.gov/pdf/terms/solicitation_instructions.pdf)

Nikon Instruments Inc. acknowledges receipt.

4.8 Proposal Content and Format Requirements

Proposals shall follow the numerical order of this RFP starting at the beginning and continuing through the end of the RFP. Proposal sections and subsections shall be identified with the corresponding numbers and headings used in this RFP. In your response, restate the RFP section and/or subsection, followed with your response. Offerors are encouraged to use a different color font, bold text, italics, or other indicator to clearly distinguish the RFP section or subsection from the Offeror's response.

Proposals must be detailed and concise. The format is designed to ensure a complete submission of information necessary for an equitable analysis and evaluation of submitted proposals. There is no intent to limit the content of proposals.

Nikon Instruments Inc. will comply.

4.9 Proposal Submission Instructions

4.9.1 Submission of Proposals: *Proposals may be submitted manually or electronically. Electronically submitted proposals must be submitted through IPRO, the Lead State's eProcurement provider, at http://purchasing.idaho.gov/ipro.html . When submitting through IPRO, enter your "Total Cost" in IPRO as "$0," and UPLOAD YOUR TECHNICAL PROPOSAL, COST PROPOSAL AND ALL OTHER REQUIRED DOCUMENTS.*

If submitting via IPRO, be advised that that the "Offeror" for bid evaluation and award purposes is the entity profile you submit under in IPRO, which must be the same legal entity presented in your attached response materials.

Offerors are further advised to upload response materials with descriptive file names, organized and consolidated in a manner which allows evaluators to efficiently navigate their response; as the State will print uploaded documents for evaluation in the manner received via IPRO.

Nikon Instruments Inc. will comply.

4.9.2 Manually Submitted Proposals: *The proposals must be addressed to the RFP Lead and clearly marked "TECHNICAL PROPOSAL – RFP16000231 Laboratory Equipment and Supplies."*

Each proposal must be submitted in one (1) original with seven (7) copies of the Technical Proposal, one (1) original and one (1) copy of the Cost Proposal as well as one (1) copy of Offerors latest Catalog.

Offerors submitting manually must also submit one (1) electronic copy of the proposal, one (1) electronic copy of the Price List and one (1) copy of the Catalog on CD or USB device. You may comply with the requirement for an electronic version by providing temporary access to a searchable electronic version of your Catalog. Word or Excel format is required (the only exception is for financials, brochures or other information only available in an alternate format). The format and content must be the same as the manually submitted proposal. The electronic version must NOT be password protected or locked in any way.

If your proposal contains trade secret information which you have identified, you must also submit a redacted copy of the Technical Proposal (in electronic format, with the word "redacted" in the file name) with all trade secret information removed or blacked out; as well as a separate document containing a complete list (per the instructions in Subsection 5.2.6, below) of all trade secret information which was removed or blacked out in the redacted copy.

*Your Proposal must be sealed, and identified as "**RFP16000231 Laboratory Equipment and Supplies.**"*

*The Cost Proposal must be separately sealed, identified as "**Cost Proposal – RFP16000231 Laboratory Equipment and Supplies.**"*

The Technical Proposal and separately sealed Cost Proposal must be submitted at the same time (place all proposal response materials within a larger package).

Nikon Instruments Inc. will comply.

Section 5 Proposal Format, Review and Evaluation

5.1 Evaluation Codes

(M) Mandatory Specification or Requirement - failure to comply with any mandatory specification or requirement will render Offeror's proposal non-responsive and no further evaluation will occur.

(ME) Mandatory and Evaluated Specification - failure to comply will render Offeror's proposal non-responsive and no further evaluation will occur. Offeror is required to respond to this specification with a statement outlining its understanding and how it will comply. Points will be awarded based on predetermined criteria.

(E) Evaluated Specification - a response is desired and will be evaluated and scored. If not available, respond with "Not Available" or other response that identifies Offeror's ability or inability to supply the item or service. Failure to respond will result in zero (0) points awarded for the specification.

Nikon Instruments Inc. acknowledges receipt.

5.2 Initial Review of Proposals

5.2.1: *All proposals will be reviewed first to ensure that they meet the Mandatory Submission Requirements of the RFP as addressed in **Sections noted with an (M)**. Any proposal(s) not meeting the Mandatory Submission Requirements may be found non-responsive.*

Nikon Instruments Inc. acknowledges receipt.

5.2.2: *The Technical Proposal will be evaluated first as either "pass" or "fail," based on compliance with those requirements listed in the RFP with an **(M) or (ME)**. All proposals which are determined to be responsive will continue in the evaluation process outlined in **Section 11**.*

Nikon Instruments Inc. acknowledges receipt.

5.2.3 Right to Waive Minor Irregularities: *Offerors are directed to IDAPA 38.05.01.074.03.a, as well as IDAPA 38.05.01.091.05, which allow the designated State official to waive minor informalities as well as minor deviations. The State also reserves the right to seek clarification on any M or ME requirement.*

Nikon Instruments Inc. acknowledges receipt.

5.2.4 Proposal Format:

5.2.4.1 Table of Contents: *Include a table of contents in the Technical Proposal identifying the contents of each section, including page numbers of major subsections.*

Nikon Instruments Inc. will comply.

5.2.4.2 Format: *Proposals should follow the numerical order of this RFP starting at the beginning and continuing through the end of the RFP. Proposal sections and subsections must be identified with the corresponding numbers and headings used in this RFP. In your response, restate the RFP section and/or subsection, followed with your response.*

Offerors are encouraged to use a different color font, bold text, italics, or other indicator to clearly distinguish the RFP section or subsection from the Offeror's response.

Nikon Instruments Inc. will comply.

5.2.5 Ownership or Disposition of Proposals and other Materials Submitted: *All Proposal contents become the property of the State, and may become a part of any resulting Contract. Award or rejection of a Proposal does not affect this right.*

Nikon Instruments Inc. acknowledges receipt.

5.2.6 Confidential or Proprietary Information: *Paragraph 28 of the Solicitation Instructions to Vendors http://purchasing.idaho.gov/pdf/terms/solicitation_instructions.pdf describes trade secrets to "include a formula, pattern, compilation, program, computer program, device, method, technique or process that derives economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by other persons and is subject to the efforts that are reasonable under the circumstances to maintain its secrecy." In addition to marking each page of the document with a trade secret notation (as applicable; and as provided in Paragraph 28 of the Solicitation Instructions to Vendors), Offerors must also: Identify with particularity the precise text, illustration, or other information contained within each page marked "trade secret" (it is not sufficient to simply mark the entire page). The specific information you deem "trade secret" within each noted page must be highlighted, italicized, identified by asterisks, contained within a text border, or otherwise clearly delineated from other text/information and specifically identified as a "trade secret."*
Provide a separate document entitled "List of Redacted Trade Secret Information" which provides a succinct list of all trade secret information noted in your proposal; listed in the order

it appears in your submittal documents, identified by Page#, Section#/Paragraph#, Title of Section/Paragraph, specific portions of text/illustrations; or in a manner otherwise sufficient to allow the state's procurement personnel to determine the precise text/material subject to the notation.

Nikon Instruments Inc. will comply.

Section 6 Mandatory Administrative Requirements

6.1 (M) Signature Page

All submitted proposals must be submitted with a state supplied signature page, located on the IPRO solicitation page as an attachment. Manually submitted proposals must contain an ***ORIGINAL HANDWRITTEN*** *signature executed in* ***INK*** *<u>OR</u>* ***AN ELECTRONIC SIGNATURE****, and be returned with the relevant Solicitation documents.* ***PHOTOCOPIED SIGNATURES*** *or* ***FACSIMILE SIGNATURES*** *are* ***NOT ACCEPTABLE (and will result in a finding that your proposal is non-responsive).*** *Your ORIGINAL Signature Page should be included at the FRONT of your ORIGINAL Technical Proposal.*

By submitting your proposal electronically through IPRO, you are acknowledging compliance with all requirements contained in the Signature Page.

Nikon Instruments Inc. will comply.

6.2 (M) Cover Letter

The Technical Proposal must include a cover letter on official letterhead of the Offeror; with the Offeror's name, mailing address, telephone number, facsimile number, e-mail address, and name of Offeror's authorized signer. The cover letter must identify the RFP Title and number, and must be signed by an individual authorized to commit the Offeror to the work proposed. In addition, the cover letter must include:

6.2.1: *Identification of the Offeror's corporate or other legal entity status. Offerors must include their tax identification number. The Offeror must be a legal entity with the legal right to contract.*

** If submitting via IPRO be certain the FEIN in IPRO is the same as the one in your cover letter and on your signature page.*

Nikon Instruments Inc. will comply.

6.2.2: *A statement indicating the Offeror's acceptance of and willingness to comply with the requirements of the RFP and attachments, including but not limited to the State of Idaho Standard Contract Terms and Conditions (http://purchasing.idaho.gov/terms_and_conditions.html; Attachment G), NASPO ValuePoint Standard Terms and Conditions (Attachment A).*

Nikon Instruments Inc. will comply.

6.2.3: *A statement indicating the Offeror's understanding that it may be required to negotiate additional terms and conditions, including additional administrative fees, with Participating States, when executing Participating Addendums.*

Nikon Instruments Inc. will comply.

6.2.4: *A statement of the Offeror's compliance with affirmative action and equal employment regulations.*

Nikon Instruments Inc. will comply.

6.2.5: *A statement that Offeror has not employed any company or person other than a bona fide employee working solely for the Offeror or a company regularly employed as its marketing agent, to solicit or secure this contract, and that it has not paid or agreed to pay any company or person, other than a bona fide employee working solely for the contractor or a company regularly employed by the contractor as its marketing agent, any fee, commission, percentage, brokerage fee, gifts or any other consideration contingent upon or resulting from the award of this contract. The Offeror must affirm its understanding and agreement that for breach or violation of this term, the State has the right to annul the contract without liability or, in its discretion, to deduct from the contract price the amount of any such fee, commission, percentage, brokerage fee, gifts or contingencies.*

Nikon Instruments Inc. will comply.

6.2.6: *A statement naming the firms and/or staff responsible for writing the proposal.*

Nikon Instruments Inc. will comply.

6.2.7: *A statement that Offeror is not currently suspended, debarred or otherwise excluded from federal or state procurement and non-procurement programs. Vendor information is available on the Internet at: http://sam.gov.*

Nikon Instruments Inc. will comply.

6.2.8: *A statement affirming the proposal will be firm and binding for one-hundred-eighty (180) days from the proposal opening date.*

Nikon Instruments Inc. will comply.

6.2.9: *A statement, by submitting its proposal, that the Offeror warrants that any contract resulting from this Solicitation is subject to Executive Order 2009-10 [http://gov.idaho.gov/mediacenter/execorders/eo09/eo_2009_10.html]; it does not knowingly*

and willfully employ persons who cannot legally work in this country; it takes steps to verify that it does not hire persons who have entered our nation illegally or cannot legally work in the United States; and that any misrepresentation in this regard or any employment of persons who have entered our nation illegally or cannot legally work in the United States constitutes a material breach and will be cause for the imposition of monetary penalties up to five percent (5%) of the contract price, per violation, and/or termination of its contract.

Nikon Instruments Inc. will comply.

6.2.10: *A statement acknowledging that a 0.25% NASPO ValuePoint Administrative Fee will apply to total sales for the Contract awarded from this RFP as detailed in Paragraph 26 of the NASPO ValuePoint Standard Terms and Conditions (Attachment A) and Section 1, RFP Administrative Information of this RFP, and acknowledging the requirement to provide a single person responsible for submitting the NASPO ValuePoint usage reports detailed in Paragraph 27 of the NASPO ValuePoint Standard Terms and Conditions.*

Nikon Instruments Inc. will comply.

6.2.11: *A statement identifying the geographic region or "all NASPO" if bidding on Bands 2-4.*

Nikon Instruments Inc. will comply.

6.3 (M) Acknowledgement of Amendments

If the RFP is amended, the Offeror must acknowledge each amendment with a signature on the acknowledgement form provided with each amendment. Failure to return a signed copy of each amendment acknowledgement form with the proposal may result in the proposal being found non-responsive. IDAPA 38.05.01.52

Nikon Instruments Inc. will comply.

Section 7 Business Information

7.1 (ME) Experience

Describe in detail your knowledge and experience in providing goods and services similar to those required in this RFP. Include Offerors business history, description of current service area, and customer base.

We would like to thank you for giving us this opportunity to present our products as a solution to your needs. Since Nikon is specifically focused on excellence in microscopy and digital imaging for microscopy and is not a full-service lab provider, we are bidding only for Band 4.

Since its inception in 1917, virtually all Nikon products have been based upon our high-quality optical glass, creating revolutionary products from microscopes to cameras. Over the years, microscopy has evolved from simple optical devices to sophisticated systems with information technology that enables the sharing of digital images over global networks. A hallmark of Nikon's success is combining imaging and digital technologies that offer comprehensive solutions and total value for its products.

Nikon has been offering high quality, leading-edge scientific instruments in the US since 1950. Nikon Instruments Inc. was incorporated as a separate company in the State of Delaware in July 2000. Nikon Instruments Inc. is privately held by Nikon Americas, Inc., a holding company owned by Nikon Corporation. Our President and CEO, Toshiaki Nagano, and our Vice President, James Hamlin, lead us in the United States.

Nikon focuses a great deal of time, energy and resources on research and development. Working in collaboration with major Universities around the country, we have established Imaging Centers and Centers of Excellence where our microscopes are used to advance the study of and education in imaging technology. We also work with major corporations to advance their research and, in turn, gain greater insights into the needs of our customers, applications for our systems, and new avenues for our own research and advancement.

In keeping with the commitment to technological product leadership and growth in each of its product lines, Nikon routinely introduces new products designed to provide long-term benefits for our customers. We strive to enhance productivity, improve quality, and reduce total-cost-of-ownership. Our history is based on providing the finest combination of optical design and highly quality-controlled production processes. Nikon quality begins with production of our own innovative glass. From there, optical components are produced and integrated into the most efficient, innovative, and reliable microscopes on the market today. Nikon's long history of integrating microscopes into imaging solutions continues with its super-resolution microscopy systems.

Nikon Instruments has sold thousands of systems over the last fifteen years. We have contracts with the Federal Government, state and local governments, universities, and commercial entities including public and private corporations in all fifty states. Nikon Instruments' Federal customers include representatives from almost every department of the Executive Branch, including the Departments of Defense, Agriculture, Veterans Affairs, Energy, the Interior, and Health and Human Services. Our Federal sales under our former GSA Schedule, GS24F-1333C, totaled several million dollars a year, and our new GSA Schedule, GS07F-078CA, is performing equally well. Our state, university, and private customers are similarly diverse.

7.2 (E) References

Offerors will be scored on a minimum of three (3) completed reference questionnaires. See Attachment F.

7.2.1: (E) *For Band 1: Full-Line Catalog suppliers: Use the attached Reference Questionnaire (Attachment F) to provide three professional references from customers for which you hold a contract with an annual volume of at least $10M.*

Nikon Instruments Inc. is submitting only for Band 4 so this does not apply.

7.2.2: (E) *For all other bands (2 – 4): Submit three professional references using the attached questionnaire (Attachment F) from customers for which you hold a contract which includes the named Band.*

Nikon Instruments Inc. has requested references from existing customers in Band 4.

7.3(M) Minimum Requirements

7.3.1 Experience: *Offeror must have been in business for a minimum of three years providing Laboratory Equipment and Supplies on a state, regional or nationwide basis, and must demonstrate that it has specific public sector experience. Describe in detail your knowledge and experience in providing services similar to those required in this RFP. Include Offerors business history, description of current service area, and customer base.*

Nikon Instruments Inc. confirms compliance with this requirement. Nikon made its first microscope in the early 1900's. It began offering scientific and laboratory equipment for sale in the United States in 1950. Nikon Instruments Inc. was incorporated as a separate entity in 2000 in the State of Delaware.

Nikon Instruments has been doing business nationwide since its incorporation. Our first Federal contracts predate our separate incorporation. We submitted a novation at that time for our then current contract, GS24F-1333C, which finally reached its twenty year expiration at the end of January, 2015. We were awarded a new GSA contract, GS7F-078CA, in February of 2015. The Final Evaluation of our previous contract showed total sales of $61,824,048. Due to the Maximum Order Limit and other limitations on that contract, we had additional open market sales during the same period which also totaled well into the tens of millions. Our customer base within the Federal Government includes the Departments of Defense, Commerce, Interior, Energy, Veterans' Affairs, and Health & Human Services, plus the EPA, NASA, and the USDA.

In addition, we have current contracts with several states and universities, and commercial contracts with various Group Purchasing Organizations in the clinical market. We also sell without contracts to research, biomedical, pharmaceutical, and manufacturing facilities across the country.

7.3.2 Licensing Requirements: *Offerors must be in full compliance with all licensing requirements in the Lead State at the time of Proposal submission. Specific states or other authorized Participating Entities may have additional licensing and/or certification requirements that would be addressed in Participating Addenda.*

There are no licensing requirements associated with Nikon Instruments' Band 4 participation.

7.3.3 Contractor Single Point of Contact: *All Offerors must include a single point of contact in their Proposal. This single point of contact shall be the primary person the Lead State may contact in regards to the resulting Master Agreement.*

Nikon Instruments' single point of contact for the Master Agreement shall be Victoria Stolz, Contract Administration Manager.

Section 8 Organization and Staffing

8.1 Key Personnel

Provide a list of key management, customer service and other personnel to be used in the fulfillment of this contract, to include all pertinent contact information.

Name	Title	Email	Mobile Phone (M)/Phone
Toshiaki Nagano	President & CEO	tnagano@nikon.net	631-547-8500
James Hamlin	Vice President	jhamlin@nikon.net	631-547-8573
Melody Burba	National Sales Manager	mburba@nikon.net	502-494-4066(M)
Nathan Coe	Western Regional Sales Manager	ncoe@nikon.net	650-823-5748 (M)
Patrick Keenan	Southwest Area Sales Manager	pkeenan@nikon.net	951-893-3670 (M)
Michael Johnson	Central Regional Sales Manager	mjohnson@nikon.net	214-738-0210 (M)
Vincent Haile	Eastern Regional Sales Manager	vhaile@nikon.net	512-658-3488 (M)
Adam Henry	Advanced Biosystems PanAmerican Manager	ahenry@nikon.net	412-849-3993 (M)
Andy Davis	Strategic Sales Manager for System Sales	jdavis@nikon.net	614-404-5815 (M)
Michael Gallo	Senior Service Manager	mgallo@nikon.net	631-223-5680 (M)
Ken Mariana	National Service Manager	kmariana@nikon.net	631-396-4903
Alex Fiakos	Senior Operations Manager	afiakos@nikon.net	631-547-8638
Janice Joseph	Sales Administrative Manager	jjoseph@nikon.net	631-547-8530
Victoria Stolz	Contract Administration Manager	vstolz@nikon.net	631-547-8526

8.2 Qualifications of Personnel

Provide resumes for employees who will be managing and/or directly providing services under the contract. For positions that are not filled, a position description (including requisite qualifications/experience) should be provided.

Toshiaki Nagano: President & CEO: Mr. Nagano has been involved in the production and business side of Nikon Corporation's microscopy division since starting with the company in 1984. While based in Tokyo, he served in the fields of Overseas Sales, Product Planning, and Business Management. He then worked for Nikon Singapore and Nikon Instruments Europe before becoming president of Nikon Instruments Inc. in the United States in 2012. His knowledge and expertise in both microscopy and business have enabled Nikon Instruments to grow and strengthen during his tenure.

James Hamlin: Vice President of Sales: Mr. Hamlin started working as a lab technician in 1975. In1979 he moved over to selling microscopes. By 2003, when he was called up to our national headquarters in Melville, New York to serve as Division Manager for Instrument Sales and Operations, Mr. Hamlin had held field sales positions including Regional Manager and General Manager. In 2010 he was promoted to Vice President of Sales, a position which was expanded to include all sales in Canada and Latin America as well as the United States in 2011. Since then, his leadership has helped turn these separate divisions into a unified company with a strong sense of teamwork and dedication.

Melody Burba: National Sales Manager: Ms. Burba has been in sales for the microscope industry since 1982. She was a sales specialist for the largest Nikon distributorship until 2006 when she came to Nikon as a confocal systems sales representative. She was promoted to Regional Sales Manager-Mid-Atlantic Region until her promotion to National Sales Manager in 2011. Ms. Burba works with Nikon Regional Managers and Sales Specialist to build Nikon into the number one brand in the Microscopy Industry. She embraces Nikon's culture of teamwork, dedication, and high integrity in all that she does.

Nathan Coe: Western Regional Sales Manager: Nathan has decades of experience in the microscopy and imaging systems field and has managed and coordinated installations of Nikon Imaging systems and follow up training support at key research institutions throughout the Western US and Canada.

Patrick Keenan: Southwest Area Sales Manager: Patrick has been working within the microscope industry for over 15 years performing multiple facets of Sales and Service. With Nikon he has specialized in Confocal, Super Resolution and Imaging for nearly a decade.

Patrick was recently promoted to Manage and coordinate Sales, Training and Customer support in the South Western US Region.

Michael Johnson: Central Regional Sales Manager: Mr. Johnson has over 20 years of experience in both Business and Personnel management, as well as over 20 years of experience with light and electron microscopy. He holds a BS in Biology from the University of Texas at Arlington and has two years graduate research experience in the laboratory of Dr. H. J. Arnott studying biomineralization via both Electron and Light microscopy. Mr. Johnson is a graduate of NxLevel Business Management Course and was Business Services Manager and eventually Executive Vice President of Logisticorp, LLC for six years before coming to Nikon Instruments Inc. He was a Biosystems Sales Specialist at Nikon covering North Texas, and earned the Top Microscope Salesperson honors for direct sales on three occasions, as well as US Sales Rep of the Year in 2002. He has served as a Regional Manager for Nikon since 2007, and currently manages Sales Operations in the Central US and Canada.

Vincent Haile: Eastern Regional Sales Manager: Mr. Haile has been in the Nikon microscope business for 30 years working in the fields of: operations, inside sales support, Field direct sales, dealer sales and management, and now functions as Nikon's Eastern regional sales manager for the United States and Canada. Mr. Haile specializes in assuring customer satisfaction through open communications and attention to detail.

Adam Henry: Advanced Biosystems PanAmerican Manager: Mr. Henry spent five years doing research in a lab before coming to work for Nikon Instruments. Since his arrival here, he has specialized in confocal and super resolution system sales. After spending many years in the field working in direct sales, Mr. Henry was recently promoted to his current position in which he oversees our high-end research sales for the United States, Canada, and Latin America.

Andy Davis: Strategic Sales Manager for System Sales: Mr. Davis has been working in the microscopy industry for eleven years. His field of expertise is integrated system sales: confocal, super resolution, and high throughput systems. He spent four years in international sales management for biosystems sales. Prior to this he spent seven years selling advanced biosystems.

Michael Gallo: Senior Service Manager: Mr. Gallo has over 20 years' experience in managing the Microscope Technical Services Department which includes Biosystem Service Specialists, Technicians, Technical Engineers, and Administrative staff. He has a wide range of knowledge in the Microscope Industry; his responsibilities include managing all aspects of the Nikon Service business and quality control of all Nikon equipment. His leadership is essential to Nikon's successful service support for Nikon's customers and the products they use.

Ken Mariana: National Service Manager: Mr. Mariana has been working in the Nikon Service Department for over thirty years. He has been responsible for overseeing all service related and quality control issues. His expertise in Nikon systems ranges from our educational and clinical all the way through our newest confocal and super resolution systems.

Alex Fiakos: Senior Operations Manager: A newcomer to Nikon Instruments, Alex has have over 25 years of experience in designing, implementing, reorganizing, and managing multi-plant operations for nationally and internationally recognized manufacturing corporations in various fields including: Aerospace/Defense, Commercial Products, and Consumer Goods. His "hands on" management style, and go-getter, positive attitude successfully blends required technical knowledge with essential managerial and financial skills to positively impact the bottom line and get done the job at hand.

Janice Joseph: Sales Administrative Manager: Ms. Joseph has twenty years' experience in Sales Administration. She is currently Administrative sales manager responsible for directing distribution of products to customers, and both field and customer support. She coordinates sales distribution by analyzing sales quotas, goals, and territories.

Victoria Stolz: Contract Administration Manager: Mrs. Stolz has spent the past ten years working in contract administration. She is certified in both Federal and Commercial Contract Management through the National Contract Management Association. She currently manages over thirty IDIQ contracts representing annual revenue in the tens of millions of dollars.

8.3 Subcontractors

Describe the extent to which subcontractors will be used to comply with contract requirements. Include each position providing service, and provide a detailed description of how the subcontractors are anticipated to be involved under the contract. Include a description of how the Offeror will ensure that all subcontractors and their employees will meet all Scope of Work requirements.

Nikon Instruments does not anticipate using subcontractors to comply with contract requirements.

Section 9 Scope of Work

9.1 (M) Mandatory Specifications and Requirements

9.1.1 Estimates of Use: *The quantities listed in Attachment B are based on the historical dollar value of both of the current NASPO ValuePoint cooperative contracts for lab equipment and supplies. These are provided as a guide for estimates of use only and are not guarantees of quantities to be purchased through the resulting Contract(s). The actual quantities to be ordered and actual volume(s) of use are not known and may vary a great deal from those listed. NASPO ValuePoint estimates that the annual spend for all states indicating an Intent to Participate could approximate $75M annually; however NO MINIMUM ORDER QUANTITIES ARE GUARANTEED.*

Nikon Instruments Inc. acknowledges that the volumes listed are for guidance only and are not a guarantee of sales volumes under any ensuing contract.

9.1.2 Customer Service Representatives: *Offerors must designate a Contract Manager, as specified in Section 7.3.3; as well as a network of technical experts, customer service representatives and local sales representatives capable of adequately serving all Ordering Entities under the resulting contract.*

Victoria Stolz will serve as Contract Manager. Nikon Instruments Inc. has a national network of sales representatives and technicians available to serve contract customers. Ordering Entities can contact Nikon Instruments Inc. through Mrs. Stolz or via our toll free customer service number to be put in touch with their local area representative. The list of primary sales representatives is attached hereto as a separate document.

9.1.3 Silence of Specifications: *The apparent silence of these specifications as to any detail, or the apparent omission from them of a detailed description concerning any point shall be regarded as meaning that the best commercial practice is to be used.*

Nikon Instruments Inc. acknowledges that silence on any details means that best commercial practice is to be used.

9.2 (M) Ordering

Contractor must establish and maintain a toll free phone number as well as an Internet-based ordering system for order placement, order inquiry, price and availability inquiries. Contractor must establish a wait time to place an order of less than 3 minutes. Contractor must maintain a web site, accessible by both the Ordering Entity and the Division of Purchasing, for the resulting contract. The web site, at a minimum, must:

Nikon Instruments has a toll free number which Ordering Entities and the Division of Purchasing can use to place orders or check on order status, prices, and availability. We do not have a queue customers land in, so the wait time when a customer calls is generally less than three minutes.

9.2.1: *Allow Participating Entities to search Contractor's catalog based on key word, brand name, description, etc.*

Nikon Instruments Inc. has a website on which customers can search for specific microscope systems by key word or description. They can search for some of our third party products, but we are the US distribution arm of Nikon Corp, so the brand is primarily Nikon.

9.2.2: *Provide List Price, Discount information and Contract Pricing for the Ordering Entity (which may vary based on an individual state's Administrative Fee).*

Since our primary website is a public website, we are unable to provide pricing information there; however, we are looking at the functionality available on SciQuest and will be creating a vendor file on that site with appropriate pricing and ordering capabilities.

9.2.3: *Allow Participating Entities to place an order on-line, with a secure means for storing procurement card information.*

Ordering Entities can currently send us purchase orders via fax and email. We are also looking at the functionality available on SciQuest and will be creating a vendor file there with appropriate pricing and ordering capabilities.

9.2.4: *Provide tracking/status information after an order is submitted.*

Nikon Instruments Sales Administrators can provide our customers order tracking and status information. An email is sent with order confirmation and initial status information as soon as a purchase order is processed. We can also provide additional information as requested. We are reviewing what other information we may be able to provide through SciQuest.

9.2.5: *Maintain a database for each Participating Entity, identifying the entity by a unique number, and containing an up-to-date listing of equipment and supplies which have been ordered during the life of the contract; the date and status of each order (including the date of delivery); the quantity and pricing; as well as the contact information for the individual at the Participating Entity that placed the order.*

Nikon Instruments maintains a database for each Ordering Entity, identifying the entity by a unique number, and containing an up-to-date listing of equipment and supplies which have been ordered; the date and status of each order (including the date the order shipped); the quantity and pricing; as well as the contact information for the individual at the Participating Entity that

placed the order. This information is not currently available on a website an Ordering Entity can access; however, it can be provided by a Sales Administrator and we are reviewing what options would be available to us through SciQuest.

9.2.6: *Provide training materials and FAQ's for use of the website and the contract; as well as troubleshooting tips.*

Nikon Instruments can provide training information on the use of the contract. Once we have a profile set up on SciQuest, we will be able to identify any training that would be appropriate.

9.2.7: *Provide contact information for ordering, billing, credit, service and other complaints/issues.*

Contact information for ordering, billing, credit, service and other complaints/issues varies by region. Ordering and customer service contact information is included on each quote. The Sales Administrator for the order will be the Ordering Entity's primary contact for all questions and concerns. Sales Administrator Contact information is as follows:

Region	Contact Name	Direct Phone	Email	Fax
Manager	Janice Joseph	631-547-8530	niiorderscontracts@nikon.net	631-944-9370
Asst. Manager	Maria Covelli	631-547-8583	niiorderscontracts@nikon.net	631-944-9370
Northwest	Savi Bains	631-547-8594	niiordersnwr@nikon.net	631-944-9374
Southwest	Savi Bains	631-547-8594	niiordersswr@nikon.net	631-944-9371
Midwest	Sandra Serrentino	631-547-4012	niiordersmwr@nikon.net	631-944-9373
South Central	Jeannine Harker	631-547-8714	niiordersscr@nikon.net	631-944-9377
Northeast	Maureen Reddy	631-547-8542	niiordersner@nikon.net	631-944-9382
Mid-Atlantic	Maureen Reddy	631-547-8542	niiordersmar@nikon.net	631-944-9375
Southeast	Theresa Woodhull	631-547-8657	niiordersscer@nikon.net	631-944-9376

9.2.8: *Provide a current list of names and contact information for all of Contractor's sales representatives assigned to support the Contract, identifying the geographic area assigned to each one.*

Regional Managers (contact information included in Section 8):

Mike Johnson: Central Region: Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Dakota, Ohio, Oklahoma, Pennsylvania, South Dakota, Texas, West Virginia, and Wisconsin

Vince Haile: Eastern Region: Alabama, Connecticut, Delaware, Florida, Georgia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, and Washington DC

Nathan Coe: Western Region: Alaska, Colorado, Idaho, Montana, Oregon, Utah, Washington, Wyoming, and Southwest Region

Area Manager (contact information included in Section 8):

Patrick Keenan: Southwest: Arizona, California, Hawaii, Nevada, and New Mexico

Primary sales representatives are listed on a separate document attached hereto.

9.3 Minimum Order

Contractor may establish a minimum order quantity no greater than $50 per order, under which it may assess delivery charges. Orders in excess of the minimum order quantity will be delivered FOB Destination, inside delivery, to the location identified by the Ordering Entity.

For orders totaling less than $50 per order, or Offeror's stated Minimum Order Quantity, whichever is lower, the Ordering Entity will pay the actual freight charges unless waived by the Contractor at time of order placement.

Ordering Entities will be encouraged to consolidate orders on a weekly basis, where practical; and to consolidate orders for hazardous chemicals, in order to minimize hazardous materials fees.

Nikon Instruments Inc. will not be establishing a minimum order.

9.4 Packaging, Delivery, Fuel Surcharge

9.4.1: *Delivery is FOB Destination, inside delivery, to the Ordering Entity's specified address. Contractor will ship routine consumable items within 48 hours (30-45 days, or as agreed to by agencies, for Band 4) after receipt of order (ARO). All other equipment and supplies must be delivered within seven (7) days ARO, unless a longer delivery time is agreed to by the Ordering Entity. Contractor will be required to notify the Ordering Entity within 24 hours of order placement, if delivery cannot be completed as required by the Contract. Upon receipt of such notice, or upon failure to deliver within the specified time, the Ordering Entity may cancel the order without penalty, and make the purchase elsewhere.*

Delivery will be FOB Destination, inside delivery, to the Ordering Entity's specified address, 30-45 days ARO unless otherwise agreed upon for a specific purchase order with Ordering Entity. Nikon Instruments will notify the Ordering Entity within 24 hours on business days if an order cannot be fulfilled as specified. Upon notification of delay or actual failure to deliver, the Ordering Entity may cancel the order with no penalty.

9.4.2: *Delivery charges will not apply to orders that are in excess of the stated minimum when placed, but fall below the minimum order amount due to backordering or delayed shipping from the Contractor.*

Delivery charges will not apply to any order. Since Nikon Instruments Inc. is not establishing a minimum order, there is no threshold below which to fall.

9.4.3: *Delivery charges will not be allowed for items shipped from a 3rd party vendor as long as the original order exceeds the minimum amount stated.*

Nikon Instruments Inc. agrees that for products purchased from third party vendors under the contract, no delivery charges will be assessed.

9.4.4: *If any items ordered have special packaging (e.g. dry ice), handling (e.g. next day delivery required), or a special pricing arrangement has been made between the manufacturer and the Participating State that will require the Contractor to charge additional shipping, these items must be marked/flagged in the ordering system to clearly identify that they are subject to additional charges.*

Nikon Instruments Inc. will ensure that if there are any products for which special pricing arrangements have been made, including third party ancillary products not included on our primary commercial price list, these items will be clearly identified so the Participating State and Ordering Entity will be conspicuously aware of any additional charges prior to placing the order.

9.4.5: *Contractor shall properly package and handle all items ordered under the resulting Contract, in accordance with industry standards and all applicable regulations.*

Nikon Instruments Inc. agrees.

9.4.6: *Any products offered with an applicable shelf life must be date stamped (including gloves).*

Nikon Instruments Inc. does not currently offer any products with a shelf life, so currently this does not apply. Should we begin to offer products which fall under this in the future, we will comply.

9.4.7: *Ordering entities requesting special handling (FedEx, NextDay, etc.) of orders may be required by the Contractor to pay additional freight charges not to exceed the carrier's actual freight charges.*

Nikon Instruments Inc. agrees.

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9.4.8: *Remote ordering entities which do not regularly receive service from FedEx, UPS or other common courier services may be required by the Contractor to pay additional freight charges, if any, associated with delivery to the remote location, not to exceed the carrier's additional actual freight charges associated with delivery to the remote location. In the alternative, the ordering entity may arrange for an alternate delivery site for which the Contract cost includes all delivery charges.*

Nikon Instruments Inc. agrees.

9.4.9: *If fuel prices rise more than 25% above the current U.S. Department of Energy's average diesel price as of the Closing Date of this RFP, the State may allow variable fuel surcharge fees to be assessed. The surcharge will be based on the U.S. Department of Energy's average diesel price from the previous month. A request for a fuel surcharge must be approved by the State prior to implementation. No fuel surcharge will be allowed when fuel prices are within 25% of the current U.S. Department of Energy's average diesel price as of the Closing Date of this RFP.*

Nikon Instruments Inc. agrees.

9.5 Late Delivery and Failure to Deliver

Contractor must deliver the equipment and supplies ordered pursuant to the resulting Contract in accordance with all of the terms and conditions contained in this RFP. Repeated failure to meet specified delivery requirements may result in Contract termination, or the State may pursue any other remedies that may be available to it, at its discretion. Contractor must complete delivery and installation within the time specified in Contractor's proposal, and in no event in excess of the limit specified in Section 9.4, above.

Nikon Instruments Inc. agrees.

9.6 Return of Items

9.6.1 Contractor Error: *Equipment or Supplies which are unacceptable because of quality problems, duplicated shipments, outdated product, breakage, or other issues related to Contractor or product performance shall be inspected within three (3) business days and be*

returned at Contractor's expense within five (5) business days after receipt of notification from the Ordering Entity, with no restocking charge. If the original packaging cannot be utilized for the return, Contractor must supply the Ordering Entity with appropriate return packaging within the five (5) business day period. Postage must be paid by Contractor, by issuing an appropriate label to the Ordering Entity via e-mail and Contractor will assume the risk of loss in transit. The returned product shall either be replaced with acceptable equipment or supplies, or the Ordering Entity must receive a credit or refund for the purchase price, at the Ordering Entity's discretion.

Nikon Instruments Inc. agrees.

9.6.2 Ordering Entity Error: *Standard stock equipment and supplies ordered in error by Ordering Entities will be returned for credit within fifteen (15) days of receipt, at Ordering Entity's expense. Product must be in resalable condition (original container, unused). There shall be no restocking fee if returned products are resalable.*

Nikon Instruments Inc. agrees.

9.7 Invoicing

DO NOT INVOICE THE IDAHO DIVISION OF PURCHASING.
Contractor will invoice the Ordering Entity. All invoices must list the Entity name; unique identification number assigned by Contractor; Contract number (State of Idaho Master Agreement Number for resulting contract); date ordered; anticipated delivery date; item description, including manufacturer name and model number; list price; discount applied; and net cost to Ordering Entity.

Nikon Instruments Inc. agrees.

9.8 Customer Account Numbers

Contractor must establish unique customer/account identification numbers for use by each individual Ordering Entity. Some Ordering Entities may require (and Contractor will provide) multiple customer/account numbers (e.g. Universities with multiple laboratories).

Nikon Instruments Inc. agrees.

9.9 State Purchasing Card

In order to be considered for award, the successful vendor must accept both VISA and MasterCard Procurement/Purchasing Cards.

Nikon Instruments Inc. accepts both VISA and MasterCard Procurement/Purchasing Cards.

9.10 Training

Contractor must provide training to all Participating Entities upon request (no more than one, one (1) hour training session per Ordering Entity per contract year), at no additional cost to the Participating Entity. Contractor may provide training remotely through videoconferencing, webinars, etc. Training must cover basic use of the website, performing searches, ordering, invoicing, credits, etc.

Nikon Instruments Inc. agrees.

9.11 Records Maintenance and Reporting Requirements

9.11.1 Records maintenance: *Contractor must maintain books, records, documents and other evidence pertaining to this Master Agreement as detailed in Attachment A, Section 25.*

Nikon Instruments Inc. agrees to maintain all pertinent records relating to performance and administration of all orders, payments and fees for a minimum of five years. We also agree to allow any duly authorized agent of a governmental entity, specifically those from the Lead State, a Participating Entity, a Purchasing Entity, or the Federal Government to audit, inspect, examine, copy, and/or transcribe those records et al which are directly pertinent to this Master Agreement or orders placed under it during that time. We agree to reimburse the appropriate party for any overpayments of invoices or underpayment of fees.

9.11.2 Reporting Requirements: *Contractor must provide summary and detailed usage reports as detailed in Attachment A, Section 27 and as required by individual states and Participating Entities.*

Nikon Instruments Inc. will provide summary sales data on a quarterly basis directly to NASPO ValuePoint using the NASPO ValuePoint Quarterly Sales/Administrative Fee Reporting Tool. We will also provide a detailed sales report including 1) state; (2) entity/customer type, e.g. local government, higher education, K12, non-profit; (3) Purchasing Entity name; (4) Purchasing

Entity bill-to and ship-to locations; (4) Purchasing Entity and Contractor Purchase Order identifier/number(s); (5) Purchase Order Type (e.g. sales order, credit, return, upgrade, determined by industry practices); (6) Purchase Order date; (7) Ship Date; (8) and line item description to by the Lead State and NASPO ValuePoint Cooperative Development Team no later than thirty (30) days after the end of the reporting period. Nikon Instruments Inc. will also report any sales to employees for personal use and provide an executive summary each quarter detailing which states have Participating Addendum and any states with which we are negotiating for the same.

9.12 Contractor Insurance Requirements

As provided in IPRO document.

Nikon Instruments Inc. will provide Certificates of Insurance to the Lead State as required in Attachment A, Section 17.

Confirm the following, by signature below: Nikon Instruments Inc. **affirmatively states that it agrees to the mandatory (M) requirements in the Scope of Work Sections 9.1 – 9.12.**
Authorized Confirming Signature: James Hamlin **Date:** 11/30/15

9.13 Customer Service and Support

9.13.1(E): *The State desires a support relationship with a Contractor that will ensure timely delivery, competent technical support for the products, as well as professional and timely response and resolution to any issues. Describe how you will meet these desirables.*

Our products are shipped out of two separate facilities in Louisville, Kentucky and Melville, New York to ensure timely and efficient delivery to our customers. Most orders are shipped out via UPS. Very large orders may go by truck transport. Customers are kept apprised of when an order ships and the method of transport.

Nikon Instruments Inc. has a national network of professional sales teams, with years of experience and training, dedicated to serving the needs of our customers. Each team consists of an account manager, usually a Bioscience Sales Specialist or BSS; a technical specialist, whom we call an Advanced Imaging Specialist or AIS; a high end systems specialist, who is an Advanced Biosystems Specialist or ABS; and an applications specialist, our Senior Biosystems Applications Manager or SBAM. These teams cover every state in the union and the District of Columbia, and they are usually local to their customers. Our sales team will work with Ordering Entities to customize a microscopy system to suit their individual needs and budgets. They are able to respond quickly to customers who have questions or when issues arise; they generally are able to respond by phone within 24 hours and will arrange on-site visits whenever necessary. They generally arrange to be on campus for larger customers on a regular basis.

Working alongside our enhanced Sales Team, we have experts in product and technology who are available to answer questions from both our internal and external stakeholders and to provide advice and assistance in the use of our products.

Nikon Instruments' strength is in its people. Our sales team and technical support personnel are all highly trained professionals, many with PhDs and accolades in science fields from around the globe. Our Research & Development team holds international patents on some of the most innovative products in microscopy. Our customer service and administrative staff are experienced and dedicated to accuracy, compliance, and a positive experience for every customer we serve. The strength of the entire team stands behind every customer and every system Nikon installs. All Nikon team members work together to provide a professional response and resolve any issues which might arise.

9.13.2 (E): *Describe how you will effectively communicate with the State and the Ordering Entities.*

Behind the scenes, we have a dynamic team of Sales Administration people in our national headquarters in New York committed to facilitating a superior purchasing experience to all of our Ordering Entities. Our Sales Administrators are assigned to specific regions, so they become

familiar with repeat accounts and with the territory enabling them to better serve the needs of each of our customers. Victoria Stolz, our Contract Administration Manager, will address any issues that arise at the contractual level, and she is always available to assist and advise on the administration of orders with contractual requirements. There is a regional email address for every region and one for contracts which ensures that any communique that comes in will be seen within one business day.

9.13.3 (E): *Describe how you will assign staff to support the resulting Contract (i.e. technical staff, customer service representatives and regional/local sales representatives). Identify the locations of staffed offices, including a contact name, address, phone number, and web and/or e-mail address (if available), which will be available on a daily basis to assist Ordering Entities with utilizing any resulting Contract.*

The infrastructure for our personnel is already in place. The local sales team and regional sales administrators for each region will support the resulting contract for all customers in their area. All Sales Administrators are located in our Melville Headquarters, so their address is:

<Sales Administrator Name>
Nikon Instruments Inc.
1300 Walt Whitman Rd.
Melville, NY 11747

Regional Sales Administration contact information is below:

Region	Contact Name	Direct Phone	Email	Fax
Contracts	Victoria Stolz	631-547-8526	niiorderscontracts@nikon.net	631-944-9370
Northwest	Savi Bains	631-547-8594	niiordersnwr@nikon.net	631-944-9374
Southwest	Savi Bains	631-547-8594	niiordersswr@nikon.net	631-944-9371
Midwest	Sandra Serrentino	631-547-4012	niiordersmwr@nikon.net	631-944-9373
South Central	Jeannine Harker	631-547-8714	niiordersscr@nikon.net	631-944-9377
Northeast	Maureen Reddy	631-547-8542	niiordersner@nikon.net	631-944-9382
Mid-Atlantic	Maureen Reddy	631-547-8542	niiordersmar@nikon.net	631-944-9375
Southeast	Theresa Woodhull	631-547-8657	niiordersscer@nikon.net	631-944-9376

9.13.4 (E): *Describe how you will provide ongoing training to your staff assigned to support the resulting Contract as referenced in Section 9.10.*

Nikon Instruments Inc. offers an online Learning Management System for all employees that provides instruction on products, applications, and business processes. Field personnel are required to attend at least two to three formal, face-to-face trainings on equipment and applications annually, with additional supplemental training provided as needed. We also hold

regional sales meetings twice a year, and a national sales meeting every two years, at which field personnel receive additional training on both product and administrative issues.

Office personnel attend monthly meetings where they discuss administrative issues and receive training on any new or changed processes. They also have access to administrative mentors who provide day-to-day support on any questions that may arise, including access to the contract management team for specific contract related questions.

9.13.5 (E): *Describe your invoicing and credit processes and how these meet the requirements of this RFP. Describe the measures you have in place to insure that any billing issues are resolved to the Ordering Entity's and the State's satisfaction in a timely manner.*

When orders come in, they are entered into our CRM and order management systems by a team of dedicated Sales Administrators. All orders identified with the Master Agreement Identifier will be marked as such in our system to ensure accurate processing in accordance with the terms of the Agreement. The Ordering Entity will receive an email informing them that the order has been received and initially processed. The Sales Administrators will work with the Ordering Entity and our Credit Department to verify that an adequate credit line has been established to allow the order to proceed and release.

Each Sales Administrator tracks the orders in their region to ensure timely delivery and accurate pricing. When the order is ready to ship, the Administrator will review it to verify that all is in place and release the order. Invoices are generated by our order management software when the order ships. The invoices will include the Ordering Name, billing address, unique Account Number, Purchase Order number, Contract number, Order Date, Ship Date, detailed item description, list price, discount, and extended price.

If products are returned, the Sales Administrators will process the paperwork for either exchanges or returns and apply the appropriate credits in accordance with Ordering Entity instructions. The same Sales Administrator will follow the order from cradle to grave which guarantees a consistent approach and facilitates accurate processing and timely resolution of any issues that may arise.

9.13.6 (E): *Describe in detail the training which would be offered to Ordering Entities throughout the term of the resulting Contract.*

Every Nikon microscopy system includes complete user training at no additional charge. After an instrument has been purchased, our goal is to provide the new owners with sufficient knowledge to help them become competent users after the first training session is complete. The local Nikon representative will come in after the system has been delivered and do a complete installation. Upon installation, training is provided in three phases, all of which are conducted in the user's laboratory, using their own instrument and when appropriate, their own specimens.

The first phase is an initial "basic training" which can last anywhere from a few hours to several days depending on the complexity of the system and the needs of the system users.

After the users have some time to become more familiar with the instrument they will develop more questions and a second more advanced training will take place. This is intended to answer any questions that may have come up during the initial use of the system and to deepen the user's understanding and mastery of the system they have acquired. We will also do our best to place them on the road to becoming expert users by the time this advanced session is complete.

The third phase is considered continuing education. This is available as required, and can consist of refresher courses, training for new users, handling new specimen types, etc. Auxiliary and ancillary training sessions and support will be less formal and will be scheduled on an as-needed basis on a mutually agreed upon time and date between the users and their local sales team. There is no limit to these visits to work on optimizing a user's research goals and operating skills with the microscopy systems. This is a user-driven activity that is available at no charge to all of our customers.

9.13.7 (E): *Describe your experience providing technical services to state or other public entities of varying size and functionality, with regard to supplying lab equipment and supplies, including your experience with laboratory inventory management in various laboratory environments (e.g. University, hospital, veterinary, forensic, etc.).*

Nikon has been providing quality microscopy systems and technical service to educational institutions, research facilities, and Government agencies for over ninety years. In the United States, our first Federal contract was awarded while we were still a division of Nikon, Inc., before our separate incorporation in July of 2000. Nikon Instruments Inc. now works with Federal agencies ranging from the National Institute of Health campus in Bethesda to regional Fish and Wildlife offices, veterinary clinics, and both VA and DoD health centers. We have established a Center of Excellence at the University of Minnesota, an Imaging Center at the University of San Francisco, and have installed educational and clinical microscopes in learning labs at community colleges and hospitals across the country.

Each of these facilities receives the same personal attention and consideration. A local account manager will go in to visit the facility to assess their needs, configure a system which will best suit their unique requirements, and then work with the Lab Director, Researcher, or Purchasing Department to establish the most efficient and fiscally responsible way to facilitate the purchase and advance the work or the mission of the facility.

9.13.8 (E): *Describe how you will meet the requirements of Section 9.2, phone and Internet ordering, as well as the website requirements. Describe how your customer service representatives are qualified/trained to respond to questions regarding the resulting contract; and how you will meet the maximum designated wait time for phone orders. Provide a detailed description of your proposed website and its functionality, which addresses, at a minimum, the*

requirements contained in Section 9.2. Describe how your proposed website will enhance your customer service (e.g. search features; ordering; billing; account updates; customer-specific ordering history; inventory assistance; FAQ's; webinars; trouble-shooting; etc.). Provide sample screen shots of existing websites created for other customers.

Nikon Instruments Inc. has a toll free number which customers can use and also provides a direct number so customers can place and track orders. Our toll free number does not go to an outsourced call center but, instead, comes directly to our headquarters. After two or three automated selections, the call will ring on the desk of one of our trained, professional Sales Administrators. The Administrator who answers will talk to the customer to determine the nature of their question and then route the call to the appropriate specialist. The whole process generally takes far less than three minutes.

We are currently exploring our options with SciQuest to determine what capabilities we will be able to offer through their vendor portal. It is our intent, upon notification of proposed award, to use best commercial effort to maximize the potential of that site to the greatest extent possible given our industry and business model. We already have accounts set up with Ariba and various Federal portals through which we receive purchase orders, submit invoices, and provide specific customer order history; we do not anticipate any difficulties in creating similar functionality for NASPO Participating Entities through SciQuest.

Our primary website allows customers to request information or quotes for each of our products which request is immediately forwarded to their local sales team through our CRM system. The website also includes our toll free number and other contact information. We do not currently maintain specific websites for individual customers; all of the information required to be on the desired website is available through our Sales Administrators. They will have access to a customer's information when a call comes in and will be able to provide a detailed, specific analysis of customer history and purchasing information upon request.

9.14 (E) Sustainability

Provide a comprehensive discussion of your company's corporate and local sustainability practices for the entire scope of Lab Supplies and Equipment offered in your proposal. Your response should include, but not be limited to: efforts to reduce adverse effects on human health and the environment for the entire product lifecycle, including energy, water, safety, delivery, storage, packaging and training. Where practicable, include numeric measures of progress made to meet established sustainability goals, objectives and targets.
Does your company have a recyclable products program (both for equipment and packaging)? Does your company have a program for buybacks or trade-ins or other incentives for obsolete or otherwise unusable items?

Policies regarding Corporate Social Responsibility and Sustainability have been established for the worldwide company by our ultimate parent, Nikon Corporation, in Japan. Nikon Corporate Headquarters in Tokyo has issued a statement expressing our commitment as a company to sustainability. In 2007 Nikon endorsed the ten principles put forth in the UN Global Compact, including concerns with the environment. Our parent company already has an ISO 14001 Certification; they are now working to ensure that more of the group companies under the Nikon umbrella are able to achieve it as well.

As a global corporation, Nikon is committed to reducing greenhouse gas emissions, lessening our carbon footprint, and producing products which are both eco- and human friendly. Nikon has all but eliminated the use of hazardous materials in production and in our products. By the end of March, 2015 almost 100% of all optical glass was lead and arsenic free. All of the solder used in all of our products is also lead-free. They have also reduced the volume of product packaging and switched from non-sustainable packing materials to recyclable materials with less of an environmental impact.

Nikon Corporation is also striving to lessen the environmental impact of the non-manufacturing facilities. Every facility around the world, including the US headquarters, has a CSR liaison who works with the local constituents to enact the corporate philosophies. All Nikon facilities are working to find ways to reduce energy consumption, minimize waste production, and give back to their local communities.

A detailed analysis of our plans and initiatives is available on the Global Website at:
http://www.nikon.com/about/csr/index.htm

9.15 (E) Local Business Support/MWBE/DBE

NASPO encourages the involvement of local businesses, as well as minority, women-owned and disadvantaged businesses. Describe any programs that your company currently has in place in support of these organizations; and whether and how the resulting contract would or could be incorporated into the program(s).

Nikon Instruments Inc. submits a Small Business Subcontracting Plan and a Small Business Subcontracting Report to the Federal Government every year. On average, approximately 50% of all of our domestic third party purchasing is through small businesses. When our Product Managers evaluate the need for new ancillary products, they try to source these through small businesses in various subcategories whenever possible. Some of our products are so specialized that they can only be acquired from a single source, but that source is frequently a small business. Not all of our vendors self-identify for the subcategories, so it is sometimes difficult to assess specific subcategory participation, but it is Corporate as well as local company policy to promote diversity among employees and vendors through strategic sourcing of materials and

accessories. These purchases are made in support of all of our contracts and all of our customers. Any increase in our demand for these products will increase the volume of products we purchase from local businesses.

9.16 COST

9.16.1(M) Price Lists and Catalogs: *Provide one hard copy and one electronic copy of both your latest Catalog, as well as your currently effective, nationally published Price List. You may comply with the requirement for an electronic version by providing temporary access to a searchable electronic version of your Catalog and Price List.*

Nikon Instruments Inc. will comply. Since we are submitting our bid electronically, we will submit a copy on a flash drive via UPS.

9.16.2 (M): *For Band 1, the State is interested in a **full line supplier of laboratory equipment and supplies which can provide its full line to ALL NASPO states**. The State reserves the right to reject a Proposal for Band 1 if that Offeror's Price List does not include at least 95% of the items chosen by the State for purposes of proposal evaluation of Band 1.*
Nikon Instruments Inc. is submitting for Band 4 only, so this does not apply.

9.16.3(M): *For Bands 2 – 4, the Offeror must offer a full line of laboratory equipment and/or supplies within the Band for which it provides a response. The State reserves the right to reject a Proposal for any Band for which an Offeror's Price List does not include at least 95% of the items chosen by the State for purposes of evaluating the Band.*

Nikon Instruments Inc. is submitting for Band 4 and will comply.

9.16.4 (ME) Discounts: *Submit discounts from your standard price list for THE ENTIRE SPECTRUM OF ITEMS OFFERED (all items in the catalog(s) and price lists for the Band to which you are responding). The nature of your response must allow the State to apply the discounts offered to the current list prices in order to calculate net price to the State for any items in the current price list. If the manufacturer's product discounts vary by category, include the various product category discounts. You must submit discounts for ALL product codes in your PRICE LIST (or state that there is no discount for an identified product code).*

Nikon Instruments Inc. will comply.

9.16.5(E) Volume Discounts: *Additional volume and other price discount options are invited, which can distinguish between individual order minimum quantities, cumulative volume*

discounts, and other discount terms that may be defined by the Offeror. Extensions of additional discounts are not required but may be evaluated if offered.

Nikon Instruments Inc. acknowledges that volume and other discounts are not required but will be evaluated when offered.

9.16.5.1: *Cumulative Ordering Volume Discounts: Offerors are invited to identify additional percentage discounts if total cumulative ordering volumes (by all Ordering Entities) exceed an amount specified. If the volume of total orders exceeds that amount in any quarter, the offered discount will apply to future orders during the term of the contract.*

Nikon Instruments Inc. will not be offering Cumulative Ordering Volume Discounts.

9.16.5.2: *Volume Discount for Minimum Order Quantity: Offeror is also invited to propose discounts for minimum order quantities. Ordering Entities may consolidate purchases in order to take advantage of any volume discount extended by Contractor for minimum orders, as long as a single delivery location is specified at the discretion of the Ordering Entity.*

Nikon Instruments Inc. will offer Volume Discounts for Minimum Order Quantities when there is a single delivery location identified on the Purchase Order. Please see chart below for specific models and discounts offered:

Brand or Model Name(s)	Standard NASPO Discount	Large Volume price points	Volume Discounts
Ci Series	15%	5-20	18%
		21+	24%
E100/E200	7%	5-10	14%
		11-16	25%
		17+	36%

9.16.6 (E) Additional Discounts: *Indicate where any additional/separate discounts are available, based on large quantity purchases, etc. Additional discounts are not mandatory, but may be evaluated, if offered.*

Nikon Instruments Inc. acknowledges that additional discounts are not mandatory but may be evaluated if offered. Nikon Instruments Inc. may offer additional discounts at the time of quote

for individual systems based on the circumstances and size of the individual sale, but will not commit to a specific discount structure for these additional strategic discounts at this time.

9.16.7 (M) Discounts to Remain Firm or Greater: *The percentage discount from the Contractor's submitted price schedule is not to decrease for all updates or revisions of Contractor's price schedule during the life of the Contract and any subsequent contract renewals; however, Contractor may increase the discount at any time. New items or replacement products are to be discounted at the same (or greater) rate as similar products or replaced items.*

Nikon Instruments Inc. acknowledges that the discount offered is to remain firm for the life of the contract through any price list revisions and that new products which are added will be discounted the same rate as that proposed herein.

9.16.8 (M) Price Negotiation During Contract Term: *Contractor is expected to continuously negotiate with manufacturers to obtain improved discounts and extend improved pricing to Ordering Entities. Contractor must agree to negotiate in good faith to establish ceiling prices or other more favorable Terms and Conditions applicable to future orders during the term of the Contract.*

Nikon Instruments Inc. agrees.

9.16.9 (M) Price Lists and Updates: *After Contract award, Contractor must furnish a "hard copy" and/or an electronic copy (at State's option) of the price list(s) and periodic updates to the Division of Purchasing. Contractor must also furnish "hard copy" and/or electronic copy (Ordering Entity's option) to all Ordering Entities for which account numbers have been established. Contractor must distribute price lists in a timely manner as they become effective. Price lists may be updated no more often than quarterly. Updates must be simultaneous for the entire line of products. All price lists and website access/ordering capabilities must be supplied to the Ordering Entities at no additional cost.*

Nikon Instruments Inc. agrees.

9.16.10 (M) Price List Access: *At any time during the Contract and for a three (3) year period following the end of the Contract, the State reserves the right to request from the Contractor access to and/or a copy of the applicable price list used for the Contract's pricing basis for Contract pricing verification. Failure to provide the requested price list within three (3) business days following the State's request may result in Contract termination.*

Nikon Instruments Inc. agrees.

Section 10 (M) Additional Terms and Conditions

10.1 Additional Manufacturer Discounts

For contract items, the Contractor agrees to allow any particular Ordering Entity to accept additional discounts offered by a Manufacturer for whom the Contractor is a distributor, if those discounts will result in a lower net price to the Ordering Entity. The Contractor agrees to furnish these items under the terms and conditions of the Contract, but at the lower net price as agreed by the Manufacturer and the Ordering Entity.

Nikon Instruments Inc. agrees.

10.2 Price Changes

10.2.1: *Price decreases or discount increases are permitted and encouraged at any time. Price reductions announced by a manufacturer must be applied at the time of the announcement for the products that have not yet been delivered to the Ordering Entities.*

Nikon Instruments Inc. will comply.

10.2.2: *All discounts offered must remain firm or higher during the term of the contract.*

Nikon Instruments Inc. will comply.

10.2.3: *Contractor may request a price increase no more than once per Contract year by submitting a request to the State at least thirty (30) days prior to the end of the then current term. Price increases must be calculated from the published price list, and may only be requested in accordance with changes made by the manufacturer or distributor in their established, nationally distributed price list or published catalog. The State reserves the right to accept or reject any proposed price increase. A price increase will not be effective until approved, in writing, by the State.*

Nikon Instruments Inc. agrees.

10.3 Audit Rights

The Contractor agrees to allow State and Federal auditors and State purchasing staff access to all the records relating to this Contract for audit, inspection, and monitoring of services or performance. Such access will be during normal business hours or by appointment.

Nikon Instruments Inc. will comply.

10.4 Change in Contractor Representative

The Lead State Procurement Officer, at his/her sole discretion, may require a change in Contractor's Named Representative by giving written notice to Contractor.

Nikon Instruments Inc. will comply.

10.5 Termination

10.5.1 Termination of Contract: *The Contract may be terminated by the State as provided in Attachment G, State's Standard Terms and Conditions, and as may otherwise be provided in this RFP.*

Nikon Instruments Inc. agrees.

10.5.2 Termination of Participating Addendum: *Participating Addendums may be terminated by the Participating Entity for lack of funding, or for failure of the Contractor to perform in accordance with the terms of the Contract and/or the Addendum, and as otherwise designated in the Entity's Participating Addendum. There is no penalty or restriction upon the State, or Ordering Entity, in the event of cancellation due to lack of funding.*

Nikon Instruments Inc. agrees.

10.6 Available Funds

Financial obligations of Ordering Entities are limited to the order(s) placed by the Ordering Entity, as well as on the Entity having available funds. Participating states incur no financial obligations or other liability on behalf of political subdivisions.

Nikon Instruments Inc. agrees.

Confirm the following, by signature below: Nikon Instruments Inc. **affirmatively states that it agrees to the mandatory (M) requirements in Section 10 – Additional Terms and Conditions**
Authorized Confirming Signature: James Hamlin **Date:** 11/30/15

Section 11 Proposal Evaluation

11.1 Technical Evaluation

11.1.1: *The Technical Proposal will be evaluated and scored by a Proposal Evaluation Committee.*

Nikon Instruments Inc. agrees.

11.1.2: *The scores for the Technical Proposal will be normalized as follows: the Technical Proposal with the highest raw technical score will receive all available Technical Points 500. Other proposals will be assigned a portion of the maximum available Technical Points, using the formula: 500 X raw score of the technical proposal being evaluated/highest raw technical score.*

Nikon Instruments Inc. acknowledges receipt of the normalizing formula.

11.2 Cost Evaluation

11.2.1: *For purposes of cost evaluation, discounts offered by Offeror pursuant to Section 9.17.4 et seq., above, will be applied to the Offeror's Price List, required by Section 9.17.1.*

The items used for purposes of Cost evaluation will be a representative sample of items purchased by public entities utilizing the current WSCA and NASPO lab equipment and supplies contracts, from the four latest Quarterly Usage Reports received from the current contractors; as well as a representative sample of items commonly procured by public entities for laboratory use.

Nikon Instruments Inc. acknowledges receipt of the cost evaluation process.

11.2.2: *For purposes of proposal evaluation, the State will use a pricing structure based upon the packaging historically purchased. For example, if a majority of a particular item has been purchased by Packages of 12 each, the state will use the price of the Offeror's similar packaging unit (PK of 12 or CS of 12) for purposes of proposal evaluation. Should an Offeror fail to offer a particular item, or equal item, the State reserves the right to use the highest price proposed by another Offeror as a price for the item in order to calculate the Grand Total Price for purposes of proposal evaluation/price comparison.*

Failure by an Offeror to indicate a discount percentage for an item in the Offeror's catalog or price list may be cause for rejection of the Offeror's offer or may be cause for the State to evaluate the item at the current catalog list price.

Note: If the Offeror is not an authorized distributor for a particular item chosen for purposes of proposal evaluation, an "equal" product line may be chosen by the State for evaluation. Otherwise, the specified product line must be available. It is not the intent of this paragraph to allow a vendor to offer an "equal" item or product line if the item or product line chosen for evaluation is available.

ITEMS to be evaluated for Band 1 may include but are not limited to:
Chemicals, Acids, Alcohols, Solvents, Reagents, pH Supplies & Solutions, Clothing / Protective Equipment, Eye Protection, Gloves & Lab Apparel, Membrane Filters, Filters, Analyzers, Balances & Weighing equipment, Waterbaths, Cabinets, Incubators, Circulators, Burners, Centrifuges, Evaporators, Glassware products, Bottles, Vials, Microscope Slides, Pipettes & Pipette Tips, Cylinders, Hot Plates & Stirrers, Microscopes, pH Selective Ion Apparatus, Power Supplies, Refractometers, Shakers, Spectrophotometers, Thermometers, Water Purification Equipment, Bags, Cleaning Supplies, Corks, Filtration Products, Frame Rods, Clamps & Clamping Systems, Labeling Tape, Labels & Dispensers, Glass & Plastic Petri Dishes, Plastic-ware, Rubber Stoppers, Sterilizers, Tubing, Brand Name Equivalent Products, Laboratory Media, Test Kits, BBL and DIFCO products as well as parts and accessories for the above equipment.

***ITEMS to be evaluated for Bands 2 – 4 may include any items within the Band being evaluated**, which are utilized by public entities for laboratory use (subject to the unit price limit of $75,000).*

Nikon Instruments Inc. acknowledges receipt of the cost evaluation procedure.

11.2.3: *The Offeror with the lowest Total Cost (for a Band), based on the sum of the Representative Sample of Items evaluated for that Band, will receive all 500 Cost Points for that Band. Other Offerors within the same Band will receive a portion of the Total Cost Points based on the following formula: Lowest Total Cost for Band #/Other Offeror Total Cost for Band # x 500.*

Nikon Instruments Inc. acknowledges receipt of the cost evaluation formula.

11.2.4: *Once the Cost Points are calculated for each Band, the points will be totaled with the Technical Points, and the Proposals will be ranked by Total Points, by Band.*

Nikon Instruments Inc. acknowledges receipt of the scoring procedure.

11.3 Award

Award will be made to the high point responsive responsible Offeror(s), by Band (1 – 4), in accordance with the Evaluation Method described above. The State may make multiple awards

for each Band, at its discretion; and may choose not to award one or more Bands, in the best interest of the State. Bands 2 – 4 may also be awarded by region. If multiple awards are made, Idaho state agencies will utilize the contracts in accordance with Idaho Code (I.C.) 67-5718A.

Nikon Instruments Inc. acknowledges receipt of the award procedure.

EVALUATION CRITERIA

All responsive Proposals will be evaluated by a committee composed of representatives of the State and other NASPO states, using a point method of award using predetermined criteria for each ME and E item identified above. Once all responsive proposals have been evaluated and scored, by Band, the sealed Cost Proposals will be opened and scored, as detailed below. Some items will be weighted and may receive more points than other evaluated items in the same section. The detailed weighting information will not be made available until the evaluation process has been completed.

The maximum points for each evaluation category are:

7.1/7.2	*Experience and References*	*75*
8.2	*Qualifications of Personnel*	*75*
9.13	*Customer Service and Support*	*300*
9.14	*Sustainability*	*25*
9.15	*Local Business Support*	*25*
9.16	*Cost*	*500*
TOTAL POINTS		***1,000***

Nikon Instruments Inc. acknowledges receipt of the Evaluation Criteria.

ATTACHEMENT G: PUBLIC AGENCY CLAUSE

RFP16000231 Laboratory Equipment and Supplies

Prices offered in this RFP must be made available to other "Public Agencies", including agencies of the State of Idaho, and as defined in Section 67-2327 of the Idaho Code, which reads: "Public Agency" means any city or political subdivision of this State including, but not limited to counties; school districts; highway districts; port authorities; instruments of counties; cities or any political subdivision created under the laws of the State of Idaho. It will be the responsibility of the "Public Agency" to independently contract with the Offeror and/or comply with any other applicable provisions of Idaho Code governing public contracts. Typically, other municipalities routinely buy from Statewide Master Contracts established by the Division of Purchasing.

Please indicate if you accept this Public Agency Clause AND return this completed form with your Proposal Response. Failure to accept this provision will result in a finding that your Proposal is non-responsive.

YES X NO_____

Name of Offeror: Nikon Instruments Inc.

The Eyes of Science Nikon.

Nikon's agile product base and modular product list allows us to configure systems to meet both the needs and the budget of any laboratory or research facility.

Nikon offers a broad array of imaging systems for educational, clinical, and advanced research applications. Our systems include basic teaching microscopes for the undergraduate classroom, pathology microscopes for the clinical setting, and advanced imaging systems including confocals, multi-photons, and cutting-edge super-resolution systems for the advanced research lab. From the first Nikon microscope, released in 1925 (the JOICO microscope), Nikon imaging systems have been helping to change the landscape of the biomedical world. The first test tube babies in the US and the UK were conceived with the help of a Nikon Diaphot inverted microscope. Dolly the sheep was also cloned with the help of a similar Nikon model. With the development of advanced imaging modalities such as super-resolution and multiphoton, Nikon systems are currently in use at the cutting edge of research. Nikon systems are used to determine brain circuitry at the single molecule level, to generate a physiological atlas of neural activity in the mouse visual system through intravital imaging, and to find therapeutic targets and treatments by screening and analyzing patient-derived induced pluripotent stem cells.

Figure 1. Dolly the sheep. *Dolly was cloned in 1996 by Ian Wilmut, Keith Campbell, and their colleagues at the Roslin Institute at the University of Edinburgh in Scotland. (Dolly (Sheep). (2015, October). Wikipedia retrieved from ttps://en.wikipedia.org/wiki/Dolly_(sheep)).*

The Nikon family of products is designed for both exceptional functionality and ease of use. The ergonomic design of Nikon's upright microscopes evolved from Nikon's earlier microscopes and culminated in products that enable routine analysis with more comfort, higher quality images, and greater configuration flexibility than ever before. All upright models are available with a tilting, telescoping head, and optional eyelevel risers for height adjustment. They include Nikon's patented in-line focusing where the stage handle and focus controls are positioned for maximum ergonomics. This enables a user to sit square and straight during operation with wrists resting on the countertop, allowing the user to maintain a more natural posture for additional comfort and fatigue-free operation. This exclusive combination of tilting, telescoping head; height adjustments; and in-line focusing allows the microscope to fit the user rather than forcing the user to fit the microscope. The Ci and Ni series of

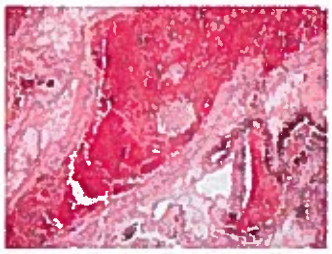
microscopes include a capture button integrated into the base, low and to the front of the scope. When used with a Nikon Digital Sight Camera System, the capture button allows the user to easily capture high-resolution digital images without ever removing their eyes or their hands from the microscope.

Core Microscopes and Accessories

The **Nikon Eclipse Ci upright microscope** is designed with clinical laboratory applications in mind. The Ci-S is the base model with the same ergonomic and optic features as the other models, but with a traditional halogen light source and a built-in NCB11 filter. The Ci-L and Ci-E boast LED illumination. LED illumination has virtually no IR in its spectrum, reducing or eliminating eye fatigue. LED illumination generates no heat. The LED lamps are warranted for five years but are designed to last for over 60,000 hours. The Ci-E is an automated microscope, allowing for motorized switching of objective lens, condenser, and light intensity so the user can concentrate on the specimen without being distracted.

The Ci-L/DS Fi2-L3 configuration is a dynamic, affordable, digital pathology image consulting system that lets a user share live images through a network browser without the need for software that could compromise the integrity of the network.

Figure 2. Enhanced LED Eco-Illumination Provides Brighter, Clearer Images. *The Ci-L and Ci-E incorporate a high-intensity LED optical system that is IR-free, significantly minimizing eyestrain for users spending long hours at the microscope. LED illumination also offers very low power consumption and heat generation and eliminates color temperature changes that occur with halogen light sources. A variety of microscopy techniques are supported, including darkfield, simple polarizing, and sensitive color polarizing for gout testing and phase contrast.*



For work that requires a more advanced or more expandable system, Nikon offers the **Ni Series**. Nikon's proprietary stratum structure, used and highly acclaimed for inverted research microscopes, is now incorporated in both versions of the Ni upright microscope, allowing a wide variety of components to be installed. The Ni-E is a motorized model primarily used in research applications. The Ni-U is a manual version with some motorized components available. It can be utilized for both research and clinical applications, particularly when a laboratory is looking for a system that has the durability and expandability to be a cornerstone of the lab for years to come.

Figure 3. Controls are conveniently located on the front of the microscope base. *Selected observation conditions can be designated to individual buttons, enabling changes to be made at the push of a button. This is particularly convenient when reproducing specific observation conditions.*

Available in two models and dozens of combinations, the Ni Series offers improved system speed, increased flexibility and efficient multi-mode microscopy as part of a fully-integrated microscope system that is ideal for routine and high-end research.

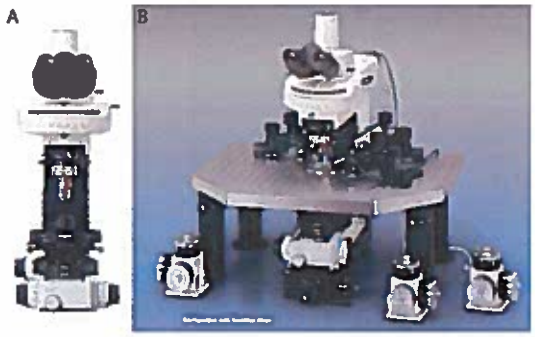
The Eclipse Ni-E, Nikon's top-of-the-line motorized upright microscope, was developed to meet the increasing demands for sophistication and automation of research. The Ni-E boasts flexible system expandability and supports a broad range of advanced research applications. Taking advantage of its stratum structure, the Ni-E can easily be equipped with various photostimulation devices for optogenetics experiments and further combined with confocal or multiphoton imaging modalities for custom applications. Ni-E has expanded application possibilities to provide the perfect solution for all advanced bioscience and medical research, through Nikon's proprietary stratum structure, exchangeable focusing mechanisms from focusing stage to focusing nosepiece, a diverse array of motorized accessories, and automatically changing observation conditions.

Figure 4. *High-precision Z-focus provides accurate Z-position information required for use with confocal laser microscopes and supports automated Z-series acquisition. Individual coarse and fine focus knobs enhance ease of operation.*

With its streamlined body, the FN-1 is the ideal platform for all your electrophysiology needs.

The **Nikon FN1 upright microscope** has been specifically developed for electrophysiological research. It features enhanced operability in every aspect to facilitate experiments. Advantages offered by the FN1 include slim body, streamlined structure, improved electrode placement, long working distance, and greater noise reduction. The Eclipse FN1 has an I-shaped slim line designed body. This is advantageous because it maximizes the space for equipment surrounding the microscope. The FN1 is a fixed stage system which allows the tissue to be kept fully stable and functional while imaging is occurring.

Figure 5. *I-shaped slim line design provides maximum clearance to incorporate electrophysiology equipment.*



The FN1 comes with a 2-position sliding nosepiece allowing for a low magnification objective for sample localization and a higher magnification objective for detail work (Figure 7). Parfocality and parcentricity adjustments can be made on the double slider nosepiece to achieve perfect specimen alignment between magnifications. Objectives can be easily raised 15mm when switching magnifications to protect both the sample and chambers. By inserting up to four 10mm spacers between the body and the arm, a researcher can raise the microscope height 10-40mm. This facilitates large specimen observation. Moreover, the condenser, sub-stage and turret can be removed entirely from the microscope to allow for more free space, depending on the purpose of the experiments.

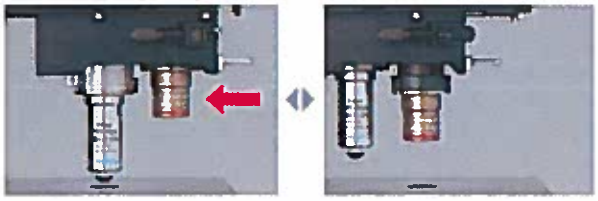


Figure 6. The FN-1 microscope's two position nosepiece provides easy switching between low magnification and high magnification imaging to enhance your neurobiology imaging experiments.

The **inverted Ti microscope series** offers expanded flexibility, advanced motorization and tools for customizing the imaging system to meet advanced research needs, ranging from basic live-cell imaging to confocal, super-resolution, and high-content imaging.
As with the Ni series, the Ti series also utilize a proprietary stratum structure that takes advantage of infinity optics to enable flexible stacking of multiple components in the infinity space. For example, users can stack multiple filter turrets or wheels and even custom optical components in the infinity space. Simultaneous incorporation of laser tweezers and photo-stimulation units becomes extremely simple to implement. Taking advantage of this stratum structure, the microscope can even be configured with five different illumination modules (e.g. multiple TIRF illuminators, Epi-Fl illuminator, FRAP device, photoconversion device, etc.). This stratrum structure provides the ultimate flexibility in microscope design and enables easy customization as well as upgrades to existing stands to meet evolving experimental needs.

Figure 7. *Proprietary stratum structure of Nikon's Ti inverted research microscope enables easy incorporation of multiple imaging modalities and offers unprecedented flexibility to customize the imaging platform.*

The award-winning Nikon PFS system automatically and continuously corrects focus drift, in real-time, to ensure the success of your live-cell imaging experiments.

In addition to its flexible structure, the Ti-E can be configured with Nikon's award winning auto-focusing device, the Perfect Focus System™ (PFS). Thermal changes and mechanical disturbances inevitably lead to focus drift during time-lapse imaging and can be one of the biggest challenges in live-cell imaging. Nikon's PFS provides real time focus correction to overcome drift. The PFS system is seamlessly integrated into the microscope nosepiece, leaving the valuable infinity space stratum structure fully accessible to other optical components. One-touch operation engages the system, which runs autonomously without user input to continuously correct Z drift. Even with high magnification, high NA objectives and zooming, your images are always in sharp focus. Now in its third generation, Nikon's PFS3 continues to deliver unrivalled performance in auto-drift correction.

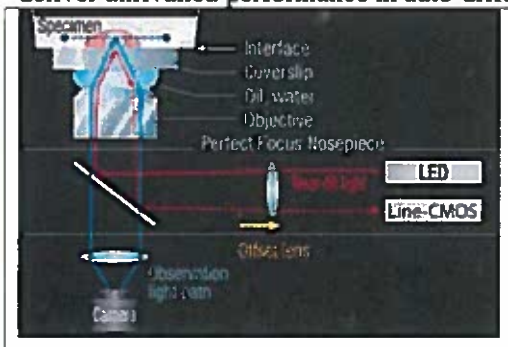


Figure 8. Schematic of Nikon's Perfect Focus System. *The PFS employs an IR LED, an offset lens and detector to maintain perfect focus at the focal plane of interest. When engaged, the PFS continuously maintains focus in real-time. Moreover, when the PFS is not in use, the optical component of the PFS can be simply retracted from the optical path.*

Nikon's modular Ti-LAPP illumination devices combined with the flexible laser combiner LU-NV provides the ultimate tools for customizing your imaging system.

Taking advantage of the flexible stratum structure of the Nikon Ti series, these inverted microscopes can be equipped with the **Ti-LAPP series of illumination devices**. The Ti-LAPP system is a series of modular illumination devices that can be easily mixed and matched and flexibly combined onto a single microscope platform to create a custom imaging system. This modular concept is unique to Nikon. The series includes a wide range of illumination modules including a fully automated TIRF, manual TIRF, N-STORM, FRAP device, DMD device for photostimulation, and Epi-fluorescence.

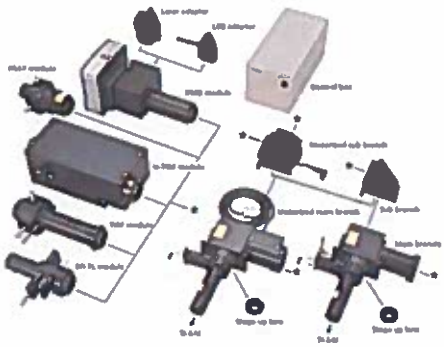


Figure 9. The modular illumination devices of the Ti-LAPP series can be easily mixed and matched to accommodate custom imaging needs.

Utilizing Nikon's stratum structure of the Ti microscope, up to five different illumination modules can be incorporated, providing the ultimate in experimental flexibility. In addition, multiples of the same module (e.g. 3 TIRF modules) can be combined. With multiple TIRF illuminators, users can easily adjust TIRF angles independently for different wavelengths for simultaneous or extremely fast, multi-angle TIRF experiments. LAPPs can also be combined with Nikon's super-resolution illuminators and confocals to provide an even wider range of imaging capabilities.

***Figure 10.** Nikon's patented complex monolithic optic lies at the heart of the LUN series of laser combiners, providing permanent ?*

Complementing the multi-modal applications enabled by the Ti-LAPP series is Nikon's **LU-NV laser combiner** which represents a breakthrough in microscope laser technology. This solid state laser system uses a patented complex monolithic optical combiner for permanent alignment and requires no maintenance/calibration. Prisms are utilized instead of traditional mirrors to combine the beams and these are permanently fused in place during manufacture

to ensure permanent alignment. The LU-NV laser combiner system accommodates up to eight laser lines and five fiber outputs, making this combiner one of the most flexible units on the market. With eight lasers and five output fibers, users can easily accommodate multiple laser-based applications with a single laser combiner. For example, a single microscope can be outfitted with a spinning disk confocal, multiple TIRF illuminators, a FRAP device, N-STORM and N-SIM super-resolution systems, all connected to a single LU-NV unit. This system's capability to easily combine multiple imaging modalities enables creative and custom experiment design (e.g. correlative confocal and super-resolution imaging) and also provides an easy upgrade path for when experimental needs change.

Nikon Instruments provides a wide range of **stereomicroscopes**, from basic dissection microscopes to fully automated imaging systems. Basic stereomicroscopes are designed to be ergonomic and provide clear images with bright and even illumination across the field of view. Nikon optics ensure crisp, flat, chromatically corrected images. The advanced models, SMZ18 and SMZ25 can be configured to provide exceptionally high-resolution fluorescence images. Acquisition can be fully automated to enable multi-color, 3D imaging over time. These advanced stereomicroscopes seamlessly bridge the gap between simple dissection/screening microscopes and more advanced imaging microscopes. Applications that traditionally required both a dissection microscope and an advanced research microscope can now be accommodated with one imaging system, an advanced Nikon stereomicroscope such as the SMZ18 or SMZ25.

The depth and breadth of Nikon's versatile camera and controller lineup allows a user to build the optimal microscopic digital imaging system for any biomedical application from documentation to advanced image processing and analysis.

Nikon Corp has a long history of excellence in photographic equipment. Their digital and film cameras are still a favorite of many amateur and professional photographers alike. Nikon has turned that same expertise to cameras for microscopy. The **Digital Sight Series,** or **DS**, includes a variety of cameras and controllers to allow researchers and sales representatives to configure a system that is most appropriate for each end user's goals, specimens, and applications.

The two most recently introduced cameras are two high resolution, 16.25 megapixel, CMOS cameras. Both come equipped with an FX-format CMOS sensor which delivers a large field of view, fast frame rate, low noise, and high resolution. The **DS-Ri2** is a high definition color camera. It is capable of reproducing color images exactly as seen by the eye through the microscope. The **DS-Qi2** is a monochrome camera ideal for measuring intensity in fluorescence, and is uniquely suited for fluorescent time-lapse imaging.

Nikon also offers three compact color digital, or CCD, cameras for microscopy. The **DS-Fi2** is frequently used in clinical and educational applications. The Fi2 is a 5 megapixel color camera with a high-speed

frame rate of 21 fps. It can be used for a variety of applications including brightfield, phase, and DIC. The **DS-Fi1c** is a 5 megapixel color CCD capable of cooling to -20°C. Because of its versatility, he Fi1c has applications is research as well as clinical fields. It works well for a variety of illumination techniques; its cooling ability allows it to be used to capture high contracts images using long exposure times with limited thermal background noise. The **DS-Vi1** is equipped with a 2.0-megapixel color CCD. SXGA live motion images can be displayed with a high speed of 15 fps (maximum 27 fps). Focusing is performed easily with high sensitivity and a wide dynamic range to obtain clear and sharp images.

The DS-Fi2-L3 is a stand-alone system that's network addressable through firmware. This lets a user easily capture and share images without the need for an external computer or software that could compromise existing networks.

All of Nikon's cameras can be used with NIS-Elements; Nikon's imaging software platform for microscopy. All of Nikon's cameras provide true natural color and exceptional depth of field. NIS-Elements is an intuitive yet powerful software solution that can provide end users with the ability to perform standard image analysis routines such as automated counting, morphology detection, intensity over time, ratio analysis, colocalization, 2D/ 3D tracking and more.

Nikon's **DS L3 Display Controller** is the ultimate in imaging system flexibility. The core of the system is an 8.4-inch high resolution, stand alone, color, touch-screen controller. The L3 acts as a local display screen for the microscope image, as a camera and microscope controller, and as a platform for conferences or tumor boards. Its DVI port can output to overhead projectors or large flat screens in conference room settings. Live images can be shared through a network browser without the need for software that could compromise the integrity of a network.

The L3 controller incorporates an Ethernet port which, when configured to the local area network, will allow capture to the server or live image sharing and easy remote case consultation over either an internal network or the internet. It can be programmed to be password protected or to allow access only to specific IP addresses. The L3 can be tied into a PC using either NIS-Elements freeware or more advanced image analysis software: NIS-Elements D, NIS-Elements BR, or NIS-Elements AR. Whole slide scanning is possible with the correct selection of microscope hardware and imaging software.

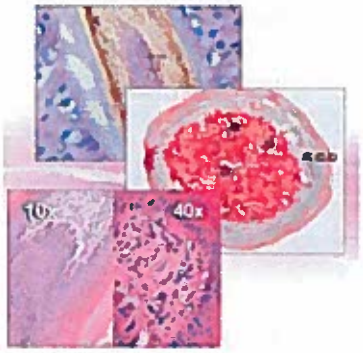


Figure 11. Images captured by the L3 using an Fi2 camera. *When viewing a live image, using the touchscreen or a mouse, the image can be easily saved, projected, shared over a network, and analyzed. The firmware within the device includes a wide range of tools for annotation, drawing, and calibrated measurements. The annotations include such things as scales, consecutive numbered points, and text capability.*

For a simpler, PC based controller, Nikon offers the **DS-U3** control unit. The U3 offers high speed information transmission. All functions are controlled through a PC making it adaptable to a wide range of applications. When integrated with NIS-Elements, the U3 enables the control of motorized microscope components including allowing for automatic detection of objective magnification.

Systems Solutions for Advanced Imaging Applications

Nikon's High Content Imaging system enables users to easily create custom acquisition and analysis workflows for intelligent, large-scale imaging experiments.

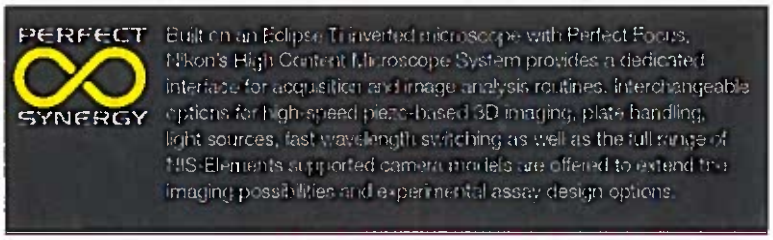
The high content (HC) system from Nikon Instruments combines the flexible Ti inverted microscope with ultra-high-speed devices and NIS-Elements HC software for high content screening of multi-well plates. Leveraging the modularity of the Ti platform, there are many combinations of hardware that can be integrated such as: field-scanning confocals, PFS, high-speed XYZ stages, , synchronized light sources and triggered excitation and emission filter switching for fast multi-color imaging. Unlike many of the commercially available high content screening systems which are enclosed inside a box, Nikon's HC system is based on an open platform and can therefore be easily customized with specific detectors, light sources, stages, etc. as well as imaging modalities of your choice. Furthermore, with Nikon's HC software, users can create custom, conditional/intelligent acquisition workflows where the software automatically analyzes acquired images in real time and dictates the next course of image acquisition based on the results. These types of intelligent workflow routines become extremely useful when performing large scale high content imaging experiments since they can reduce the amount of un-meaningful data collection..

Figure 12. NIS-Elements High Content Software Package. *Complete microscope automation and the ability to save entire acquisition/analysis "Jobs" and subsequently reuse them allows researchers to easily and quickly go from the discovery phase of their project to a full-scale screening phase.*

Advanced tools within the NIS-Elements HC software package include well- plate acquisition workflow, well-plate visualization, standard and custom image analysis routines, heat-mapping, sample labeling, graphing, data management and filtering, and exporting functions. Live cell screening and fixed cell screening are made possible by easy-to-use set up of experiments, fast acquisition, and image analysis which can be performed during or after the images have been acquired. As an essential part of the HC software package, Nikon's General Analysis module

makes it possible for researchers to create their own custom image analysis routines.

Figure 13. Perfect Synergy.



All projects and jobs are organized around a centralized database which can be filtered to sort data and export only relevant fields and results. This streamlined data management system can be automatically saved onto a networked centralized server. The ultimate advantage is that customers can start with a basic HC system and upgrade the hardware as necessary or as new technologies emerge and enter the marketplace. As applications and use of the system evolve, the same NIS-Elements HC platform serves as a consistent interface for the transition of newly acquired hardware. The entire system costs less than most "microscope-in-a-box" solutions. In addition, NIS-Elements HC functionality can be retrofit onto an existing Nikon microscope and NIS-Elements platform.

Figure 13. *Nikon's High Content system provides advanced software tools for designing custom analysis methods as well as a variety of visualization tools for viewing large-scale data.*

The **Nikon A1R** confocal microscope has a number of unique features distinguishing it from instruments offered by competitors. While each of these features, in and of themselves, are significant and reason enough to choose A1R, taken together, they create an extremely versatile, turn-key confocal imaging system.

One groundbreaking feature that places the A1R in a class by itself is the dual scanning system built into the scan head. The A1R comes equipped with both a high resolution galvanometer scanner and a high speed resonance scanner. The galvanometer scanner scans a single illumination point over the image field as fast as 8 frames/sec (fps) for a 512x512 pixel field and can be used to acquire high spatial resolution images at up to 4096x4096 pixels. The resonance scanner can be used to acquire high temporally resolved images at up to 30 fps at 512x512 pixels resolution or 420 fps in band scan acquisition mode at 512x32 pixels resolution. Resonance scanning has important advantages in addition to speed. The dramatically shortened exposure time significantly limits photo bleaching and the effects of phototoxicity on live specimens. Nikon's unique combination of resonance and galvanometer scanners enables users to deliver visible light for photoactivation while images are simultaneously acquired at up to 30 fps using the resonance scanner. There is no other confocal system on the market currently available that can be used for simultaneous photostimulation or optogenetics and high speed data acquisition in a mode that minimizes photo bleaching and phototoxicity.

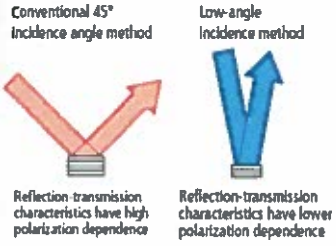
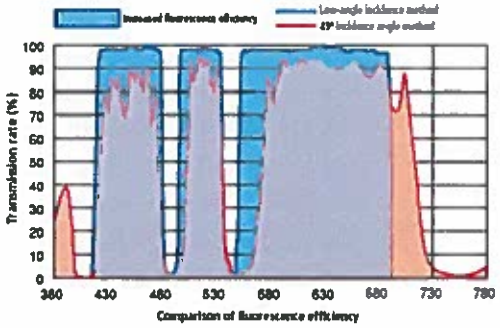


Figure 14. Primary Dichroics.
The fully-automated A1 offers an exclusive low-angle incidence dichroic mirror realizing 30% increase of fluorescence efficiency. Additionally, brighter images are obtained with the industry's first continuously variable hexagonal pinhole, which replaces the standard four-sided aperture.



Nikon developed the GaAsP multi-detector unit equipped with two GaAsP PMTs and two normal PMTs. When using resonant scanners, the GaAsP PMT enables low-noise, high-speed imaging.

Ultra Sensitive and Versatile Detection

The A1 confocal offers several modes of detection that can be combined in many ways for a flexible and moldable imaging system. Nikon's DUG GaAsP descanned detector can be coupled with any of our A1 offerings. This detector offers four channels of simultaneous confocal detection and can be configured to fit any experiment utilizing its 18 individual filter positions. In addition, Nikon offers a 32-channel spectral detector with several different modes of operation. This detector has variable spectral resolution and can be tuned to any experiment in which overlapping probes or auto-fluorescence may need to be distinguished from one another. This detector can also be used in "Virtual Filter" mode in which the 32 channels can be flexibly combined to create tunable, multi-channel acquisitions. For our class leading multi-photon system, the A1R-MP, Nikon offers 4 channel Non-descanned detectors for both transmitted and reflected fluorescence signals. These highly sensitive detectors can be configured with either multi-alkali PMTs or low-noise GaAsP detectors allowing them to be chosen to suit one's specific experimental needs.

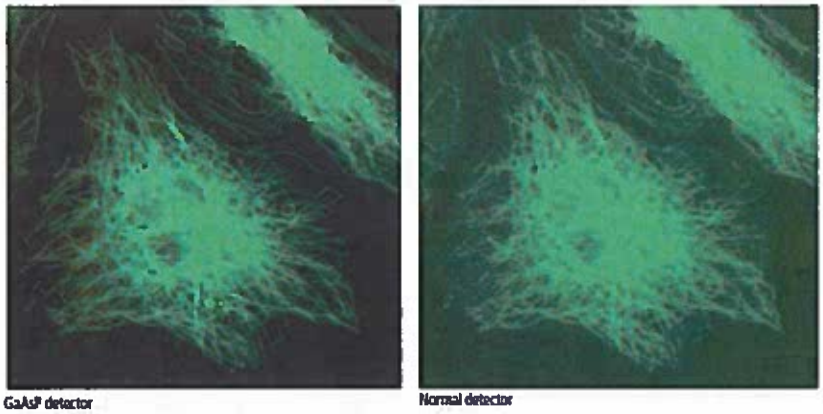


Figure 15. GaAsP Multi-Detector Unit. *GaAsP PMT realizes higher sensitivity than normal PMT, thus offering high quantum efficiency up to 45%. *Quantum efficiency indicates logarithm.*

Class Leading Excitation Flexibility

With the recent introduction of the LUN-V to Nikon's laser lineup, our confocal systems benefit from excitation flexibility that has not previously existed. These laser units can be configured with up to eight different laser lines with varying output powers as well as up to five individual output fibers. This laser unit enables Nikon to create near infinite flexibility in offering upgradable combination systems using a single laser unit. This might include combinations with photostimulation devices, high-speed TIRF and even Nikon's super resolution microscope systems.

Nikon's A1 Confocal system reduces the number of service calls by developing the LUNV laser launch that never needs alignment, saving the users from losing valuable research hours and the facility from spending additional funds.

Infrared Laser Auto Alignment

For our multi-photon system, the A1R-MP, Nikon has also made great advances in infrared beam containment and beam introduction. The entire beam path between the laser aperture and the specimen is fully enclosed in an opaque and non-reflective housing. Part of this enclosure includes a Nikon developed Incident Optical Unit (IOU). The IOU houses beam introduction periscopes, the AOM that is used to modulate the ultrafast laser beam, beam expansion optics that maximize the filling of the objective lens pupil, and auto alignment optics and electronics. The objective lens pupil must be optimally filled to maximize both two photon absorption and resolution, particularly in the axial direction. The purpose of the auto alignment function is to eliminate the inevitable drift in beam pointing as the wavelength of the ultrafast laser is changed. It also eliminates drift from other sources including temperature instability in the imaging suite. Once installed, an undisturbed A1R-MP will never have to be realigned.

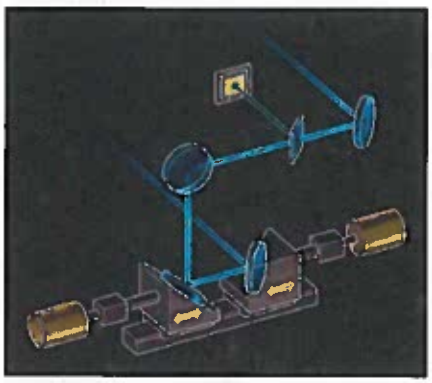


Figure 16. The IOU allows SAFE and EASY user control and adjustment for beam focus and position. *The IOU tackles the following issues: it allows for safe free space coupling of IR laser to IR port on A1 scan head, laser power modulation via AOM, automated centering of IR beam, automated focusing of IR beam, and it is programmable per objective.*

IR-Laser Precompensation

The A1R-MP is equipped with precompensated ultrafast (femtosecond) lasers from either Coherent or Spectra-Physics. Precompensation reverses the effects of group velocity dispersion on the laser pulse which restores it to the same ultrafast (femtosecond) pulse width at the specimen that it had when it emerged from the laser head. Specific laser models have been developed for Nikon that match precompensation to the expected dispersion induced through the beam optics, microscope, and objective lenses. Precompensation is done automatically with no need for user adjustment after the system is installed.

The A1R-MP can be used as a traditional confocal microscope when equipped with a continuous wave visible light laser unit with all of the advantages of the A1R preserved intact. These include the advantages of simultaneous photostimulation and image acquisition, resonance scanned

imaging for increased acquisition speed and reduced photo damage, and Nikon's unique Si spectral detector.

Software is equally important as hardware and the A1 family operates using the same NIS-Elements software that operates all other Nikon imaging systems. This software includes not only acquisition drivers, but also a complete analysis package including but not limited to, volumetric acquisition and measurement, time series acquisition and analysis including ratio fluorescence, and spectral acquisition and analysis.

Super Resolution Research Systems

Rapid, reliable and accurate STORM data rendering is possible via the live Gaussian fitting preview mode, which streamlines and improves data acquisition and ease of use for all users.

N-STORM is Nikon's powerful fully-automated Super Resolution imaging system. It is capable of two and three-dimensional Stochastic Optical Reconstruction Microscopy (STORM) in up to three colors. With a lateral resolution of approximately 20nm and axial resolution of approximately 50nm, N-STORM provides a ten-fold improvement over the diffraction limit of conventional microscopy methods to achieve molecular scale imaging. The Nikon N-STORM system has been designed with technological innovations and modularity that provide excellent performance and unmatched flexibility. The system configured herein will also be equipped with a separate detector for TIRF and widefield imaging, all of which will be operated within NIS-Elements software.

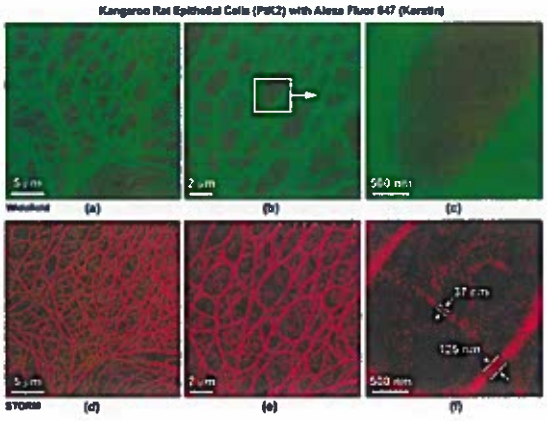


Figure 17. Comparison of images Widefield and STORM. *The N-STORM system is built on the industry leading Ti-E inverted microscope with Perfect focus system. STORM data can be captured using several methods, including both continuous activation and activator-reporter dye-pair STORM in both 2D and 3D. Three channel cSTORM acquisition is possible with automatic drift and chromatic shift correction, and axial drift is eliminated by the perfect focus system.*

The Nikon N-STORM super-resolution microscope system combines "STochastic Optical Reconstruction Microscopy" technology, licensed from Harvard University with Nikon's Eclipse Ti inverted research microscope. N-STORM reconstructs high resolution fluorescence images (2D or 3D) from localization information of fluorophores detected with

high accuracy and calculated from multiple exposures. Because of this, the technique generates much more detailed information and goes from producing an understanding of mere structural data to a nearly molecular understanding of the specimen. N-STORM differs from conventional fluorescence microscopy in that it does not observe all the fluorescently labeled molecules in the sample at the same time, but activates only a very low percentage at any one given time. Repeating this process and acquiring multiple frames at a maximum rate of 100 frames per second allows statistical localization of molecules to produce a final super-resolution image.

N-SIM is a powerful Super Resolution imaging system based on Nikon's Ti-E inverted microscope technology. It is capable of multi-spectral two and three-dimensional nanoscopy. With lateral resolution of approximately 85nm - 110nm and axial resolution of approximately 300nm, N-SIM extends the role of the optical microscope to a level nearing molecular resolution. N-SIM has been designed with groundbreaking new technological innovations to provide unprecedented system quality and flexibility.

The N-SIM system utilizes a proprietary "stage-up" system to introduce a second optical path to the system, which allows widefield imaging to be maintained.

The Nikon N-SIM super-resolution microscope system combines "Structured Illumination Microscopy" technology, licensed from The University of California San Francisco, and Nikon's Ti-E PFS inverted research microscope. N-SIM reconstructs super-resolution fluorescence images (2D, TIRF or 3D) from Structured Illumination information of fluorophores detected with high accuracy. With this technique, N-SIM nearly doubles the resolution of conventional optical microscopes. N-SIM differs from conventional fluorescence microscopy in that it illuminates the specimen with a striped illumination in multiple angles and reconstructs the image with twice the resolution of conventional microscopes.

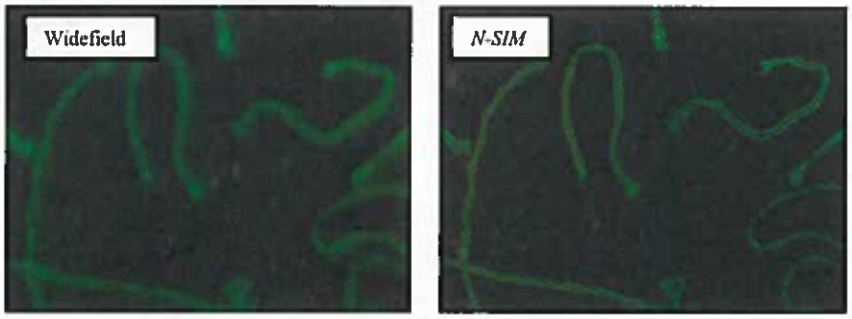


***Figure 18.** Structured illumination imaging reveals homologous chromosome pairs that cannot be resolved with conventional widefield fluorescence or confocal. Source: Mouse spermatocytes.*

The BioStation IM configuration is a dynamic, affordable, digital imaging system that allows users to record their live cell's activity.

The Nikon standard hardware configuration makes N-SIM extremely multi-user friendly. It is an ideal instrument for the "core" style laboratory. N-SIM technology utilizes the world renowned Nikon Ti-E inverted microscope and can be combined with STORM and/or the A1R confocal system to provide easily adapted multi-mode imaging capability.

Nikon offers two versions of the **Biostation**. The **BioStation IM** (IMager) is a bench-top, personalized, automated, live-cell imaging instrument. All microscope and camera operations are software driven using an intuitive guided user interface (GUI). Integration of environmental controls, microscope, and cooled monochrome CCD camera allow for easy installation and maintenance of the instrument. Acquisition of phase contrast and two channels of fluorescence is possible. The use of a cell friendly LED for phase illumination protects the cells and ultimately improves cell viability during the imaging experiment as compared with other brightfield illumination systems. BioStation IM has a small footprint and does not require placement in a dark room for fluorescence imaging. The magnification range, automated image stitching feature, and fast twelve frames per second imaging mode facilitates identifying and studying cellular behavior of single cells, larger cell colony structures, and rapid dynamic changes. Perfusion accessories are available to add drugs during the imaging experiment or conduct complete media exchange for even longer-term imaging experiments.

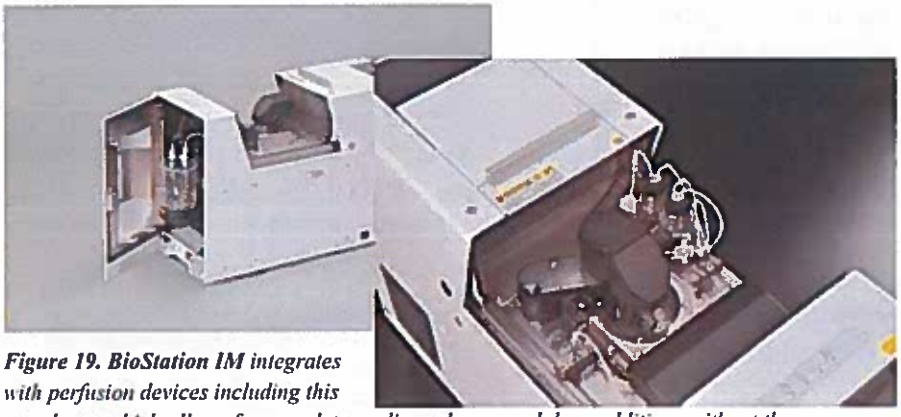
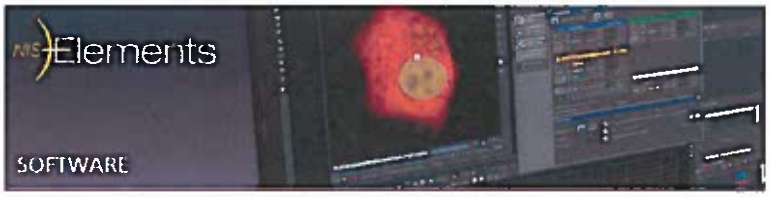


***Figure 19. BioStation IM** integrates with perfusion devices including this one shown which allows for complete media exchange and drug additions without the need to pause the imaging experiment.*

The **BioStation CT** (Cell-Tracker) is an integrated tissue culture incubator, microscope and digital imaging system with advanced image analysis software. Dedicated software and hands-off, push-button functionality minimizes the complexity of performing long-term imaging experiments. This system automates the process of observing,

Environmentally controlled systems lessen the number of times an experiment needs to be performed before providing meaningful results. Reproducible experimentation is now possible.

documenting, and managing the complete cell culturing period for live cell screens. There are 30 "stocker" positions for various culturing formats including well-plates, flasks and dishes. While maintaining optimal environmental conditions, internal robotics shuttle the culture vessels between the stocker and microscope stage for acquiring phase contrast and five channels of fluorescence. Various observation modes are enabled to automate the process of acquiring user registered custom points, full well scans, and high-speed, high-magnification montage tiling. Additionally, numerous researchers can simultaneously set up experiments with a wide variety of cell culture vessel formats and run those experiments in parallel due to a software calendar management feature. On-board image storage and a data management system allow for image review of the entire culture history. Automated methods for backing up the data exist and remote operation allows off-site review of the cells for scheduling experiments or image/video download. Our image analysis software package is capable of analyzing both phase contrast and fluorescence images to quantitate the time-lapse sequences for a wide range of applications. Nikon realizes that researchers depend on consistent and reproducible cell culturing techniques to optimize their experimental results.



NIS-Elements is an integrated software platform designed for Nikon microscope and image offline analysis. There are multiple packages available, each specifically designed for a variety of applications and imaging techniques.

NIS-Elements AR, or Advanced Research, allows end users to achieve complete microscope and confocal control, image capture for both confocal and standard widefield microscopy, documentation, data management and analysis. NIS-Elements is a single unifying platform for multiple users, which handles both confocal data acquisition and image acquisition, and widefield imaging using CCD or sCMOS cameras. NIS-Elements handles multidimensional imaging tasks flawlessly with support for capture, display, peripheral device control & analysis of images of up to six dimensions. Its intuitive interface simplifies workflow and speeds up image acquisition while providing sophisticated image processing and visualization features, such as a 5D volume viewer, automated object counting, intensity measurements over time, image tiling & stitching, live and post-acquisition linear & blind unmixing of multi-channel data, as well as advanced applications such as

deconvolution, FRAP, FRET, ratiometric imaging, and photoactivation, 2D& 3D object tracking and sub-pixel object tracking.

With the Nikon NIS-Elements platform, there is tremendous flexibility in building and designing the ideal microscopy imaging system. Nikon supports and integrates an ever growing list of 3rd party camera and peripheral devices such as stages, Z motors, piezos, high speed I|O DAQ hardware, filter wheels, shutters, wavelength switching, excitation illumination, and incubation systems. Building extensive options for a laboratory's growing needs and emerging techniques is guiding principle in Nikon's product development philosophy.

More information for all of Nikon's microscope solutions is available on our website at www.nikoninstruments.com.

Biological Microscope General Catalog

Biological Microscopes

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Ci-POL			30W				✓			10
E200POL			30W				✓			10
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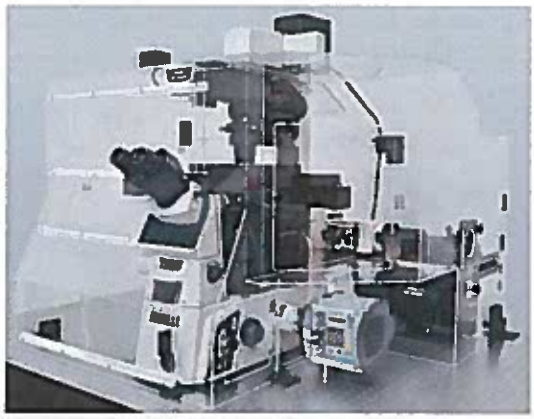
*1 Nikon Advanced Modulation Contrast
*2 Brighter than 100W

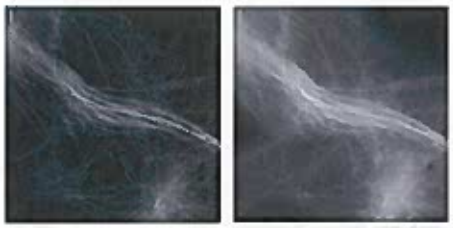
Super Resolution Microscope

N-SIM

Temporal resolution of 0.6 sec./frame enables super resolution time-lapse imaging of dynamic live cell events with double the resolution of conventional optical microscopes

- Offering nearly twice (up to approx. 115nm*) the resolution of conventional optical microscopes, N-SIM enables detailed visualization of minute intracellular structures and their interactive functions by utilizing "Structured Illumination Microscopy" technology (* excited with 488nm laser, in 3D-SIM mode)
- Ultra-high temporal resolution of up to 0.6 sec/frame* enables super-resolution time-lapse imaging of dynamic molecular interactions in living cells (* with TIRF-SIM/2D-SIM mode)
- Various observation modes
  - TIRF-SIM/2D-SIM mode allows high-speed super resolution 2D image capture with incredible contrast; TIRF-SIM doubles the resolution of conventional TIRF microscopes, facilitating a greater understanding of molecular interactions at the cell surface
  - Two modes are available with 3D-SIM mode: Slice 3D-SIM mode allows axial super-resolution imaging with optical sectioning at 300nm resolution in specimens; Stack 3D-SIM mode can image thicker specimens than Slice 3D-SIM mode
- The optional two-camera imaging adapter allows simultaneous two-wavelength super-resolution imaging with excitation of 488nm and 561nm
- 5-laser multi-spectral super resolution imaging facilitates the study of dynamic interactions of multiple proteins at the molecular level





Left: with N-SIM, Right: with conventional microscope
Microtubules in B16 melanoma cell

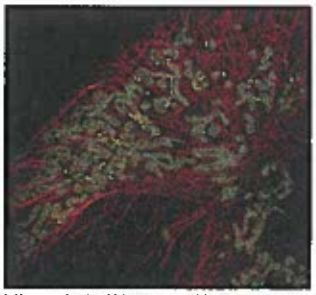
Dynamics of mitochondria (approx. 1 sec. image capturing intervals)

Super Resolution Microscope

N-STORM

Resolution 10 times that of conventional optical microscopes enables a greater understanding at the molecular level

- Ultra-high spatial resolution 10 times higher (up to 20nm in xy) than that of conventional optical microscopes is achieved by utilizing accurate localization information of thousands of discrete fluorophor molecules within a specimen
- In addition to lateral super-resolution, a tenfold enhancement in axial resolution (up to 50nm) is achieved, effectively providing 3D information at the nanoscopic scale
- Multicolor super-resolution imaging utilizing a combination of various "activator" and "reporter" probes affords a critical insight into the co-localization and interaction of multiple proteins at the molecular level
- Compatible with 488nm laser



Microtubule (Alexa405-Alexa647) and mitochondria (Cy3-Alexa647) in a mammalian cell.

Inverted Research Microscopes

ECLIPSE Ti Series

Ultimate solution for advanced imaging methods in live cell research

- Ti-E with motorized focusing and motorized three-port (four-port with Ti-E/B model) changeover, Ti-U with manual three-port (four-port with Ti-U/B model) changeover and Ti-S with manual two-port changeover
- High-speed multi-channel screening is possible by fast motorized control (Ti-E)
- The latest version of Perfect Focus System (PFS), which maintains focus in real-time during long-term observations, comes in two models: a UV-visible imaging model and a multiphoton imaging model. Both can maintain focus at greater depths than the previous model
- Imaging software NIS-Elements provides total system control for 6D time-lapse imaging (Ti-E)
- "Full intensity" external phase contrast unit allows use of specialized objectives without a phase ring and acquisition of high-quality images with high NA objectives
- Nikon original stratum structure allows simultaneous mounting of multiple fluorescence turrets and simultaneous acquisition of multiple wavelengths with two cameras including optional back port
- The Ti-LAPP modular illumination system allows for flexible combination of a wide range of illumination modules to create an imaging system tailored for individual research (Ti-E/U)
- By attaching a HUB controller, desired components such as a filter cube turret and filter wheel, in addition to the stage and nosepiece, can be motorized

Ti-E configuration with motorized accessories

Ti-U configuration with epi-fluorescence illuminator

Ti-S

Illumination modules

Ti-LAPP Modular Illumination System (for Ti-E/U)

A wide range of illumination modules can be flexibly combined or added to create an imaging system tailored for individual research. Utilizing the Ti's stratum structure, up to five modules can be simultaneously mounted and rapidly switched. Dual layer configuration of filter cube turrets enables optimal filter configuration for illumination modules on each layer.

❶ DMD module: Allows for simultaneous multi-point photoactivation with customizable illumination ROIs

❷ N-STORM module: Equipped with motorized switching of illumination field for N-STORM microscopy

❸ H-TIRF module: Enables automatic laser focus adjustment and incident angle adjustment for TIRF observations

Laser units

LU-NV laser units

(for Ti-E/U, Ni-E/U, FN1, AZ100)

Up to 8 wavelengths and 7 fiber outputs are available to choose from. Switching fiber output allows a single laser unit to simultaneously support multiple laser applications, such as TIRF and photoactivation modules, Confocal Microscope A1⁺ and C2⁺, and Super Resolution Microscope N-SIM and N-STORM.

LU-NV laser unit with LU controller box B (top)

LU-N4/N4S 4-laser unit, LU-N3 3-laser unit

(for Ti-E/U, Ni-E/U, FN1, AZ100)

A compact and easy-to-use laser unit that can support laser application systems such as TIRF and photoactivation modules, Confocal Microscope A1⁺ and C2⁺. LU-N4/LU-N4S* is equipped with four lasers (405nm, 488nm, 561nm, and 640nm), while LU-N3 has three lasers (405nm, 488nm, and 561nm).

*LU-N4S is compatible with spectral imaging but not with the Ti-LAPP system.

LU-N4/N4S/N3 laser unit

Inverted Microscopes

ECLIPSE TS100/TS100-F

Apodized Phase Contrast objectives visualize minute details with greater resolution Also supports fluorescence and NAMC*

- Both high-luminescent LED (Eco-illumination) model and halogen lamp model are available
- Adopts CFI60 infinity optics for this class of microscope
- Apodized Phase Contrast objectives visualize minute details within a specimen
- Both TS100 and TS100-F support fluorescence microscopy
- Nikon Advanced Modulation Contrast (NAMC) observation is possible, enabling colorless and transparent samples in a plastic dish to be observed in high relief, a procedure not possible with DIC observation
- Eyepiece tube inclination and comfortable eye-point height for natural viewing posture when sitting or standing
- Low-profile 195mm-high stage with transparent acrylic stage ring for easy confirmation of objective in use
- Quintuple backward-facing nosepiece offers plenty of clearance for easy rotation

*Nikon Advanced Modulation Contrast

TS100 (Binocular tube model)

TS100-F (Trinocular tube model)

Accessories for Inverted Microscopes

Oil Hydraulic Micromanipulation Systems

NT-88-V3 Series (for Ti-E/U/S, TS100/100F)

The NT-88-V3 series with compact and easy-to-assemble design ensures stable and smooth operation without needle drift. It provides microscopic and precise specimen micromanipulation for experiments in the fields of IVF (In Vitro Fertilization), especially ICSI (Intracytoplasmic Sperm Injection), transgenic biotechnology and electrophysiology.
(Manufactured by Narishige Co., Ltd.)

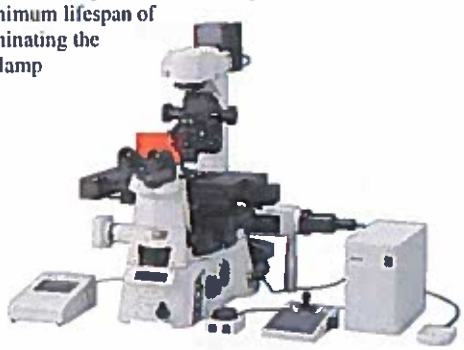
Water Hydraulic Micromanipulation System

MHW-3 (for Ti-E/U/S, TS100/100F)

Needle drift caused by changes in room temperature has been decreased to the lowest possible level. Optimized for long hours of micromanipulation, such as in electrophysiologic patch-clamp experiments.
(Manufactured by Narishige Co., Ltd.)

Epi-FI LED Illuminator
(for Ti-E/U/S, Ni-E/U, FN1)

Equipped with an LED light, this epi-fluorescence illuminator requires zero warm-up time and ensures stable and quantitative brightness of illumination, thus is particularly suited to long periods of time-lapse imaging. It allows simultaneous lighting with multiple wavelengths and the intensity of each wavelength can be controlled. An LED has a minimum lifespan of 10,000 hours, eliminating the need for frequent lamp replacement.



HG Precentered Fiber Illuminator

Intensilight
(for Ti-E/U/S, Ni-E/U, Ci-E/L/S, FN1, AZ100/100M)

It comes equipped with a precentered, easy-to-replace mercury lamp that has a lifespan of up to 2,000 hours and is suitable for fluorescence observation. Motorized and manual models are both available.

C-HGFIE
(motorized type)

Stage Incubation System

INU Series (for Ti-E/U/S)

It sustains the internal temperature at 37°C with humidity of 90% and CO_2 of 5% to keep the specimen in a stable and precise condition for about three days.
(Manufactured by Tokai Hit Co., Ltd.)

Thermal Plate Warmer

ThermoPlate TP Series
(for Ti-E/U/S, TS100/100F)

A temperature controllable stage ring with a glass heating plate keeps the specimen at a set temperature. Temperature is adjustable from room temperature +5°C to 50°C in 0.1°C increments.
(Manufactured by Tokai Hit Co., Ltd.)

Cell Culture Observation System

BioStation CT

Automated stem cell screening in culture environment

- Operations from culture to observation of cells run automatically under optimal conditions in the same incubator
- Culture vessels are transferred from the rack to the microscope stage and cell image is captured according to a user-configured schedule
- Remote observation and setting from outside the laboratory via a network is possible
- Captures micro images from 2x to 40x with phase contrast observation using apodized phase contrast (APC) optics and fluorescence observation using three-color LED illumination. A bird's eye macro view allows the entire vessel to be viewed from above
- High resolution whole vessel images can be acquired with Full Well Scan Observation. This mode allows automatic processing and stitching of images to reconstruct the entire image of the culture vessel, and quick and easy discovery of developing iPS colonies. Images are zoomed so that colonies can be seen without loss of resolution
- Optional image analysis software CL-Quant allows automatic cell detection from a phase contrast image, and enables identification and counting of iPS colonies

Time Lapse Imaging System

BioStation IM-Q

The perfect and simple solution for reliable time-lapse imaging

- A totally integrated cell incubation and time-lapse imaging system
- High-sensitivity cooled monochrome CCD camera captures bright, high-contrast images
- Accurate, reliable data acquisition provided by precision XYZ control and by eliminating the focus drift caused by the stage movement and temperature change
- Powerful and intuitive software. Effortless operations with ergo controller and mouse
- Stable, consistent control of temperature, humidity and CO_2 gas concentration maintains cell activity for long periods
- Exceptional phase contrast and fluorescence imaging quality
- Instant set-up. Space-saving design. No need for darkroom
- Convenient accessories include a vessel and chamber for multi-sample observation and built-in perfusion components

Motorized Advanced Research Microscope

ECLIPSE Ni-E (focusing stage model and focusing nosepiece model)

Automated imaging capability for most advanced observations

- High-precision motorized focusing supports automated Z-series acquisition
- Observation method can be changed using buttons on the microscope body. Microscope settings are automatically set to optimal positions according to selected magnification
- Various motorized accessories can be attached
- Stratum structure allows double layer mounting of a photoactivation unit and an epi-fluorescence attachment to enable simultaneous photoactivation and imaging
- High-speed motorized excitation/barrier filter wheel for multicolor imaging
- Exchangeable focusing mechanism from focusing stage to focusing nosepiece
- High optical performance: uniform and bright illumination using fly-eye optics
- Built-in, easy-to-reach image capture button. Angled operation buttons allow touch-type operations during observation

Ni-E (Focusing stage) configured with motorized epi-fluorescence illuminator, motorized condenser and motorized quadrocular tilting tube

Ni-E (Focusing nosepiece) configured with motorized stage, motorized epi-fluorescence illuminator, photoactivation unit, motorized quadrocular tilting tube and camera

Advanced Research Microscope

ECLIPSE Ni-U

Manual microscope with flexible selection of motorized options

- Motorized nosepiece, motorized epi-fluorescence cube turret and motorized shutter can be utilized
- Stratum structure allows double layer mounting of a back port unit and an epi-fluorescence attachment to enable simultaneous multichannel imaging with two cameras.
- High optical performance: uniform and bright illumination using fly-eye optics
- Built-in, easy-to-reach image capture button

Ni-U configured with ergonomic binocular tube

Clinical and Laboratory Microscopes

ECLIPSE Ci-E/Ci-L/Ci-S

Exceptional comfort for clinical and laboratory observation

- High-luminescent eco-friendly LED (Eco-illumination) for Ci-E/Ci-L and halogen illumination for Ci-S
- Ci-E offers motorized magnification switching and automatic light intensity reproduction, enabling use of motorized condenser
- Angle and extension adjustable ergonomic binocular tube ensures observation with natural posture. Eye-point height can be lifted using an eyelevel riser
- Stage height can be lowered by adding a nosepiece spacer, and locked for easy refocusing. Height-adjustable stage handle. Durable, scratch-resistant ceramic-coated stage
- Built-in capture button allows easy imaging with the DS series camera

Ci-E configured with ergonomic binocular tube

Ci-L configured with ergonomic binocular tube and DS series camera

Ci-S configured with ergonomic binocular tube

Clinical & Educational Microscope

ECLIPSE E200

Outstanding cost performance—striking image sharpness, operability and durability

- Both high-luminescent LED (Eco-illumination) model and halogen lamp model are available
- Adopts CFI60 infinity optics for this class of microscope. Plan objectives that excel in image flatness come standard
- One-touch refocusing stage for easier specimen handling
- Focusing knob and stage handle are low-positioned and equidistant from operator, permitting one-handed operation in natural posture
- Ergonomic binocular tube and eye-level risers are available for adjusting the eyepoint
- Anti-mold treated
- E200-F (model with field diaphragm) is also available
- Various accessories are available, such as dedicated epi-fluorescence attachment
- Halogen lamp model is compliant with 100V-240V (multi-voltage)

E200 (model without field diaphragm)

Upright Microscope

Educational Microscope

ECLIPSE E100

High optical quality, simple operation and rigid design

- Both high-luminescent LED (Eco-illumination) model and halogen lamp model are available
- CFI optical system and dedicated objectives for flat images
- Siedentopf-type eyepiece tube and eye level adjustments; digital camera attachable to trinocular eyepiece tube
- Phase contrast observation for high-contrast viewing of transparent and colorless specimens
- Anti-mold treatment for objectives, eyepieces, and eyepiece tube

E100 configured with binocular tube

Polarizing Microscopes

ECLIPSE LV100N POL/Ci-POL/E200POL

- CFI60 optics deliver world-class optical performance
- Excellent basic performance, operability, durability and, above all, outstanding image sharpness
- LV100N POL is a research polarizing microscope that boasts twice the rigidity of conventional models and a brightness exceeding 100W (12V-50W model with centering quintuple nosepiece). The built-in Fly-Eye optics ensures uniform illumination, making it ideal for digital imaging
- ECLIPSE Ci-POL is compact yet offers high functionality, such as a nosepiece with DIN standard compensator slot (6V-30W model with centering quintuple nosepiece). Built-in capture button allows easy imaging with DS series cameras
- E200POL is a cost-efficient and extremely compact model (6V-30W multi-voltage model with quadruple nosepiece)

LV100N POL (diascopic illumination type)

Ci-POL (diascopic illumination type)

E200 POL (diascopic illumination type)

Microscope for Asbestos Identification

Polarizing/Dispersion Microscope

ECLIPSE LV100ND POL/DS

Dispersion staining microscopy that aids in the identification of asbestos

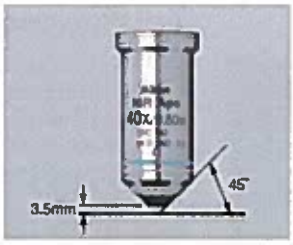
- Characteristic dispersion colors of each asbestos type corresponding to the refraction index of the immersion liquid can be observed using the phase contrast condenser and objectives (10x and 40x) for dispersion staining microscopy
- Qualitative asbestos analysis is possible by determination of birefringence and elongation (positive/negative); measurement of extinction angle, refractive index, and birefringence magnitude (retardation); observation of pleochroism

Microscope for Patch Clamp Experiments

ECLIPSE FN1

Dedicated patch-clamp microscope with I-shaped body design—more room for smooth electrode manipulation

- Corrects axial chromatic aberration up to IR light (to 850nm). New 40x and 60x objectives for crisp high resolution IR-DIC imaging
- 100x objective with NA 1.1 and working distance 2.5mm comes with a correction function for depth- and thermally-induced aberrations
- Vertical motion nosepieces enables magnification changes without moving Petri dish (15mm or less in height)
- Easy switching between IR light and reflected illumination
- With an optional variable magnification double port (0.35x, 2x, 4x), both wide field and high magnification observations can be carried out with a 16x objective alone
- Deep imaging of living specimens is possible in configuration with multiphoton confocal system A1 MP+/A1R MP+



All objectives have wide approach angles and long working distances (45° and 3.5mm with 40x objective).

Configuration with Narishige micromanipulators and epi-fluorescence attachment

SMZ25/SMZ18

- Motorized zoom model SMZ25 is the first stereo microscope to offer a large 25:1 zoom ratio. Zoom ratio of manual zoom model SMZ18 is 18:1
- Optical path of both eyes boast high NA of up to 0.156 with the SHR Plan Apo 1x objective and SMZ25 zooming body
- Fly eye lens employed in the epi-fluorescence attachment ensures uniform brightness over the entire field of view even at the lowest magnifications
- Motorized focus and zoom operation (SMZ25)
- User-friendly remote control (SMZ25)
- Total magnification 3.15-315x (SMZ25), 3.75-270x (SMZ18), depending on objective used
- Compatible with various accessories including trinocular tubes

SMZ25 configured with motorized epi-fluorescence attachment and LED diascopec illumination base

SMZ18 configured with plain stand

Accessories for SMZ25/SMZ18

LED Diascopic Illumination Base

The slim LED DIA Base is equipped with OCC illumination, which utilizes oblique lighting to enable high-contrast illumination of colorless and transparent specimens.

Fiber Diascopic Illumination Base

The Fiber DIA base features condenser lenses that can be switched between low and high magnifications. Furthermore, the OCC illumination system allows high-contrast illumination.

LED Ring Illumination Unit

LED Ring Illumination Unit is equipped with high-intensity, long-life (20,000 hours) LEDs. The illuminator's dial adjusts the intensity of the white LED.

LED Dark Field Unit

Darkfield observation is possible simply by attaching the darkfield unit to the base.

Simple Polarizing Attachment

The analyzer is attached to the objective and the polarizer to the base or stand to enable polarized observations.

Epi Fluorescence Attachment

A fly eye lens ensures bright high-contrast images over the entire field of view.
A motorized model with control via a remote control unit or imaging software is also available.

SMZ1270/1270i, SMZ800N

- SMZ1270/1270i provides highest-in-class zoom ratio of 12.7:1. Zoom ratio of SMZ800N is 8:1
- Total magnification 3.15-480x (SMZ1270/1270i), 5-480x (SMZ800N), depending on eyepieces and objectives used
- High-level chromatic aberration correction provides sharp images
- Automatic detection of zoom magnification in combination with the digital camera control unit. Objective information is also detected with the intelligent nosepiece. (SMZ1270i)
- Compatible with various accessories, including trinocular tubes, epi-fluorescence attachment and teaching head. The slim-type LED diascopic stand is equipped with OCC illumination. The nosepiece offers both a widened magnification range and on-axis imaging

SMZ1270 configured with binocular tube and LED diascopic illumination stand

SMZ1270i configured with trinocular tilting tube, intelligent nosepiece and LED diascopic illumination stand

SMZ800N configured with binocular tube and plain stand

SMZ745/SMZ745T

- Total magnification 3.35-300x
- Zoom ratio 7.5:1
- Compatible with a camera (SMZ745T)
- Eyepiece inclination 45°

SMZ745T configured with C-PS plain stand

SMZ745 configured with C-PS plain stand

SMZ445

- Total magnification 4-70x
- Zoom ratio 4.4:1
- Eyepiece inclination 45°

SMZ445 configured with hybrid LED stand

SMZ460

- Total magnification 3.5-60x
- Zoom ratio 4.3:1
- Eyepiece inclination 60°

SMZ460 configured with hybrid LED stand

Multi-purpose Zoom Microscope

Multizoom AZ100/AZ100M/AZ-C2+

Continuously switchable magnifications, extending from macro to micro observation of the same specimen

- Covers a magnification range of 5x to 400x, thanks to 8x zooming optics and a unique triple nosepiece
- True on-axis observation and image capture are possible in the macro region
- Comes standard with an aperture stop
- Tilting trinocular eyepiece tubes can accommodate a digital camera
- The dedicated stands combine two focuses, one with an 85-mm stroke on the column side and one with a 10-mm stroke on the front stage, enabling observation of tall samples
- AZ100M with motorized focusing and motorized zooming makes it easy to capture Extended Depth of Focus (EDF) images
- AZ-C2+ offers high-definition macro confocal image capture in a single shot. Deep imaging of in-vivo whole specimens is also possible

AZ100M configured with Epi-Fl attachment

AZ100 configured with Epi-Fl attachment

AZ-C2+

Confocal Microscope System

Multiphoton Confocal Microscope

A1 MP+/A1R MP+

High-speed and high-resolution imaging of deep area in a living specimens

- A1 MP+ is equipped with a galvano (non-resonant) scanner that enables high-resolution imaging of up to 4096 x 4096 pixels
- A1R MP+ is equipped with both a galvano scanner and a resonant scanner, allowing ultrafast imaging of up to 420 fps (512 x 32 pixels)
- Deep imaging with high-sensitivity NDD (non-descanned detector); diascopic NDD is also available for Ni-E/FN1
- The ultrasensitive GaAsP (gallium arsenide phosphide) NDD has approximately twice the sensitivity of a standard NDD. Episcopic GaAsP NDDs for Ni-E/FN1 are compatible with the 1300nm wavelength and enable deep imaging up to 1.4mm
- Sharper, brighter imaging with high NA objectives deposited with Nano Crystal Coat
- High-speed, high-precision unmixing with NDD
- Multiphoton laser beam can be automatically aligned with a single click

Configured with Ni-E

Confocal Microscope

A1+/A1R+

A1+ for high-resolution imaging, A1R+ for ultrafast and high-resolution imaging

- A1+ is equipped with a galvano scanner that enables high-resolution imaging of up to 4096 x 4096 pixels, and high-speed imaging of 10 fps (512 x 512 pixels)
- A1R+ is equipped with both a galvano scanner and a resonant scanner, allowing ultrafast imaging of up to 420 fps (512 x 32 pixels) as well as simultaneous photoactivation and imaging
- The high-sensitivity GaAsP detector enables much brighter imaging with minimal noise than conventional detectors
- Dichroic mirror with 30% increased fluorescence efficiency provides high image quality

Configured with Ti-E

True Spectral Imaging Confocal Microscope

A1si+/A1Rsi+

High-performance spectral detector supports simultaneous excitation of multiple wavelengths

- Acquisition of 32 channels (512 x 32 pixels) at 24 fps in a single scan
- Accurate, real-time spectral unmixing
- Simultaneous excitation of four lasers
- V-filtering function adjusts total intensity of up to four desired spectral ranges individually, providing flexibility to handle new fluorescence probes

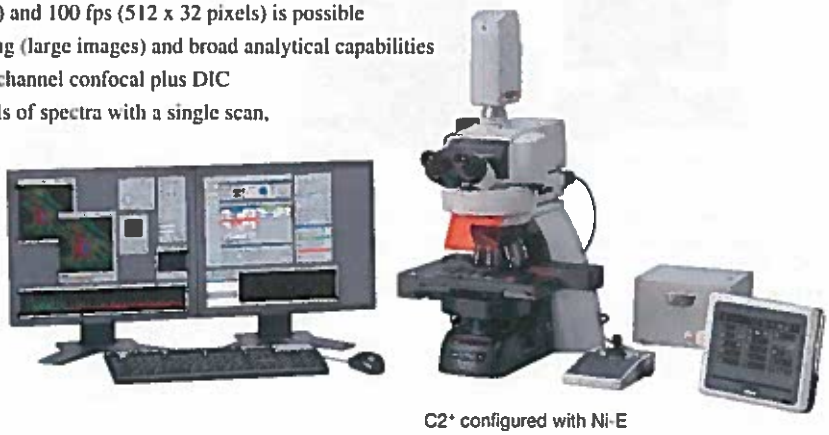
Configured with Ti-E

Confocal Microscope

C2+/C2si+

Powerful personal confocal microscope, essential for laboratories

- Highly efficient scanning head and detector provide noiseless, high contrast images
- High-speed imaging of 8 fps (512 x 512 pixels) and 100 fps (512 x 32 pixels) is possible
- With a host of functions, such as image stitching (large images) and broad analytical capabilities
- 4-channel simultaneous acquisition, such as 3-channel confocal plus DIC
- Spectral detector for C2si+ acquires 32-channels of spectra with a single scan, enabling unmixing of overlapped spectra



C2+ configured with Ni-E

Digital Cameras for Microscopes

Digital Sight Series

A wide range of digital cameras for microscopes is available, including high-definition cameras equipped with the Nikon FX-format CMOS sensor and compact camera heads with a choice of control units.

F-mount CMOS cameras

Microscope Camera DS-Ri2

- Equipped with a 16.25-megapixel CMOS sensor for digital SLR cameras that has been optimized for microscopes
- Fast acquisition of high-resolution images up to 4908 x 3264 pixels
- Accurate color reproduction of microscopy images with Nikon's proprietary image processing engine
- High frame rate of up to 45 fps (1636 x 1088 pixels) enables fast focusing
- High-sensitivity low-noise color fluorescent imaging is possible

Monochrome Microscope Camera DS-Qi2

- Equipped with a large format 16.25-megapixel monochrome CMOS sensor
- High-sensitivity imaging of weak fluorescent signals
- Cooling mechanism allows low noise imaging with high S/N ratio
- Reliable quantitative analysis with excellent linearity
- High frame rate of up to 45 fps (1636 x 1088 pixels) enables fast focusing
- Time-lapse imaging with high temporal resolution

C-mount CCD camera heads and control units

High-definition Color Camera Head DS-Fi2

- High-definition 5.0-megapixel CCD. High resolution of up to 2560 x 1920 pixels
- High frame rate of up to 21 fps
- High dynamic range and accurate color reproduction

High-definition Cooled Color Camera Head DS-Fi1c

- Cooling mechanism enables it to capture fluorescence and darkfield images clearly
- High-definition 5.0-megapixel CCD. High resolution of up to 2560 x 1920 pixels

High-speed Color Camera Head DS-Vi1

- High-frame-rate, 2.0-megapixel CCD. High-speed display at 15 fps (29 fps max.)
- Suitable for monitoring of microscopy images

PC-use Control Unit DS-U3

Configured with ECLIPSE Ni-U

- Versatile image capture, processing, measurement, analysis and data management when coupled with imaging software NIS-Elements
- High-speed image transfer for PC via IEEE 1394b connection
- Compact, space-saving design
- Allows integrated control of Nikon motorized microscopes and peripheral devices

Stand-alone Control Unit DS-L3

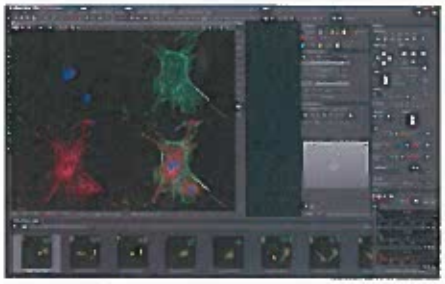
Configured with ECLIPSE Ci-L

- Built-in high-definition 8.4-in. large display monitor
- Camera can be controlled with mouse operation or touch panel operation, eliminating the necessity of a PC connection
- Various digital interfaces including USB 2.0 connection
- Pre-programmed imaging modes for different observation methods
- Allows control of motorized devices on ECLIPSE Ni-E/U and Ci-E

Imaging Software

NIS-Elements

NIS-Elements is an integrated platform of imaging software developed by Nikon to achieve comprehensive control of microscope image capture and document data management.
NIS-Elements handles multidimensional imaging tasks flawlessly with support for capture, display, peripheral device control, and data management & analysis of images (up to six-dimensional images).



Nikon offers a number of microscope software packages to control and optimize the performance of its products.

Ar NIS-Elements Advanced Research

NIS-Elements AR is optimized for advanced research applications. It features fully automated acquisition and device control through full 6D (X, Y, Z, Lambda (Wavelength), Time, Multipoint) image acquisition and analysis.

Br NIS-Elements Basic Research

NIS-Elements BR is suited for standard research applications. It features acquisition and device control through 4D (up to four dimensions can be selected from X, Y, Z, Lambda (Wavelength), Time, Multipoint) acquisition.

D NIS-Elements Documentation

NIS-Elements D supports color documentation requirements in bio-research, clinical and industrial applications, with basic measuring and reporting capabilities.

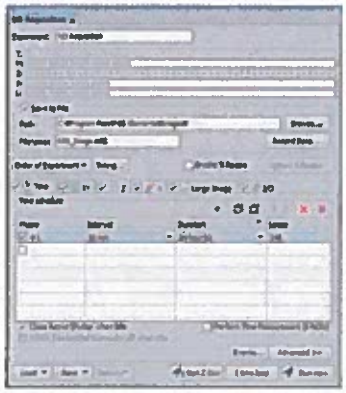
HC NIS-Elements HC (High Content Analysis)

NIS-Elements HC supports total operation of high-content analysis, from integrated control of Ti-E motorized inverted microscope and peripheral devices such as well plate loaders and CCD cameras, to image data management.

Various convenient plug-ins are available for advanced imaging and analysis capabilities.

Multidimensional Capturing

Up to 6D image acquisition combining dimensions such as X, Y, Z, time, wavelength and multipoint is easily set using the intuitive GUI.

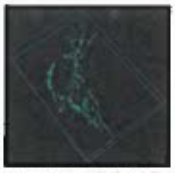


3D/2D Deconvolution

Haze and blur of the fluorescence image can be eliminated from the captured 3D image or from the 2D live preview image. (Separate plug-in for 3D and 2D)

3D deconvolution

Before deconvolution



After deconvolution

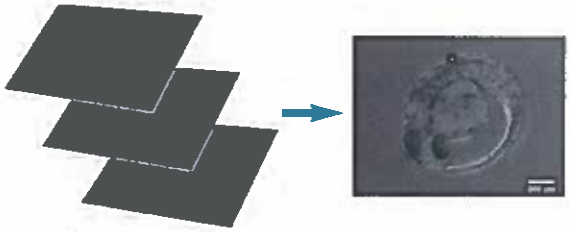
2D deconvolution

Before deconvolution

After deconvolution

Extended Depth of Focus

With the Extended Depth of Focus (EDF) plug-in, images that have been captured in a different Z-axis using a motorized stage can be used to create an all-in-focus image. Also, it is possible to create stereovision images & 3D surface images to achieve virtual 3D imaging.



All-in-focus image created from a sequence of Z-stack images

Database

NIS-Elements has a powerful image database module that supports image and meta data. Various databases & tables can easily be created and images can be saved to the database via one simple mouse-click. Filtering, sorting and multiple grouping are also available according to the database field given for each image.

CFI60 Objectives

Type	Use	Model	Immersion	NA	W.D. (mm)	Cover glass thickness	Correction ring	Spring loaded	Brightfield	Darkfield	DIC*2	Phase contrast	Polarizing	Fluorescence		TI-E PFS
														Visible light	UV	
Achromat	Brightfield (CFI)	4x		0.10	30.00	—			○				△	○		
		10x		0.25	7.00	—			○	△			△	○		
		10x DS		0.25	7.00	—			○				△	○		
		LWD 20x		0.40	3.90	0.17			○	○●			△	○		
		40x		0.65	0.65	0.17		✓	○	○●			△	○		
		LWD 40xC		0.55	2.7-1.7	0-2.0	✓		○	○●			△	○		
		60x		0.80	0.30	0.17		✓	○	●			△	○		
		100x Oil	Oil	1.25	0.23	0.17		✓	○				△	○		
		100xSH (with iris)	Oil	0.5-1.25	0.23	0.17		✓	○	○●			△	○		
	Polarizing (CFI)	P 4x		0.10	30.00	—			○				○	○		
		P 10x		0.25	7.00	—			○	△			○	○		
		LWD P 20x		0.40	3.90	0.17			○	○●			○	○		
		P 40x		0.65	0.65	0.17		✓	○	○●			○	○		
		P 100x Oil	Oil	1.25	0.23	0.17		✓	○				○	○		
	Phase contrast (CFI)	DL 10x		0.25	7.00	—			○	△		○ PH1	△	△		
		LWD DL 20x		0.40	3.90	0.17			○	○●		○ PH1	△	△		
		LWD DL 20xF		0.40	3.10	1.2			○			○ PH1	△	△		
		DL 40x		0.65	0.65	0.17		✓	○	○●		○ PH2	△	△		
		LWD DL 40x		0.55	2.7-1.7	0-2.0	✓		○	○●		○ PH2	△	△		
		DL 100x Oil	Oil	1.25	0.23	0.17		✓	○			○ PH3	△	△		
		BM 10x		0.25	7.00	0.7			○			○ PH1	△	△		
	Apodized phase contrast (CFI)	ADL 10x		0.25	6.20	1.2			○			○ PH1	△	△		
		LWD ADL 20xF		0.40	3.10	1.2			○			○ PH1	△	△		
		LWD ADL 40xF		0.55	2.10	1.2			○			○ PH1	△	△		
		LWD ADL 40xC		0.55	2.7-1.7	0-2.0	✓		○	○●		○ PH2	△	△		
	Advanced modulation contrast (CFI)	NAMC 10x		0.25	6.20	1.2			○					△		
		LWD NAMC 20xF		0.40	3.10	1.2			○					△		
		LWD NAMC 40xC		0.55	2.7-1.7	0-2.0	✓		○					△		
Plan Achromat	Brightfield (CFI Plan)	UW 1x		0.04	3.20	—			○				△	△		
		UW 2x		0.06	7.50	—			○				△	△		
		4x		0.10	30.00	—			○				△	○		
		10x		0.25	10.50	—			○	△			△	○		
		20x		0.40	1.20	0.17			○	○●			△	○		
		40x		0.65	0.56	0.17		✓	○	○●			△	○		
		50x Oil	Oil	0.90	NCG0.35	—		✓	○	●			△	○		
		100x Oil	Oil	1.25	0.20	0.17		✓	○				△	○		
		LWD IMSI 100xC		0.85	1.3-0.95	0.6-1.3	✓		○		○			○		
	Phase contrast (CFI Plan)	DL 10x		0.25	10.50	—			○	△		○ PH1	△	△		
		DL 20x		0.40	1.20	0.17			○	○●		○ PH1	△	△		
		DL 40x		0.65	0.56	0.17		✓	○	○●		○ PH2	△	△		
		DL 100x Oil	Oil	1.25	0.20	0.17		✓	○			○ PH3	△	△		
	No cover glass (CFI Plan)	NCG 40x		0.65	0.48	0		✓	○	○●			△	○		
		NCG 60x (CF objective)*1		0.85	0.35	0		✓	○	●			△	○		
		NCG 100x		0.90	0.26	0		✓	○	●			△	○		
	Super long WD (CFI L Plan EPI)	SLWD 20x		0.35	24.00	0			○	○●			△	○		
		SLWD 50x		0.45	17.00	0			○	○●			△	○		
		SLWD 100x		0.70	6.50	0			○	○●			△	○		
S Plan Fluor	Brightfield (CFI S Plan Fluor)	ELWD 20xC		0.45	8.2-6.9	0-2.0	✓		○	○●	○		○	○	○	●
		ELWD 40xC		0.60	3.6-2.8	0-2.0	✓		○	○●	○		○	○	○	●
		ELWD 60xC		0.70	2.6-1.8	0.1-1.3	✓		○	○●	○		○	○	○	
	Apodized phase contrast (CFI S Plan Fluor)	ELWD ADM 20xC		0.45	8.2-6.9	0-2.0	✓		○	○●		○ PH1		○	○	●
		ELWD ADM 40xC		0.60	3.6-2.8	0-2.0	✓		○	○●		○ PH2		○	○	●
		ELWD ADL 60xC		0.70	2.6-1.8	0.1-1.3	✓		○	○●		○ PH2		○	○	
	Advanced modulation contrast (CFI S Plan Fluor)	ELWD NAMC 20xC		0.45	7.40	0-2.0	✓		○					○		
		ELWD NAMC 40xC		0.60	3.10	0-2.0	✓		○					○		
S Fluor	Brightfield (CFI S Fluor)	4x		0.20	15.50	—			○				△	○	○ Wide	●
		10x		0.50	1.20	0.17		✓	○	○●	○		△	○	○ Wide	●
		20x		0.75	1.00	0.17		✓	○	○●	○		△	○	○ Wide	●
		40x		0.90	0.30	0.11-0.23	✓	✓	○	●	○		△	○	○ Wide	
		40x Oil	Oil	1.30	0.22	0.17		✓w/stopper	○		○		△	○	○ Wide	●
		100xSH (with iris)	Oil	0.5-1.3	0.20	0.17		✓	○	○●			△	○	○ Wide	
Universal Plan Fluor	No cover glass polarizing (CFI LU Plan Fluor EPI)	P 5x		0.15	23.50	—			○				○	○	○	
		P 10x		0.30	17.50	0			○	△			○	○	○	
		P 20x		0.45	4.50	0			○	○●			○	○	○	
		P 50x		0.80	1.00	0		✓	○	●			○	○	○	
		P 100x		0.90	1.00	0		✓	○	●			○	○	○	

*1 To use with the CFI60 optics microscope (not possible in E400), an objective conversion adapter is necessary. *2 See page 20 for compatible prisms. *3 Dedicated for FN1 (CFI75 objective)

Note 1. Model numbers
The below letters, when attached to the end of model numbers, indicate the respective features.

F: for use with 1.2mm-thick cover glass
C: with correction ring
NCG: for use without cover glass
SH: with iris
WI: water immersion type
W: water dipping type
MI: multi immersion (oil, water, glycerin) type
IMSI: compatible with IMSI only
DS: compatible with dispersion staining microscopy

Note 2. Cover glass thickness
—: can be used without cover glass
0: use without cover glass

Note 3. Darkfield microscopy
Possible with the following
△ universal condenser (dry) and darkfield ring
○ above and darkfield condenser (dry)
● darkfield condenser (oil)

Note 4. Phase rings are classified by objective NA
PHL and PH1 - 3 are condenser cassette modules. EXT PH3 and EXT PH4 indicate external phase contrast modules for T.

Note 5. Fluorescence microscopy (UV)
△: possible with visible light that has a longer wavelength than the excitation light used for DAPI
○: suitable
◎: recommended for best results
Wide: high transmittance with an ultraviolet wavelength range of up to 340nm

Type	Use	Model	Immersion	NA	W.D. (mm)	Cover glass thickness	Correction ring	Spring loaded	Brightfield	Darkfield	DIC*2	Phase contrast	Polarizing	Fluorescence			TI-E PFS
														Visible light	UV	NIR	
Plan Fluor	Brightfield (CFI Plan Fluor)	4x		0.13	17.10	—			○				△	○	○		
		10x		0.30	16.00	0.17			○	△	○			○	○		●
		20x		0.50	2.10	0.17				○●	○		○		○		
		20xA MI	Oil, water glycerin,	0.75	0.51-0.35 0.51-0.34 0.49-0.33	0-0.17	✓	✓	○	○●	○		○	○	○		
		40x		0.75	0.66	0.17		✓	○	○●	○		○	○	○		●
		40x DS2		0.75	0.66	0.17		✓	○					○	○		
		40x Oil	Oil	1.30	0.20	0.17		✓w/stopper	○		○	EXT PH3-40x	○	○	○		●
		60x		0.85	0.40-0.31	0.11-0.23	✓	✓	○	●	○		○	○	○		
		60xSH (with iris)	Oil	0.50-1.25	0.22	0.17		✓	○	○●	○		○	○	○		
		100x Oil	Oil	1.30	0.16	0.17		✓w/stopper	○		○		○	○	○		●
		100xSH (with iris)	Oil	0.50-1.30	0.20	0.17		✓		○●	○		○	○	○		
	Phase contrast (CFI Plan Fluor)	DL 4x		0.13	16.40	1.2			○			○ PHL		○			
		DLL 10x		0.30	16.00	0.17			○	△		○ PH1		○	○		●
		DL 10x		0.30	15.20	1.2			○	△		○ PH1		○	○		
		DLL 20x		0.50	2.10	0.17			○	○●		○ PH1		○	○		
		DLL 40x		0.75	0.66	0.17		✓	○	○●		○ PH2		○	○		●
		DM 40xDS		0.75	0.66	0.17		✓	○	○●		○ PH2		○	○		
		DLL 100x Oil	Oil	1.30	0.16	0.17		✓w/stopper	○			○ PH3			○		●
		BM 40x AS		0.75	0.66	0.17		✓	○			PH2		○	○		
	Apochromat phase contrast (CFI Plan Fluor)	ADH 100x Oil	Oil	1.30	0.16	0.17		✓w/stopper	○			○ PH3		○	○		●
Plan Apochromat	Brightfield (CFI Plan Apo)	λ 2x		0.10	8.50	—			○				○	○	△		
		λ 4x		0.20	20.00	—			○				○	○	△	○	●
		λ 10x		0.45	4.00	0.17			○	△	○		○	○	△	○	●
		λ 20x		0.75	1.00	0.17		✓	○	○●	○		○	○	△	○	●
		VC 20x		0.75	1.00	0.17		✓	○	○●	○		○	○	△		●
		λ 40x		0.95	0.21 (0.25-0.16)	0.11-0.23	✓	✓	○	●	○		○	○	△	○	●
		λ 60x		0.95	0.15 (0.21-0.11)	0.11-0.23	✓	✓	○	●			○	○	△	○	
		λ 60x Oil	Oil	1.40	0.13	0.17		✓	○		○	EXT PH3-60x	○	○	△	○	●
		VC 60xA WI	Water	1.20	0.31-0.28	0.15-0.18	✓	✓	○	●	○	EXT PH3-60x		○			●
		IR 60xWI	Water	1.27	0.17 (0.18-0.16)	0.15-0.19	✓	✓	○		○	EXT PH3-60x	○	○	△	○	●
		λ 100x Oil	Oil	1.45	0.13	0.17		✓	○		○	EXT PH3-100x	○	○	△		●
		VC 100x Oil	Oil	1.40	0.13	0.17		✓	○		○	EXT PH3-100x	○	○	△		●
		NCG 100x Oil	Oil	1.40	0.16	0		✓	○				○	○	△		
	SR (CFI SR Plan Apo)	IR 60xWI	Water	1.27	0.17 (0.18-0.16)	0.15-0.19	✓	✓	○		○	EXT PH3-60x	○	○	△	○	●
	Phase contrast (CFI Plan Apo)	λ DM 20x		0.75	1.00	0.17		✓	○	○●		○PH2			△	○	●
		λ DM 40x		0.95	0.21 (0.25-0.16)	0.11-0.23	✓	✓		●		○PH2		○	△	○	●
		λ DM 60x		0.95	0.15 (0.21-0.11)	0.11-0.23	✓	✓	○	●		○PH2		○	△	○	
		λ DM 60x Oil	Oil	1.40	0.13	0.17		✓	○			○PH3		○	△	○	●
		λ DM 100x Oil	Oil	1.45	0.13	0.17		✓	○			○PH3		○	△	○	●
Apochromat	Confocal (CFI Apo)	40xWI λS	Water	1.25	0.18	0.15-0.19		✓	○		○	EXT PH3-40x	○	○	○		●
		LWD 40xWI λS	Water	1.15	0.60	0.15-0.19	✓	✓	○	●	○	EXT PH3-40x	○	○	○		●
		60x Oil λS	Oil	1.40	0.14	0.17	✓	✓	○		○	EXT PH3-60x	○	○	○		●
	Evanescent (CFI Apo)	TIRF 60x Oil	Oil	1.49	0.12	0.13-0.19 (23℃) 0.15-0.21(37℃)	✓		○		○	EXT PH4-60x	○	○	△		●
		TIRF 100x Oil	Oil	1.49	0.12	0.13-0.19 (23℃) 0.14-0.20(37℃)	✓		○			EXT PH4-100x	○	○	△		●
	SR (CFI SR Apo)	TIRF 100x Oil	Oil	1.49	0.12	0.13-0.19 (23℃) 0.14-0.20 (37℃)	✓		○			EXT PH4-100x	○	○	△		●

Type	Use	Model	Immersion	NA	W.D. (mm)	Cover glass thickness	Correction ring	Spring loaded	Brightfield	Darkfield	DIC*2	Phase contrast	Polarizing	Fluorescence		Near-infrared DIC
														Visible light	UV	
Water Dipping	Confocal (CFI Apo)	25xW MP	Water	1.10	2.00	0	✓		○	●	○		○	○	○	
	Brightfield (CFI Plan Fluor)	10xW	Water	0.30	3.50	0			○	△	○		○	○	○	
	Brightfield (CFI Fluor)	20xW	Water	0.50	2.00	0			○	○●			○	○		
		40xW	Water	0.80	2.00	0			○	●	○		○	○	○ Wide	
		60xW	Water	1.00	2.00	0			○	●	○		○	○	○	
	Brightfield (CFI Apo)	40xW NIR	Water	0.80	3.50	0			○	●	○		○	○	△	
		60xW NIR	Water	1.00	2.80	0			○	●	○		○	○		
	Brightfield (CFI Plan)	100xW	Water	1.10	2.50	0	✓		○	●	○		○	○		
	Phase contrast (CFI Fluor)	DLL 40xW	Water	0.80	2.00	0			○	●		○ PH2		○	○	
	Brightfield (CFI75)	LWD 16xW*3	Water	0.80	3.00	0			○	●	○		○		○	

Note 6.
Brightfield/DIC/Fluorescence (visible light) microscopy
△ possible but not recommended
suitable
recommended for best results

Note 7 Polarizing
△ possible but not recommended
suitable
retardation measurement is possible with a polarizing microscope

Note 8. T PFS
● : compatible with PFS

Combinations of DIC Prisms and Objectives

For Ti series inverted microscopes

		System Condenser LWD Dry, Motorized System Condenser LWD Dry						HNA Condenser Lens Dry				HNA Condenser Lens Oil			
		Standard		High Contrast		High Resolution		Standard		High Resolution		Standard		High Resolution	
		Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider
10x	Plan Fluor 10x S Fluor 10x Plan Apo λ 10x	LWD N1 Dry	10x	—				—				—			
20x	Plan Fluor 20x S Fluor 20x Plan Fluor 20xA MI Plan Apo λ 20x Plan Apo VC 20x	LWD N2 Dry	20x	LWD N1 Dry	20x-C			HNA N2 Dry	20x			HNA N2 Oil	20x		
	S Plan Fluor ELWD 20xC	LWD N1 Dry	20x II	—				—				—			
40x	Plan Fluor 40x S Fluor 40x Plan Apo λ 40x Apo LWD 40xWI λS	LWD N2 Dry	40x I	LWD N1 Dry	40x I-C			HNA N2 Dry	40x I			HNA N2 Oil	40x I		
	Plan Fluor 40x Oil S Fluor 40x Oil Apo 40xWI λS		40x II						40x II				40x II		
	S Plan Fluor ELWD 40xC	LWD N1 Dry	40x IV					—				—			
60x	Plan Apo λ 60x Apo TIRF 60x Oil	LWD N2 Dry	60x I			LWD NR Dry	60x I-R	HNA N2 Dry	60x I	HNA NR Dry	60x I-R	HNA N2 Oil	60x I	HNA NR Oil	60x I-R
	Plan Fluor 60x Oil Plan Fluor 60x Plan Apo λ 60x Oil Apo 60xH λS		60x II				60x II-R		60x II		60x II R		60x II		60x II-R
	Plan Apo VC 60xA WI Plan Apo IR 60xWI SR Plan Apo IR 60xWI		60x IV				60x IV-R		60x IV		60x IV-R		60x IV		60x IV-R
	S Plan Fluor ELWD 60xC	LWD N1 Dry	60x III			—		—		—		—		—	
100x	Plan Apo λ 100x Oil Plan Apo VC 100x Oil Apo TIRF 100x Oil SR Apo TIRF 100x Oil	LWD N2 Dry	100x I			LWD NR Dry	100x I-R	HNA N2 Dry	100x I	HNA NR Dry	100x I-R	HNA N2 Oil	100x I	HNA NR Oil	100x I-R
	Plan Fluor 100x Oil Plan Fluor 100x Oil Iris		100x II				100x II-R		100x II		100x II-R		100x II		100x II-R
	Plan LWD IMSI 100xC		100x III			—		—		—		—		—	

For Ni-E (focusing stage)/Ni-U upright microscopes

		Universal Condenser Dry/Motorized Universal Condenser Dry						DIC Condenser Oil			
		Standard		High Contrast		High Resolution		Standard		High Resolution	
		Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider
10x	Plan Fluor 10x S Fluor 10x Plan Apo λ 10x	N1 Dry	10x	—				—			
20x	Plan Fluor 20x Plan Fluor 20xA MI S Fluor 20x Plan Apo λ 20x Plan Apo VC 20x	N2 Dry	20x	N1 Dry	20x-C			N2 Oil	20x		
	S Plan Fluor ELWD 20xC	N1 Dry	20x II	—				—			
40x	Plan Fluor 40x S Fluor 40x Plan Apo λ 40x Apo LWD 40xWI λS	N2 Dry	40x I	N1 Dry	40x I-C			N2 Oil	40x I		
	Plan Fluor 40x Oil S Fluor 40x Oil Apo 40xWI λS		40x II						40x II		
	S Plan Fluor ELWD 40xC	N1 Dry	40x IV					—			
60x	Plan Apo λ 60x Apo TIRF 60x Oil	N2 Dry	60x I			NR Dry	60x I-R	N2 Oil	60x I	NR Oil	60x I-R
	Plan Fluor 60x Oil Plan Fluor 60x Plan Apo λ 60x Oil Apo 60xH λS		60x II				60x II-R		60x II		60x II-R
	S Plan Fluor ELWD 60xC	N1 Dry	60x III			—		—		—	
100x	Plan Apo λ 100x Oil Plan Apo VC 100x Oil Plan Apo 100x NCG Oil Apo TIRF 100x Oil	N2 Dry	100x I			NR Dry	100x I-R	N2 Oil	100x I	NR Oil	100x I-R
	Plan Fluor 100x Oil Plan Fluor 100x Oil Iris		100x II				100x II-R		100x II		100x II-R

For Ni-E (focusing nosepiece)/FN1 fixed stage microscopes

		FN-C LWD Condenser	
		Condenser Module	DIC Slider
10x	Plan Fluor 10xW	N1 Dry	10x
16x	LWD 16xW (CF175)	N2 Dry	16x I
20x	Fluor 20xW		20x
25x	Apo 25xW MP		25x I
40x	Apo 40xW NIR Fluor 40xW		40x III
60x	Apo 60xW NIR Fluor 60xW		60x I
100x	Plan 100xW		100x-II

Epi-fluorescence Filter Cubes

Filter Cube Characteristics

	Filter Cubes	Wavelengths	Characteristics	i series, Ti series	E series, TS100
U V	UV-1A	EX 365/10 DM 400 BA 400	•Narrow band pass—only 365nm (i line) of Mercury spectrum used •Narrow band pass minimizes auto-fluorescence and photo-bleaching	✓	✓
	UV-2A	EX 330-380 DM 400 BA 420	•Standard filter block for UV	✓	✓
	UV-2B	EX 330-380 DM 400 BA 435	•Darker background than UV-2A	✓	✓
	UV-2E/C (DAPI)	EX 340-380 DM 400 BA 435-485	•For DAPI, cutting off FITC (green) and TRITC (red) •Soft-coated type for high signal/noise •Band-Pass Barrier Filter used to cut off green and red	✓	✓
V	V-2A	EX 380-420 DM 430 BA 450	•Standard filter block for V	✓	✓
B V	BV-1A	EX 435/10 EM 455 BA 470	•Narrow band pass—only 435nm (g line) of Mercury spectrum used •Narrow band pass minimizes auto-fluorescence and photo-bleaching	✓	
	BV-2A	EX 400-440 DM 455 BA 470	•Standard filter block for BV	✓	✓
B	B-1A	EX 470-490 DM 505 BA 520	•Narrower excitation range than B-2A •FITC+Counter-stain (TRITC, PI)	✓	
	B-1E	EX 470-490 DM 505 BA 520-560	•For FITC (green), cutting off Rhodamine red •Band-Pass Barrier Filter used to cut off red	✓	
	B-2A	EX 450-490 DM 505 BA 520	•Standard filter block for B •For FITC + Counter-stain (TRITC, PI)	✓	✓
	B-2E	EX 450-490 DM 505 BA 520-560	•Similar to FITC •For FITC (green), cutting off Rhodamine red •Band-Pass Barrier Filter used to cut off red		✓
	B-2E/C (FITC)	EX 465-495 DM 505 BA 515-555	•Soft coated type for high signal/noise •For FITC (green), cutting off Rhodamine red •Band-pass Barrier Filter used to cut off red	✓	✓
	B-3A	EX 420-490 DM 505 BA 520	•Wide band pass—recommended for halogen illumination only	✓	✓
G	G-1B	EX 546/10 DM 575 BA 590	•Narrow band pass—only 546nm (e line) of Mercury spectrum used •Narrow band pass minimizes auto-fluorescence and photo-bleaching	✓	✓
	G-2A	EX 510-560 DM 575 BA 590	•Standard filter block for G	✓	✓
	G-2B	EX 510-560 DM 575 BA 610	•610nm barrier provides darker background and deep red emission	✓	
	G-2E/C (TRITC)	EX 540/25 DM 565 BA 605/55	•For TRITC (Rhodamine) •Soft coated type for high signal/noise •Band-Pass Barrier Filter used to cut off reds above 643nm	✓	✓
Y	Y-2E/C (Texas Red)	EX 540-580 DM 595 BA 600-660	•For Texas Red® •Soft coated type for high signal/noise •Band-Pass Barrier Filter used to cut off reds above 660nm	✓	✓

Filter Cubes for Fluorescent Protein

Filter Cubes	Wavelengths	i series, Ti series	E series, TS100
BFP	EX380/30, DM420, BA460/50	✓	
CFP	EX436/20, DM455, BA480/40	✓	
CFP HQ*	EX420-445, DM450, BA460-510	✓	
GFP-L	EX480/40, DM505, BA510	✓	✓
GFP-B	EX480/40, DM505, BA535/50	✓	✓
GFP HQ*	EX455-485, DM495, BA500-545	✓	
YFP	EX500/20, DM515, BA535/30	✓	
YFP HQ*	EX490-500, DM510, BA520-560	✓	

*Each filter/mirror has a very sharp rising edge at the corresponding wavelength, minimizing signal crossover.

Other Filter Cubes

Filter Cubes	Wavelengths	i series, Ti series	E series, TS100
Cy3	EX535/50, DM565, BA610/75	✓	
Cy5	EX620/60, DM660, BA700/75	✓	
Cy7	EX710/75, DM750, BA810/90	✓	

Multi-Band Filter Cubes

Filter Cubes	Abbreviations	Applications	i series, Ti series	E series, TS100
Dual	F-R	FITC, Rhodamine	✓	✓
	F-T	FITC, Texas Red	✓	✓
	D-F	DAPI, FITC	✓	✓
Triple	D-F-R	DAPI, FITC, Rhodamine	✓	✓
	D-F-T	DAPI, FITC, Texas Red	✓	✓

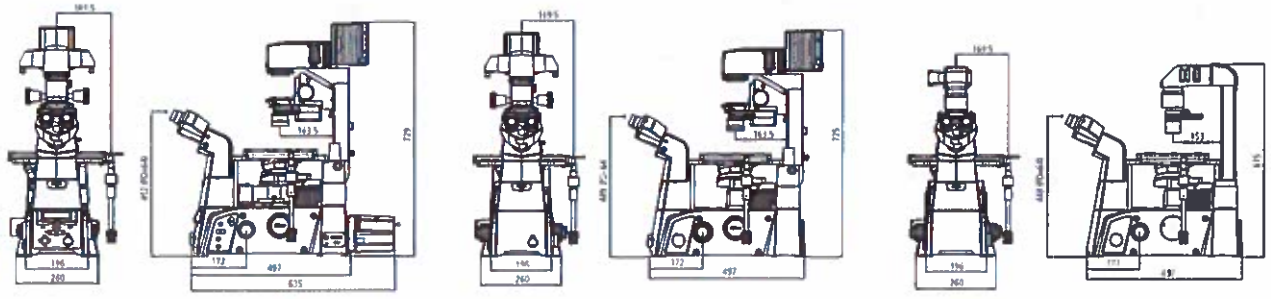
Filter Cubes for SMZ25/18

Filters	Wavelengths
DAPI	EX395/25, DM425, BA460/50
CFP	EX436/20, DM455, BA480/40
GFP-B	EX460-500, DM505, BA510-560
GFP-L	EX460-500, DM505, BA510
YFP	EX500/20, DM515, BA535/30
RFP	EX530-560, DM570, BA590
mCherry	EX560/40, DM585, BA630/75

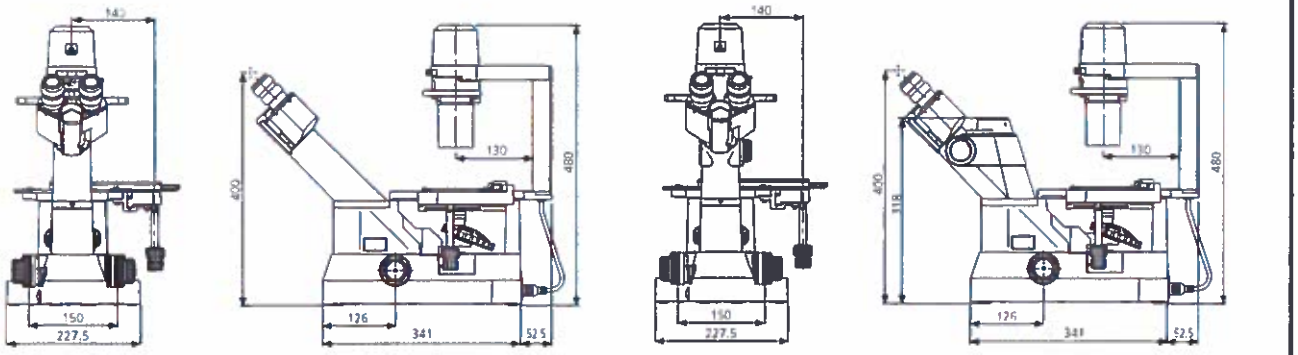
Note:
The lineup is constantly updated. For the latest information, please contact your local Nikon representative. The excitation filters or barrier filters in each filter cube are interchangeable. For custom setup, blank cubes without filters are also available. Please consult with your local Nikon distributor for a complete list of filters locally available or inquire about special custom filter combinations.

Dimensional Diagrams

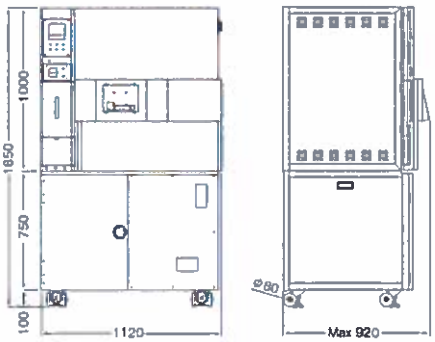
Ti-E **Ti-U** **Ti-S**



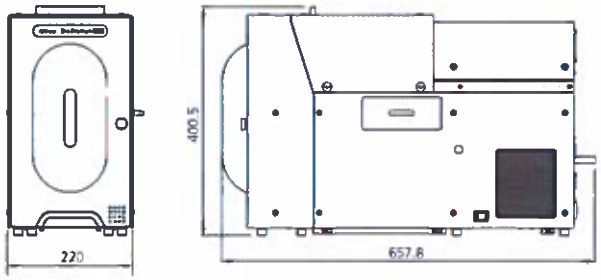
TS100 **TS100-F**



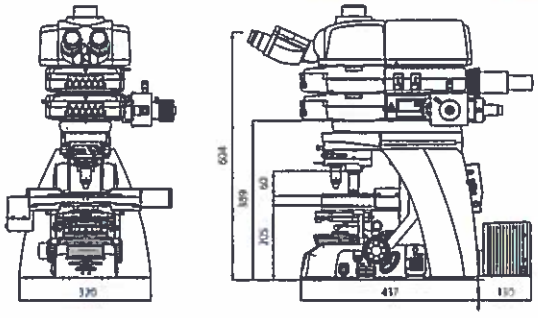
BioStation CT



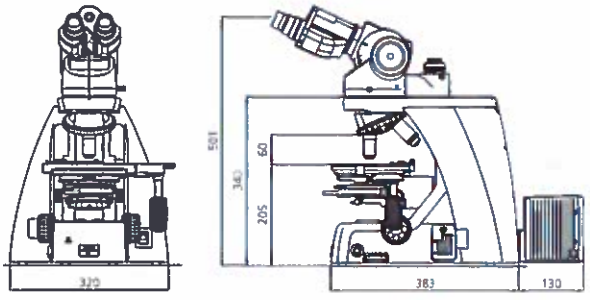
BioStation IM-Q



Ni-E (focusing nosepiece) Configured with epi-fluorescence attachment, photoactivation unit and motorized quadrocular tilting tube

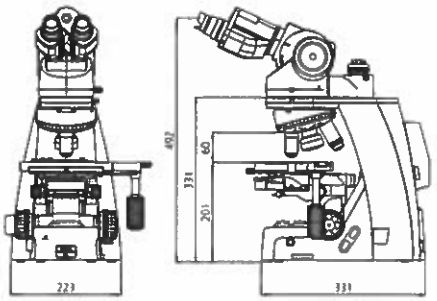


Ni-U Configured with ergonomic binocular tube

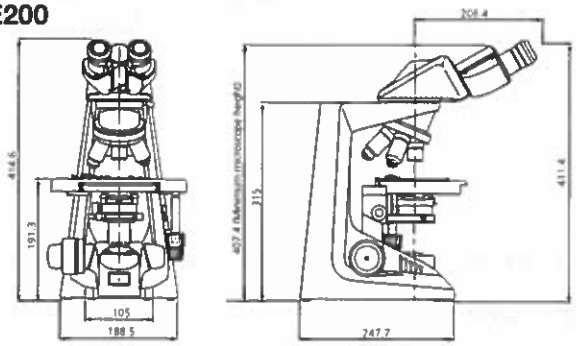


Eyepoint height: when pupillary distance is 64mm Unit: mm

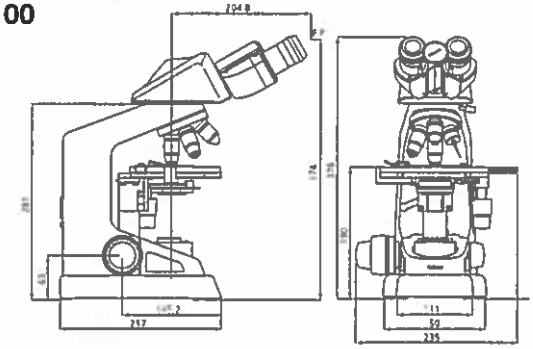
Ci-E/L/S (Illustration is of Ci-E) Configured with ergonomic binocular tube



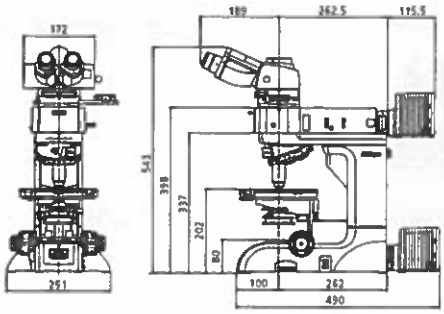
E200



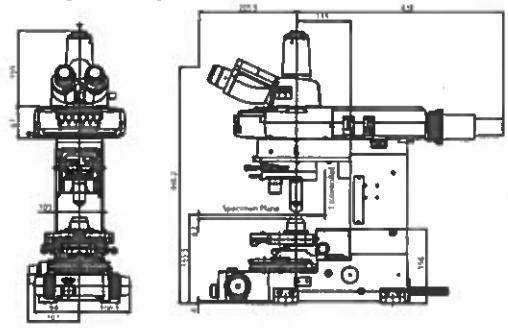
E100



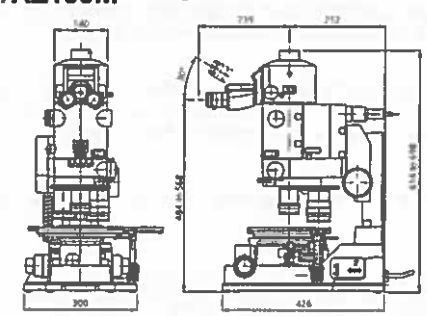
LV100N POL Configured with Universal Epi-illuminator



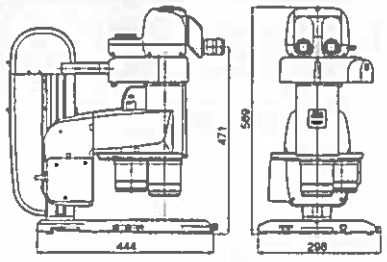
FN1 Configured with epi-fluorescence attachment



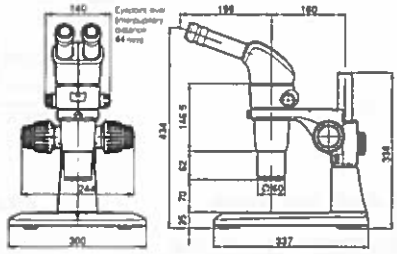
AZ100/AZ100M Configured with DIC attachment



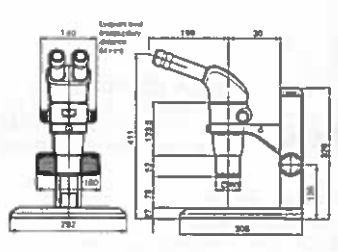
SMZ25/SMZ18 (Illustration is of SMZ25) Configured with motorized epi-fluorescence attachment and LED DIA base



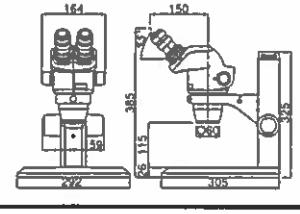
SMZ1270/SMZ1270i Configured with binocular tube and P-PS32 plain stand



SMZ800N Configured with binocular tube and C-PSN plain stand

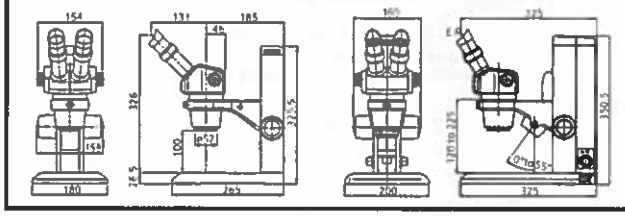


SMZ745T Configured with C-PS plain stand



SMZ445 Configured with C-PSC plain stand

SMZ460 Configured with C-LEDS hybrid LED stand



Unit: mm

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Printed in Japan (1412-04)T

Code No. 2CE-MPIH-2

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