

89 NORTH
Illuminate Today. Transform Tomorrow™

OVERVIEW OF **PRODUCT & SERVICES**

Leverage our expertise in microscopy manufacturing, wealth of application experience, and esteemed European manufacturer partnerships to empower your scientific pursuits.

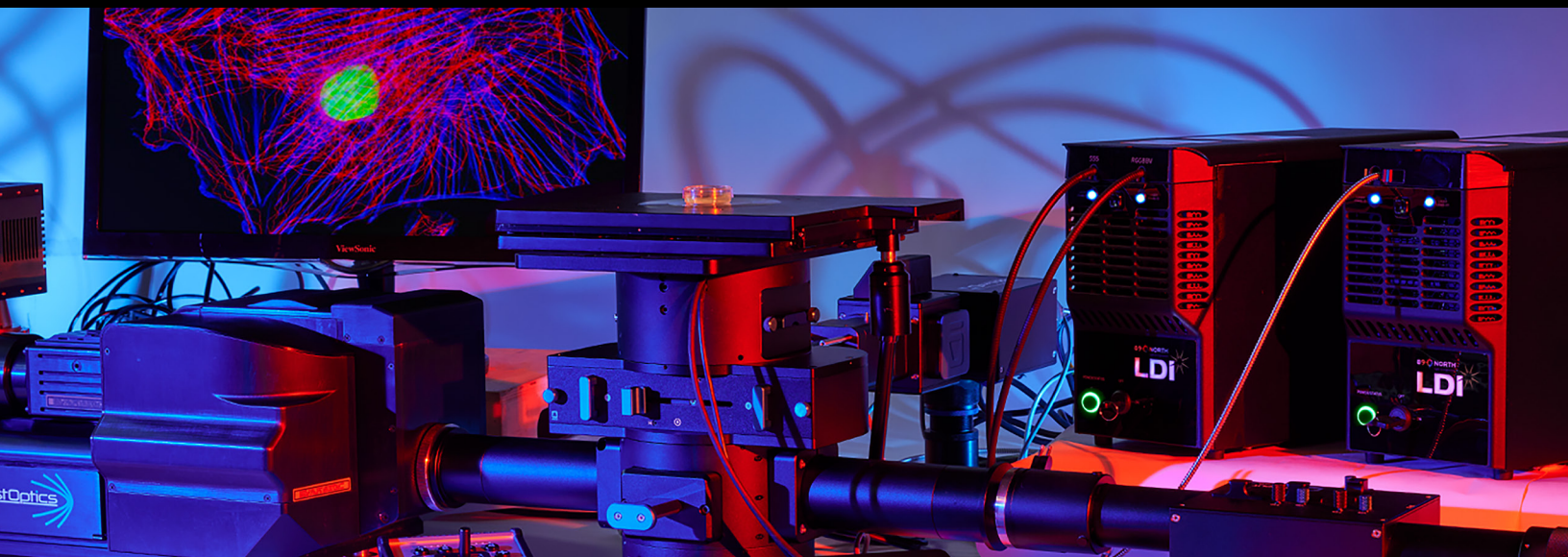


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OUR HONORS & AWARDS

We've been honored within our industry, within our state and for our social community engagement.





WE'RE SOLUTIONS ARCHITECTS FOR OPTICAL ENGINEERING CHALLENGES

We're award-winning illumination solutions innovators...

backed by the world's leading developer of scientific optical filters...

leveraging the expertise we've built from working with worldwide microscopy solutions providers...

to develop advanced OEM manufacturing solutions for the advanced sciences & beyond.



SUPERIOR ILLUMINATION OUR LDI FAMILY OF PRODUCTS



UCSF

University of California
San Francisco



Stanford
University



National Institute
of Mental Health

Penn



RUTGERS

Yale

NC STATE
UNIVERSITY



Cornell University

hhmi janelia
Research Campus



UNIVERSITY OF
OXFORD

MIT

S Syracuse University



HARVARD
UNIVERSITY



BROWN

Washington
University in St. Louis

MICROSCOPY LIGHT ENGINE PRODUCT LINE UP

The LDI is a multiline, solid-state laser illuminator offering up to 1000mW of output power via a multimode fiber at the price of a low power LED light engine. With feedback-controlled output stability and up to a 100:1 linear dynamic range, the LDI is the ideal light source for a wide range of applications including spinning disk confocal microscopy, structured illumination microscopy, FRAP, photoactivation / photoconversion, and PALM/STORM.



240+

OVER 240 WORLDWIDE SCIENTIFIC CITATIONS

Our light engine products have had the honor of being cited in over 240 worldwide scientific papers. Our products support important research, including the efforts of Nobel Prize winning scientists.

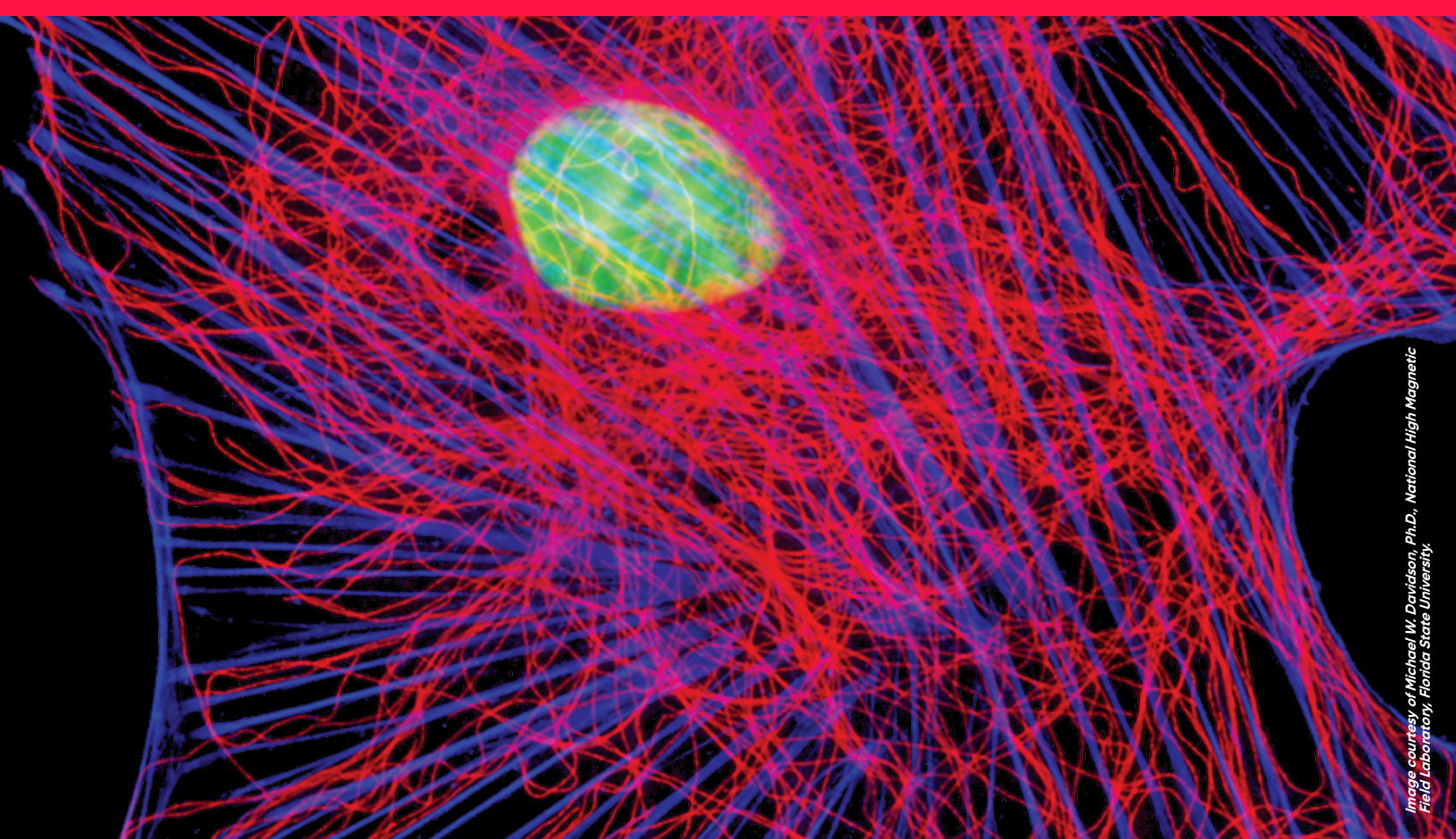


Image courtesy of Michael W. Davidson, Ph.D., National High Magnetic Field Laboratory, Florida State University.

HIGH-PERFORMANCE LASER DIODE ILLUMINATION

A SPECTRUM OF CHOICES

The LDI is a multiline, solid-state laser illuminator offering up to 1000mW of output power per laser line via a multimode fiber at the price of a low power LED light engine. With feedback controlled output stability and up to a 100:1 linear dynamic range, the LDI is the ideal light source for quantitative imaging, ratiometric imaging, and more repeatable optogenetics experiments. There is no user alignment, and it is easy to use and maintain.

APPLICATIONS

- Spinning Disk Confocal Microscopy
- Super Resolution SIM Imaging
- PALM/STORM
- Optogenetics with DLPs or Multiport Illuminator
- Photoactivation/Photoconversion/FRAP
- FRAP with SLM or Multiport Illuminator
- Spatial Biology

LDI FAMILY PRODUCT LINE OVERVIEW

We now offer a full range of LDI products, including laser lines 488, 577 and into the NIR. Other laser lines are available upon request.

Product Line Up	CHOOSE BETWEEN				CHOOSE BETWEEN					
	405nm	445nm	470nm	488nm	520nm	528nm	555nm	577nm	640nm	730nm
LDI-4 Series	300		1000	1000			1000	700	400	
LDI-5 Series	450		1000	1000			1000	700	900	850
LDI-7 Series	300	1000	1000	1000	500	500	1000	700	400	
LDI-NIR	450	1000	1000	1000	500		1000	700	900	850
LDI-PRIME*	150			800			600		300	

Units shown in the interior of the table above are milliwatts (mW)
 *PRIME unit is a single 400µm core fiber optic output

20+ models available today. Small fiber options available.
 Option to combine multiple LDIs into single output.

Table above is from WC#01-101661 Rev A

OVER 20 CUSTOMIZABLE CONFIGURATIONS AVAILABLE

Our LDI line up can be custom configured to your needs. Contact us with your specific requirements.



CONTACT US

Note that in addition to what's shown above, we also work with institutions to make custom solutions. Have questions on what's right for you?

Email: slin@89north.com

Phone: **+1.802.881.0302**



SAMPLE PRODUCTS FROM OUR LDI PRODUCT LINE UP



OUR LDI LIGHT ENGINE LINE-UP

Our products support important research, including the efforts of Nobel Prize winning scientists.

A TRUSTED RESOURCE

240+

WORLDWIDE SCIENTIFIC CITATIONS

LEARN MORE

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LDI-NIR LASER DIODE ILLUMINATOR

Our economical solution focused on research requiring Near Infrared functionality.

KEY FEATURES

- ✓ High output power
- ✓ Feedback controlled optical stability
- ✓ Up to 100:1 linear dynamic range
- ✓ Up to 7 laser lines across the spectrum
- ✓ No user alignment
- ✓ TTL and Analog control

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LDI-PRIME LASER DIODE ILLUMINATOR

Our lead product focuses on researching requiring the use of single fiber output.

KEY FEATURES

- ✓ High output power
- ✓ Feedback controlled optical stability
- ✓ Up to 100:1 linear dynamic range
- ✓ 4 laser lines across the spectrum
- ✓ No user alignment
- ✓ TTL and Analog control

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LDI-4 SERIES LASER DIODE ILLUMINATOR

Our lead product in an economical form factor featuring 4 laser lines.

KEY FEATURES

- ✓ High output power
- ✓ Feedback controlled optical stability
- ✓ Up to 100:1 linear dynamic range
- ✓ 4 laser lines across the spectrum
- ✓ No user alignment
- ✓ TTL and Analog control

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LDI-5 SERIES LASER DIODE ILLUMINATOR

Our lead product features 5 laser lines with 488nm and 577nm laser technology.

KEY FEATURES

- ✓ High output power
- ✓ Feedback controlled optical stability
- ✓ Up to 100:1 linear dynamic range
- ✓ 5 laser lines across the spectrum
- ✓ No user alignment
- ✓ TTL and Analog control

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LDI-7 SERIES LASER DIODE ILLUMINATOR

Our lead product in a complete form factor featuring 7 laser lines.

KEY FEATURES

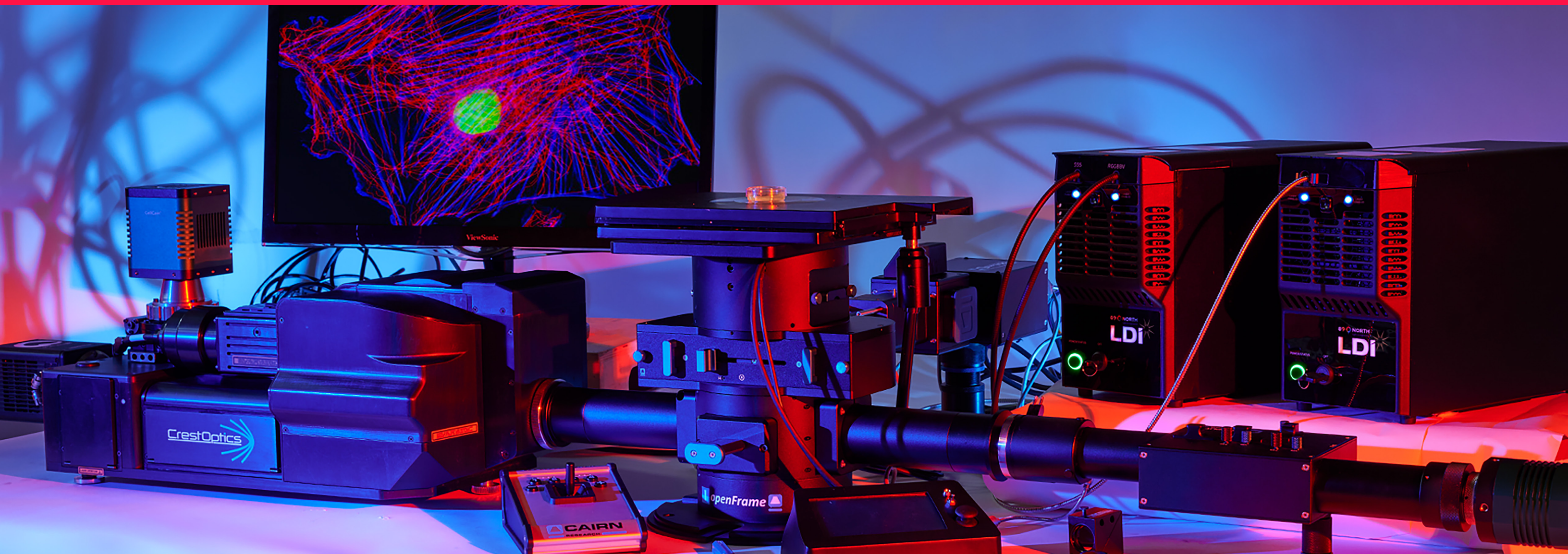
- ✓ High output power
- ✓ Feedback controlled optical stability
- ✓ Up to 100:1 linear dynamic range
- ✓ Up to 7 laser lines across the spectrum
- ✓ No user alignment
- ✓ TTL and Analog control

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MAKING YOUR SCIENCE SING SYSTEM INTEGRATION SERVICES



ORCHESTRATING THE PERFORMANCE OF YOUR MICROSCOPY SYSTEM

A modern imaging system is a symphony of moving parts and technologies. Whether it's an optimized turnkey system or a bespoke microscope pushing science to the optical limit, system integration services from 89 North can help align the hardware, software, and processes of your microscopy system for seamless and efficient operation.





OVERVIEW OF SERVICES

These are just some of the many services that 89 North can offer:

- Installation and training
- On-site technical support
- Remote software setup
- Optical alignment
- Laser safety assistance
- Custom optical filter design
- System automation

CLIENTS SERVED

Our customer base includes some of the most respected institutions in imaging and research.



BRINGING IT ALL TOGETHER FULL SYSTEM INTEGRATION

ORCHESTRATING THE ENTIRE SYSTEM

89 North can provide products, software, and services to build cutting edge microscopy systems that are cost efficient and easy to use. With robust system integration capabilities, these are just some of the techniques that 89 North can help you unlock with your existing microscope, or a complete new package:

- Spinning Disk Confocal Microscopy
- Super Resolution SIM Imaging
- Stochastic Super-Resolution (PALM/STORM)
- Optogenetics
- Photoactivation/Photoconversion/FRAP
- Single Molecule Imaging
- Spatial Biology

CONTACT US

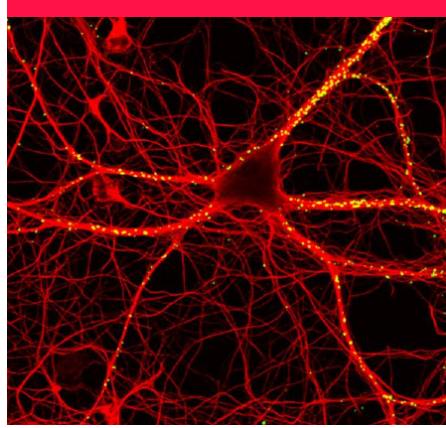
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Email: mglidewell@89north.com

Phone: **+1.802.881.0302**



APPLICATIONS & TECHNIQUES FOR WHICH WE PROVIDE
SYSTEM INTEGRATION SERVICES



CONFOCAL

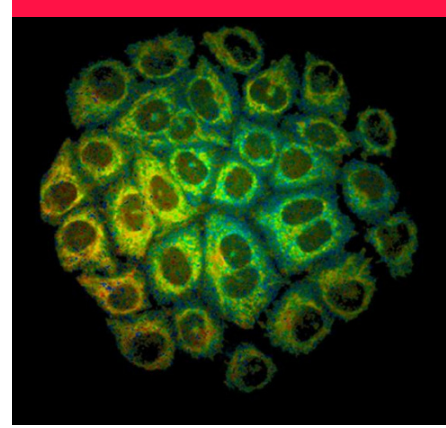
High speed, high sensitivity, and high value imaging systems.

WHAT WE PROVIDE

- ✓ The highest speed spinning disks available
- ✓ Multiple pinhole sizes and patterns
- ✓ Laser and filter customization
- ✓ Very large field-of-view (25mm)

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PHOTOMANIPULATION

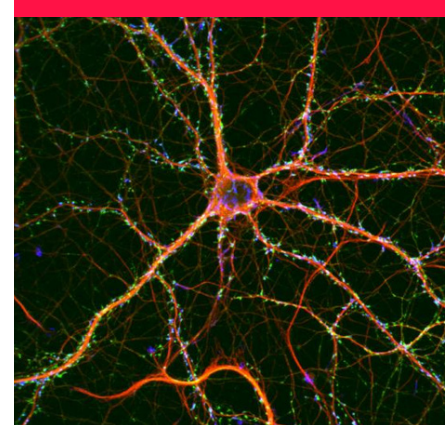
Targeting illumination for FRAP, photo-conversion, optogenetics, ablation, DNA damage, targeted thermal control, and more.

WHAT WE PROVIDE

- ✓ Visible, UV, and IR light wavelengths
- ✓ CW or pulsed lasers
- ✓ High speed control
- ✓ Experiment synchronization with virtually any imaging system

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SIMULTANEOUS IMAGING

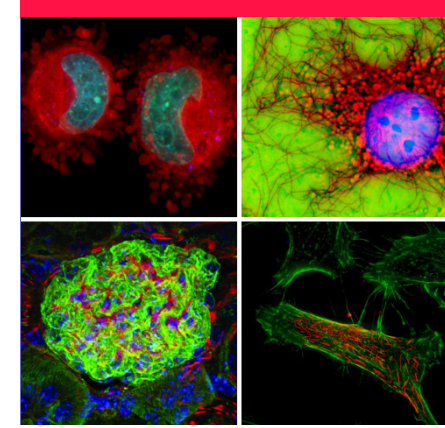
Synchronous imaging of multiple wavelengths, polarization, or z-depth channels.

WHAT WE PROVIDE

- ✓ Single camera splitters
- ✓ Multi-camera systems
- ✓ Large field-of-view (over 25mm)
- ✓ Filter assistance

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CELLULAR BIOLOGY

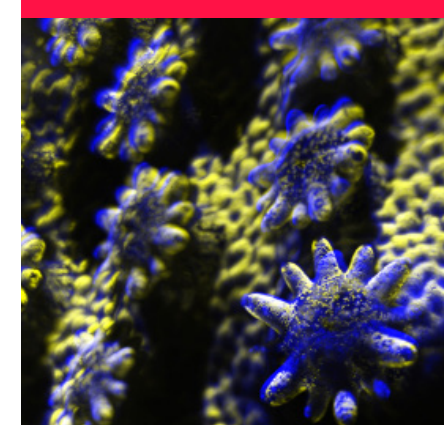
Solutions to study the fundamental units of life, cells, and their intricate processes that underlie all living organisms.

WHAT WE PROVIDE

- ✓ Custom multi-dimensional systems
- ✓ Low photo-toxicity solutions
- ✓ High speed volumetric imaging
- ✓ Visualization in deep and difficult samples

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NEUROSCIENCE

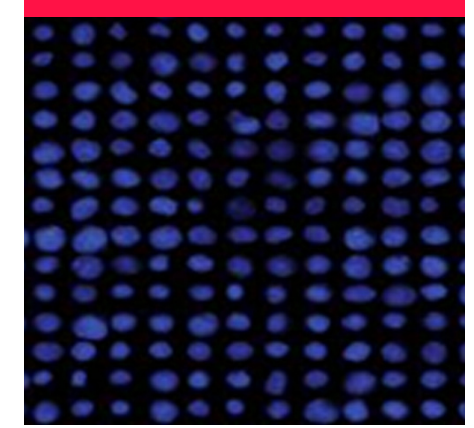
Imaging solutions optimized for the complex structure and signaling of the nervous system and cells.

WHAT WE PROVIDE

- ✓ High speed, high resolution microscopy
- ✓ Calcium indication imaging
- ✓ Low light level solutions
- ✓ Multidimensional image reconstruction

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SINGLE MOLECULE FISH (SMFISH)

High power, stability, and simultaneous excitation, provides the fastest data acquisition across large samples.

WHAT WE PROVIDE

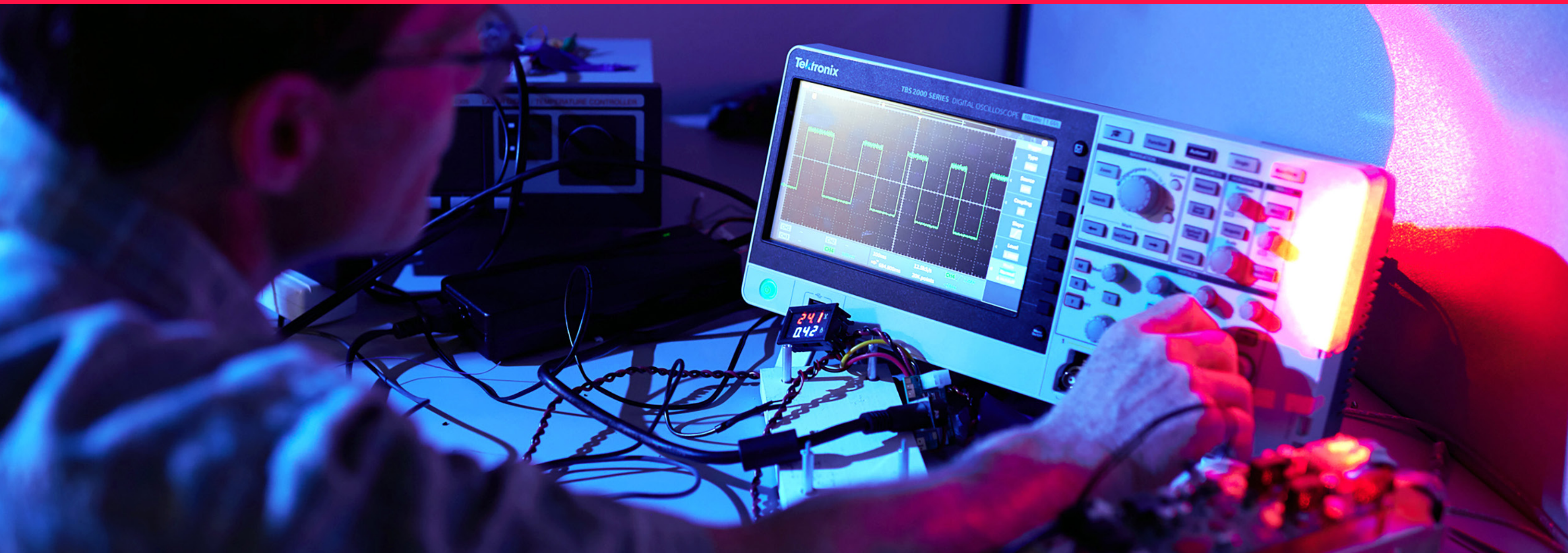
- ✓ Ability to image multiple wavelengths simultaneously
- ✓ High Power and High Stability laser light source with up to 7 different laser lines
- ✓ High Speed image acquisition in XY & Z across large samples and tissues
- ✓ Combining high speed and high resolution to maximize productivity

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OPTICAL EXPERTISE OUR OEM SERVICES



OPTICAL ENGINEERING OEM EXPERTISE

Scientific tools and techniques that used to reside solely in the nation's most prestigious laboratories are now finding their way into commercial applications. We, along with our partner company, Chroma Technology, are pioneering new use cases for deploying the power of light in innovative ways across a variety of industries.

- Bioanalytical Device Manufacturing
- Industrial Inspection
- Photonics & Imaging Applications
- Medical Device Manufacturing





EMBEDDED OPTICS 89 NORTH'S OEM SERVICES

CORE EXPERTISE: CUSTOM ILLUMINATION DESIGN

This is where we shine. Our expertise in laser illumination coupled with our award-winning team has culminated in the release of an OTF laser launch that cannot be beat for value. Your application depends on precisely the right light delivery. We have the expertise to help you find the right illumination solution to deliver the results you need.

CUSTOM ENGINEERING SOLUTIONS

Mastering the intricate art of light manipulation and management is a formidable challenge. At 89 North, we embrace this complexity, constantly seeking ingenious solutions while maintaining a delicate balance between cost, schedule, and risk. Our commitment to simplicity guides our approach to innovation, ensuring that our solutions not only meet but exceed expectations. We're dedicated to empowering scientists and researchers worldwide to push the boundaries of knowledge and discovery.

COMMERCIAL APPLICATIONS

Our core mission is to bridge the gap between groundbreaking life science research and tangible, real-world applications. We leverage our expertise to transform discoveries into practical solutions that advance physical science and life science knowledge. Through innovation and collaboration, we empower the life sciences community to drive progress in medicine, biotechnology, and beyond

- **Bioanalytical Device Manufacturing**
89 North understands there is more to an optics system than just shining a light. We optimize every aspect of the design with the objectives of simplicity, cost-effectiveness, efficiency, and elegance.
- **Industrial Inspection**
89 North is as comfortable building a multiphase laser controller as we are designing the optics for flat-field illumination: We welcome the challenge.
- **Photonics & Imaging**
89 North optimizes the excitation and emission pathways, reduces the noise, and maximizes the signal - getting every photon that counts to the detector.
- **Technical Collaboration Process**
Elegance in simplicity. We understand complexity, but seek out the best, simplest, most cost-effective solution to your industrial inspection needs.

OPTICAL SCIENCES ARE TRANSCENDING THE LABORATORY

Scientific tools and techniques that used to reside solely in the nation's most prestigious laboratories are now finding their way into commercial applications. We, along with our partner company, Chroma Technology, are pioneering new use cases for deploying the power of light in innovative ways across a variety of industries.

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Email: btrecroce@89north.com

Phone: **+1.802.881.0302**



89 NORTH[®]

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Headquarters

89 North
20 Winter Sport Lane, Suite 135
Williston, VT 05495 USA
Phone: +1.802.881.0302
Email: info@89North.com
www.89North.com

Sales & Support - Europe

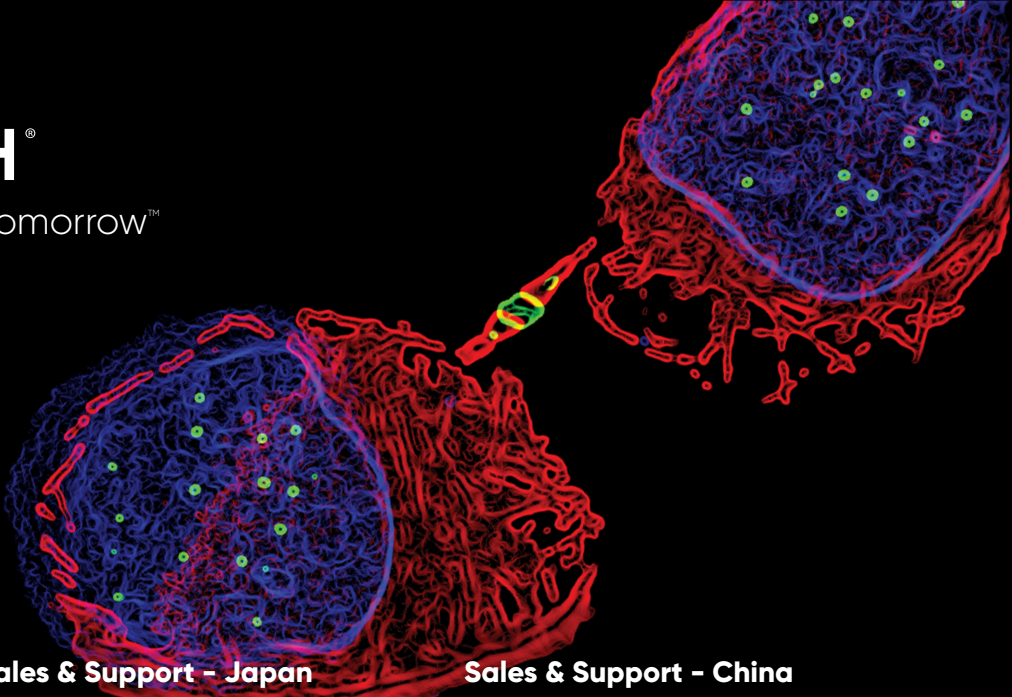
89 North / Chroma Technology GmbH
Maximilianstrasse 33
D-82140 Olching Germany
Phone: +49 8142 4219701
Fax: +49 8142 2845349
europe@chroma.com

Sales & Support - Japan

89 North / Chroma Technology Japan
8F Yokohama Onoecho Building
4-57 Onoecho Naka-ku
Yokohama 231-0015 Japan
Phone: +81 (0) 45 285 1583
Fax: +81 (0) 45 285 1501
japan@chroma.com
www.jp.chroma.com

Sales & Support - China

89 North / Chroma China
Room 611, Building 23, Harmony Times
Square
No. 268, Wangdun Road, SIP, Suzhou
City
Jiangsu Province, 215028 China
Phone: +86-0512-66051705
china@cn.chroma.com
www.cn.chroma.com



89 NORTH AT YOUR SERVICE

Our experienced team is ready to serve you, whatever your optical engineering needs may be. Won't you contact us today?

tel +1.802.881.0302
fax +1.802.881.0308
info@89north.com

