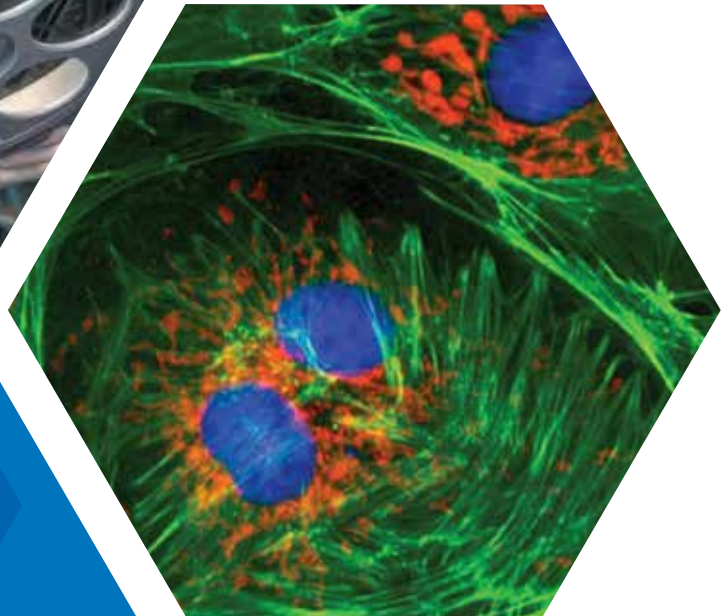


Imaging and Illumination Subsystems

Systems Designed to Balance
Performance and Cost



Capabilities

FROM SOURCE TO SENSORS, WE HAVE YOU COVERED

We are the market leader in providing “enabling” optical systems, vertically integrated from sensors, cameras, optical filters, laser, and optical components through system design, manufacturing, and metrology. We combine deep technical expertise with creative engineering teams who understand how to bring product ideas to market successfully for leading OEM customers worldwide.

Every component in a system impacts system-level performance. For an instrument to operate at its full potential, each component must interact seamlessly with all other components. But, when integration is forced with independently developed components, the system will not be optimized for best performance. This leads to cost overruns, excessive debugging, and inconsistent performance.

To avoid the uncertainty of off-the-shelf components that may not be characterized sufficiently to fully define your system’s optical path, integrate a custom optical system from IDEX Health & Science. We are your design partner to support the development of unique, high-performance, optical systems that are optimized to meet the

ever-increasing performance requirements of the life sciences market. Our experts create innovative optical solutions that balance price and performance, meet development timelines, and exceed expectations.

By using our in-house design and manufacturing capabilities, we develop optimal designs with your whole system in mind from the start. Our optical expertise in system assembly and alignment ensures product quality and superior performance.

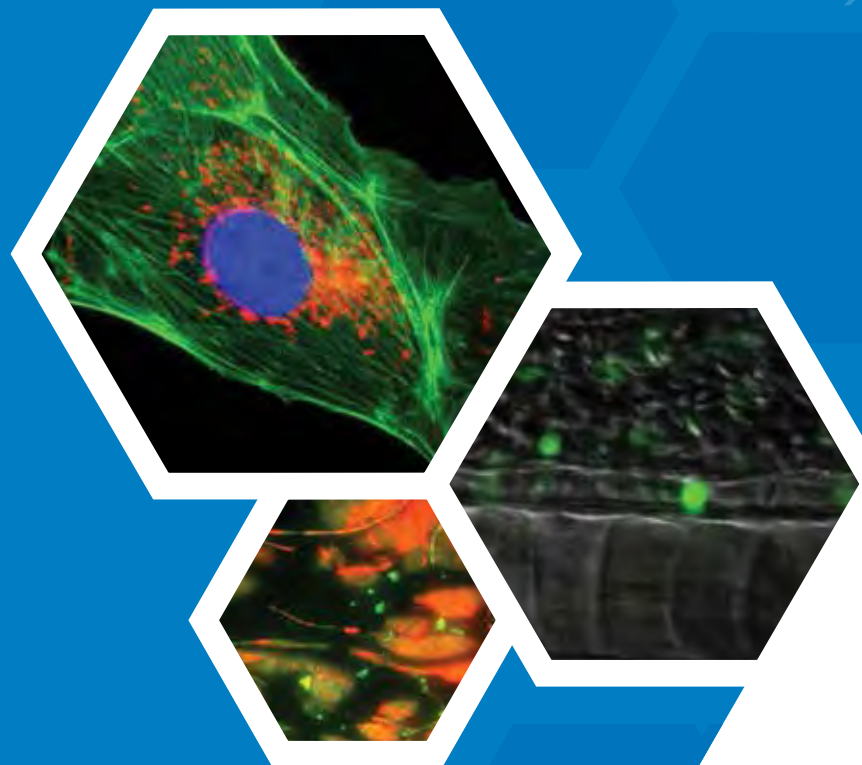
System Optimization Driven by:

- › Component Innovation Through Illumination, Imaging, and Filter Design
- › Solution Customization
- › Systems Integration
- › Verification / Validation

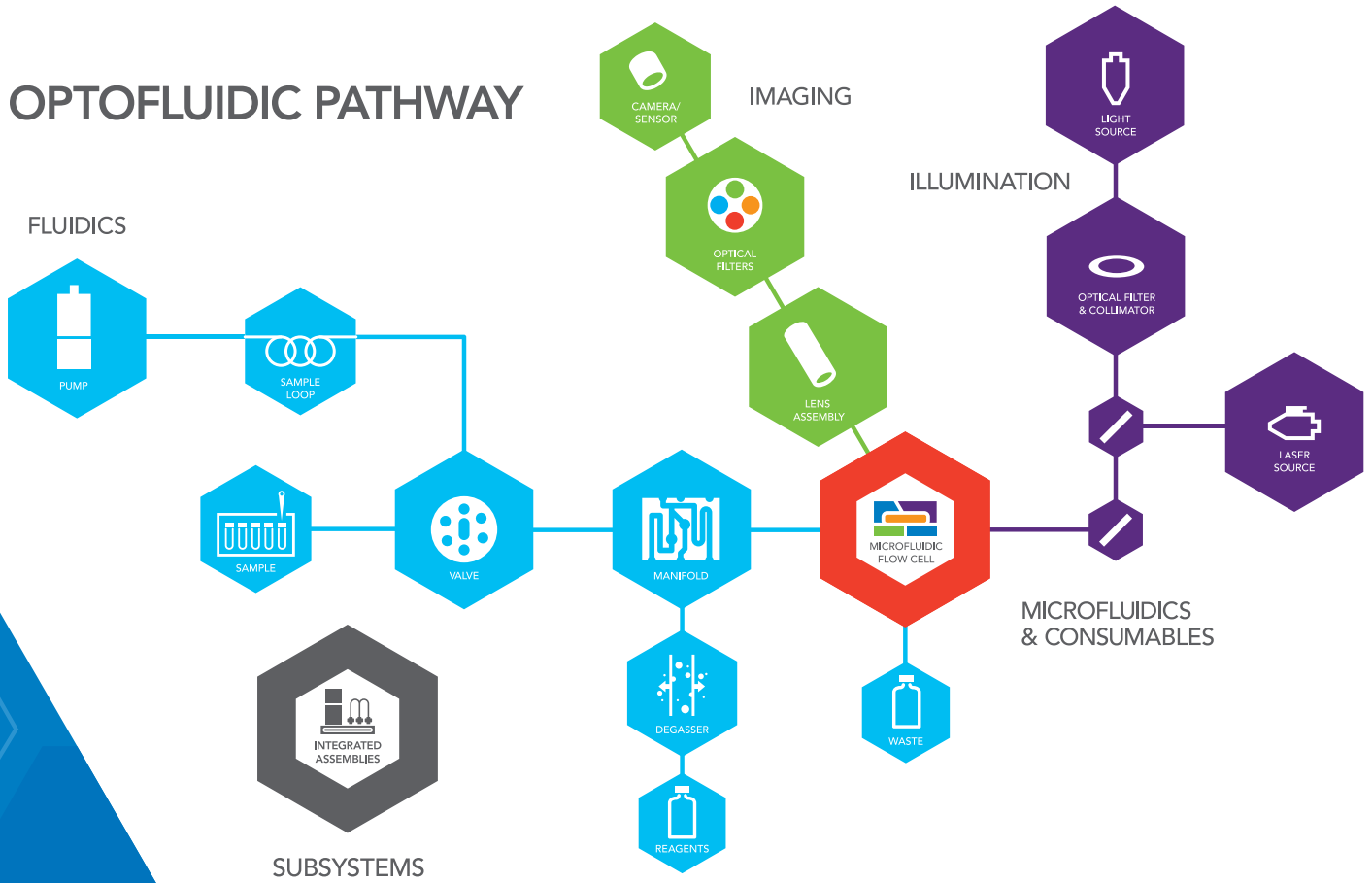
LEVERAGE SUPPLY CHAIN TO REDUCE RISK

We incorporate supply chain management practices into disciplined standard operating procedures.

- › Rigorous Documentation and Revision Control
- › Lead Time Management — Monitoring Tools Keep Inventory at Levels to Satisfy Delivery Goals
- › Traceability — Complete Product Histories of Each Manufactured Item
- › Blanket Orders, Purchasing Contract, and Just-in-Time Delivery



OPTOFLUIDIC PATHWAY



Design

- › Vertically Integrated Design and Manufacturing to Optimize System Performance
- › We Design and Manufacture from Source to Sensor
- › Cross-Functional Technical Collaboration Across Our Sites
- › Maximize Imaging Throughput
- › Diffraction-Limited Imaging Performance Over Large FOV
- › Integrated Solution in a Compact Package
- › Every Unit Fully Tested and Validated to Predetermined Qualification Plan

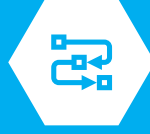
Development

- › Supply Chain Embedded Early in the Process to Reduce Risk and Ensure On-Time Execution
- › Incorporation into Current Workflows
- › Cost Optimization
- › Minimal Time-to-Market
- › Flexible and Efficient Design Iterations

Manufacturing

- › Scalability
- › Regulatory Compliance
- › Product Fulfillment
- › Risk / Failure Analysis
- › Extensive Clean-Room Manufacturing

Product Development Process



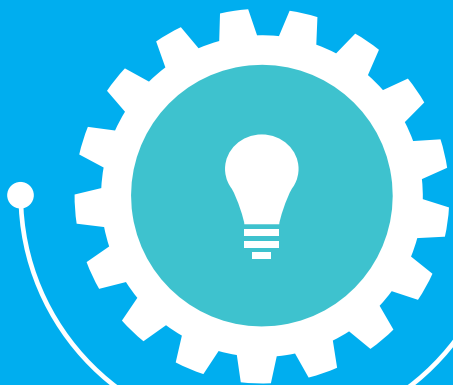
YOU CAN LAUNCH PRODUCTS MORE EFFECTIVELY WITH OUR PRODUCT DEVELOPMENT PROCESS

Using our proven process, we solve your unique problems by innovating projects through efficient product development. We deliver quality technology on time, to secure your success in highly competitive markets.

The more complex a system becomes, the more complicated the process required to build it becomes. We simplify product development with our disciplined process that aligns our expertise with your business objectives to take you from conception to market easier.

New Project Proposals

WE WILL REVIEW YOUR REQUEST AND JOINTLY SCOPE THE PROPOSED PRODUCT



Feasibility Phase

WE EVALUATE THE TECHNICAL FEASIBILITY OF YOUR DESIGNS AND IDEAS



Business Phase

WE PERFORM A TECHNICAL ASSESSMENT AND DEVELOP A BUSINESS CASE





Pre-Production Phase

WE COMPLETE TESTING AND VERIFICATION AND PREPARE TO RELEASE THE PRODUCT



Design Phase

TOGETHER WE ITERATE THROUGH DESIGN AND DEVELOPMENT ROUNDS TO TEST AND VALIDATE



Market Launch

WE ASSIST YOU BEYOND DEVELOPMENT AND PROVIDE LIFE-OF-INSTRUMENT SUPPORT

System Solutions

OUR DESIGN-THROUGH-MANUFACTURING APPROACH IS YOUR SOLUTION

When you need a complete optical system at the core of your life science or other high-performance instrument, our expertise in all aspects of optics combined with our proven design-through-manufacturing approach is your solution.

Systems engineering always requires trade-offs to be made and these decisions have significant consequences in terms of performance, price, and reliability. This maxim is just as true for an optical system — where illumination optics, imaging optics, spectral optics, an autofocus system, a detection system, and all other supporting optical, opto-mechanical, and electronic components required to interface the system to the overall instrument must work flawlessly together time after time. Don't risk bolting together parts that weren't designed with one another in mind. Let us design and build a fully integrated system for your instrument.

WE ARE COMMITTED TO YOUR PRODUCT & BUSINESS SUCCESS

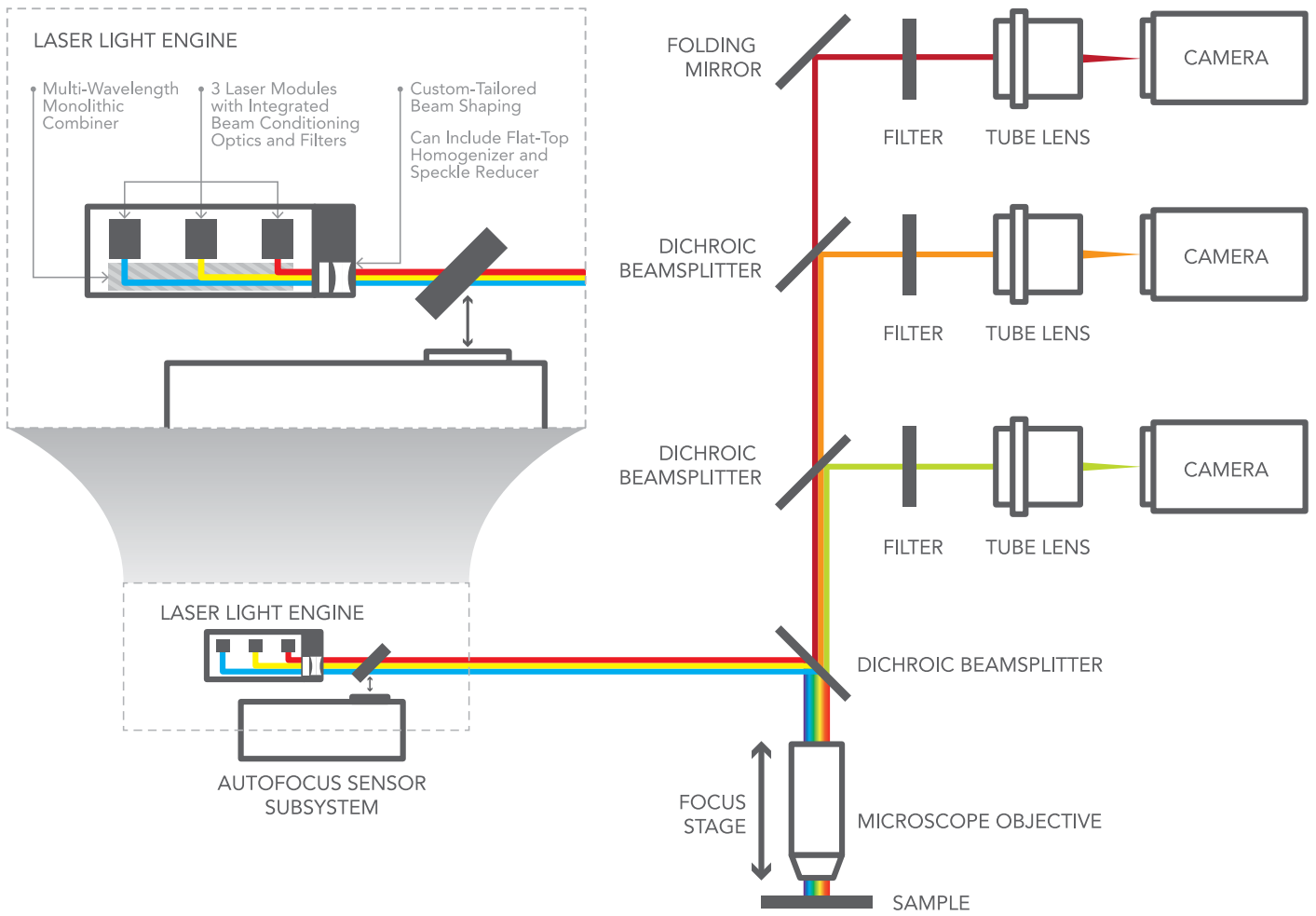
ILLUMINATION OPTICS

As experts in illumination delivery systems, we specialize in custom-tailored beam profiles that deliver the precise spot you need at the point of work, dramatically reducing system cost and complexity — and significantly improving system performance. To achieve this high level of precision and repeatability, we have become vertically integrated for close control of the most critical components while minimizing production lead-times. From in-house superpolishing capabilities to dedicated ion-beam sputtering (IBS) thin-film coating chambers for coating intracavity optics, we ensure high-quality critical components for both prototype development and production platforms alike.

IMAGING OPTICS

We employ multiple lens assembly techniques, from our proprietary "Exact Placement" approach for the most demanding, micron level tolerance systems, to our state-of-the-art "Alignment Turning" capability for cost-effective, high-performance optical assemblies in high volumes. These, combined with the implementation of unique solutions such as magneto-rheological finishing (MRF) post-processing and real-time, interferometrically controlled aberration compensation, ensure outstanding and consistent system-level performance.





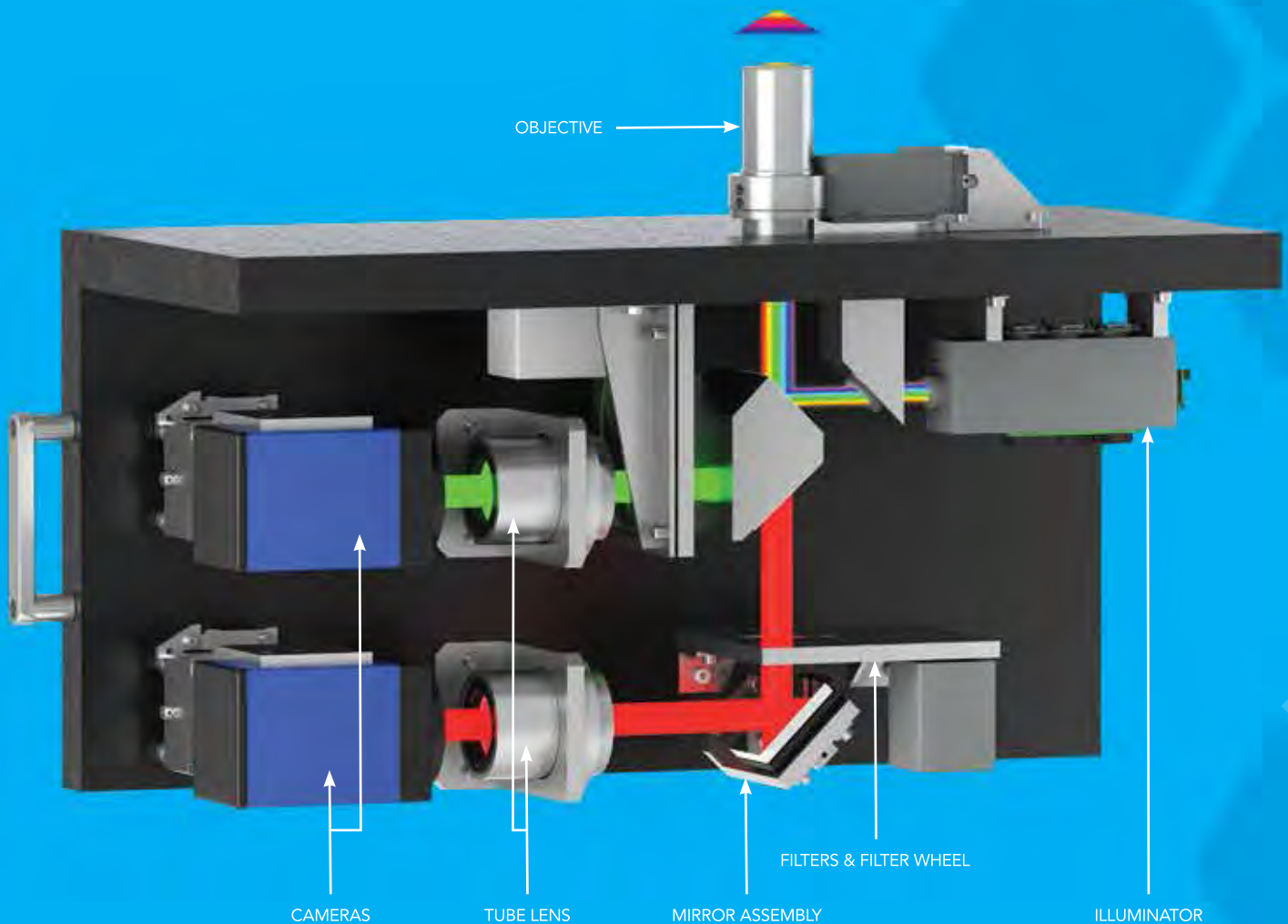
System Solutions

OPTOELECTROMECHANICAL INTEGRATION

Through our innovation, in-depth know-how, and unique set of technical competencies, our designs represent the very best solution for each application. We design and accurately simulate "as-built" complete optical systems, including stray-light analysis and FEA modeling for resonance, thermal, and mechanical stress effects. Coupled with advanced component-through-assembly fabrication experience and system-level thinking, this approach ensures that the end-product has been fully optimized for manufacturability, cost, and performance, that can be directly transitioned to production.

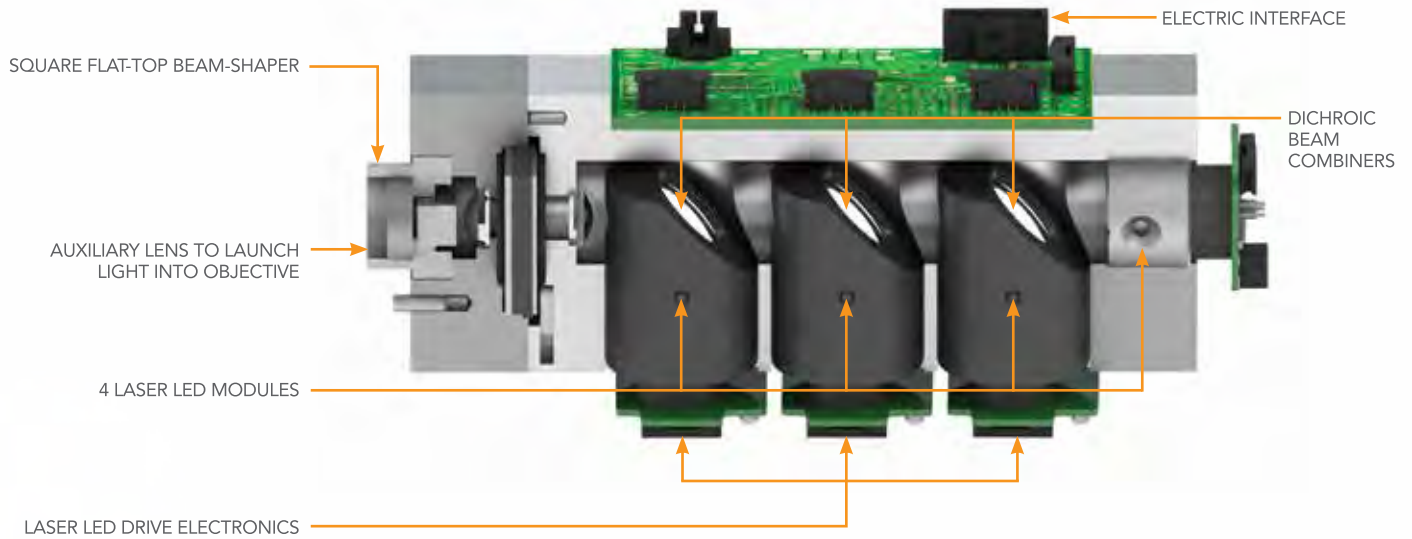
By bringing together expert system design, vertically integrated state-of-the-art manufacturing capabilities, and extensive optical metrology under one roof, we can take on projects at any level of design maturity, and quickly bring them to market. Ultimately, with our long history and customer-centric culture, we provide the solutions you need in order to differentiate and outperform your competition.

SYSTEMS DESIGNED TO BALANCE PERFORMANCE AND COST



CASE STUDY

The diagram below showcases a prototype developed for a next-generation fluorescence-based life science instrument.



Multi-wavelength LED & Laser Based Light Engine

- › High brightness multi-color illumination in a compact and fully integrated design
- › Customized beam shaping with highly uniform flat-top profile, speckle reducer
- › Outstanding reliability and power stability

Optimized Fluorescence Imaging

- › High-performance Semrock brand filters enable multi-color imaging with best sensitivity and spectral purity
- › Custom sizing, shaping edge blackening to fit any instrument design and performance requirement

Electromechanical Integration

- › Established partnerships with industry leaders for motion control, sensors, cameras, and in-house capability for control electronics
- › Developed high precision laser autofocus system with fast piezo stage to compensate for flow cell variations
- › Designed to image on next-gen large format camera

Full Product Qualification

- › Full control over the entire system with extensive end-to-end simulation and design validation
- › Wavefront characterization of the complete system at the operating wavelengths
- › Dedicated test station to measure "as-used" imaging quality and autofocus performance
- › Environmental and product reliability testing

Optomechanical Integration

- › Design-for-manufacturability with precision integrated system alignment
- › Robust and innovative adjustment mechanisms
- › Low-stress and ultra-stable optical mounts
- › Control of stray light, thermal sensitivity, resonant frequencies and mechanical stress
- › Upgradeability and compact footprint

Custom Objective Solution with Imaging Tube Lens

- › High-NA wide-FOV with diffraction limited resolution
- › Guaranteed performances over the entire FOV and all spectral bands, including extra low distortion and minimized variability between channels
- › Superior unit-to-unit repeatability





Sensors & Cameras

OPTIMIZE YOUR CAMERA FOR THROUGHPUT AND SENSITIVITY

IDEX Health & Science offers a comprehensive line of cooled CCD and CMOS cameras for life science applications. High-throughput applications such as DNA sequencing, spatial-transcriptomics, and circulating tumor cells benefit from our high-speed and high-resolution CMOS cameras. Similarly, high-sensitivity applications such as in-vivo imaging, PCRs, fluorescence, and chemiluminescence gel imaging utilize our deep cooled CCD cameras visualizing dimmest signals and reducing sample size and cost of assays.

- › Maximize resolution by matching pixel size to diffraction-limited imaging optics
- › Optimize instrument size, weight, and cost with our pre-existing camera body or customized board-level formats
- › Full body MicroLine (MLx285, MLx695), ML4710, Kepler (KL400 & KL4040) cameras, and IMX-183 board-level cameras (BLx183) available in weeks and ready for customization for our OEMs
- › Enhance sensitivity by our expertise in deep cooling and managing electronic and thermal noise
- › Enhance throughput by precision design and assembly of cameras integrated in imaging sub-systems
- › Minimize risks by consistent and reliable performance from concept to high volume production

CAMERA CAPABILITIES

	KL400 FI	KL400 BI	KL4040	MLx285	MLx695	ML4710	BLx183*
Sensor Technology	CMOS	CMOS	CMOS	CCD	CCD	CCD	CMOS
Sensor Architecture	Front Illuminated	Back Illuminated	Front Illuminated	Front Illuminated	Front Illuminated	Back Illuminated	Back Illuminated
Peak QE %	58%	95%	74%	62%	75%	95%	83%
Pixel Size (µm)	11	11	9	6.45	4.54	13	2.4
Array Size	4MP (2K x 2K)	4MP (2K x 2K)	16MP (4K x 4K)	1.3MP (1360 x 1024)	6MP (2750 x 2200)	1MP (1K x 1K)	20MP (5472 x 3648)
Sensor Area	22.5 mm x 22.5 mm	22.5 mm x 22.5 mm	36.9 mm x 36.9 mm	8.8 mm x 6.6 mm	12.5 mm x 10.0 mm	13.3 mm x 13.3 mm	16.1 mm x 12.6 mm
Diagonal	31.9 mm	31.9 mm	52.1 mm	11 mm	16 mm	18.8 mm	15.86 mm
Full Well	120ke-	92ke-	70ke-	18ke-	17ke-	100ke-	~14ke-
Bit-depth	12/16	12/16	12/16	16	16	16	12
Spectrum Capability	400 – 1000 nm	200 – 1000 nm	300 – 1000 nm	300 – 1000 nm	300 – 1000 nm	200 – 1000 nm	400 – 1000 nm
Dark Current	0.2 eps @ -20C	0.4 eps @ -20C	0.15 eps @ -20C	0.001 eps @ -25C	0.0007 eps @ -30C	0.2 eps @ -30C	2.9 eps @ 25C
Read Noise	1.5 e-	1.6 e-	3.7 e-	4.5 e-	3 e-	10 e-	~4 e-
Shutter Type	Rolling	Rolling	Rolling	Electronic	Electronic	Mechanical	Rolling
Frame Rate	24/48	24/48	24	4	1.4	1.4	25
Cooling	delta 45C	delta 45C	delta 40C	delta 60C	delta 60C	delta 60C	Temp Stabilized
Interface	USB3/QSFP	USB3/QSFP	USB3/QSFP	USB2	USB2	USB2	Custom
Binning	No	No	No	Yes	Yes	Yes	No

*Estimated performance based on custom needs of OEMs.

Filter Wheels & Switchers

INDUSTRY-LEADING FILTER EXCHANGE TIMES

Some applications require rapid change of filters in order to acquire different spectral ranges as close together in time as possible. Our high speed filter changers represent a major leap forward in speed and ease of use. Optimized hardware cuts filter wheel move times in half even with a fully loaded wheel. Software does not need to be manually “tuned” to the number of filters or their locations. The compact units connect directly to the host computer via RS-232 (no bulky external controller needed) and up to three can be daisy-chained from a single computer port.

- › Filter wheels 2X – 3X higher throughput than competitors’ units
- › Cube turret 10X higher throughput
- › Exceptional reliability
- › Easy OEM integration
- › No external controller needed
- › Major software program support
- › Optional external shutter driven from auxiliary port
- › Optional reflection reducing angled filter pockets



THE “IDEAL” PIXEL SIZE FOR MICROSCOPY

For best results, pixel size needs to be selected for a given wavelength, magnification, and numerical aperture. For a short primer on how to do the calculations yourself, see the paragraphs below. On the other hand, our optical engineers are standing by to design the optimal system for your needs.

Equations for measuring the theoretical resolution of microscope systems vary.

- › One such equation is $(0.61 * \text{wavelength}) / \text{NA}$.
- › Example: 600 nm, NA 0.95:
Resolution is $(0.61 * 600) / 0.95 = 385$ nm or 0.39 microns.

Whichever equation is used, there is an inverse linear relation between wavelength and resolution: the shorter the wavelength, the higher the resolution. If the resolution is 0.39 microns with 600 nm illumination, the resolution with 400 nm illumination is $(400/600) * 0.39 = 0.26$ microns. Ideally, samples are imaged at 2X the resolution of a microscope system, aka “Nyquist sampling.”

There is also an inverse linear relation between numerical aperture and resolution. Changing from an NA of 0.95 to an NA of 1.4 changes the resolution by $(0.95/1.4)$.

- › A 40X objective with 0.95 NA has the same resolution as a 60X objective with NA of 0.95.

The ideal pixel size is the product of the magnification (divided by 2 for Nyquist sampling) and the resolution.

- › If the calculations yield 0.39 micron resolution, and the magnification is 40X, then the ideal pixel size is $0.39 * 40 / 2 = 7.8$ microns.
- › If this result is for 600 nm light, then the result for 400 nm light is $(400/600) * 7.8 = 5.2$ microns.
- › If this result is for an NA of 0.95, then the result for NA of 0.75 is $(0.95/0.75) * 7.8 = 9.9$ microns.

To ensure your application has the best possible results, match the pixel size to the wavelength, numerical aperture, and magnification.



Semrock Optical Filters

MAKE EVERY PHOTON COUNT IN YOUR SYSTEM

With proven results, we give you access to high-level engineering know-how that will help make every photon count in your system. As the pioneering experts in optical filters for life science, analytical instrumentation, and medical diagnostics applications, we have continually set the standards for advanced performance and reliability. Our unwavering commitment to quality and customer service allows us to consistently deliver much more than just filters.

When you are developing optical instrumentation, you continually face new challenges: new customer requirements and product expectations, evolving technologies, changing markets, and the need for a rapid and decisive response. To help you conquer those challenges, we provide superior products and expert, personalized support.

We specialize in the volume production of optical filters for the life science and analytical instrumentation markets, and also manufacture filters for laser and optical systems applications. Our products exclusively feature hard, thin-film sputtered coatings for proven reliability. These filters will not change or degrade in any way as a result of humidity or temperature variations, nor will they “burn out” with normal use. All of our products are backed by our industry-leading ten-year warranty.

Overall, Semrock filters are brighter, more durable, and spectrally more sophisticated than those made by other coating technologies, driving significant improvements for our customers and their applications: faster measurement times, reduced downtime, consistent performance, repeatable manufacturing, and lower optical component count.

We make our unique products with lot-to-lot consistency in high volumes, providing our OEM customers with a dependable supply. We find solutions “within the box” of our standard catalog, and “out of the box” with the help of our expert design staff, and we apply each strategy in the right proportion.

With thousands of in stock items available for shipment often the same day, combined with our ability to custom-size these items (typically in less than a week) and perform custom co-development engineering with fast prototyping, we can quickly provide intelligent solutions that meet your price points.

20 Different Batches — Reproducible Results



FILTER AND OPTICAL SYSTEM DESIGN CAPABILITIES

Versatility

Our design engineers are experts in optical science, physics, electrical and mechanical engineering, and biology, and are all experienced problem-solvers.

Industry's Fastest

Design Turnaround

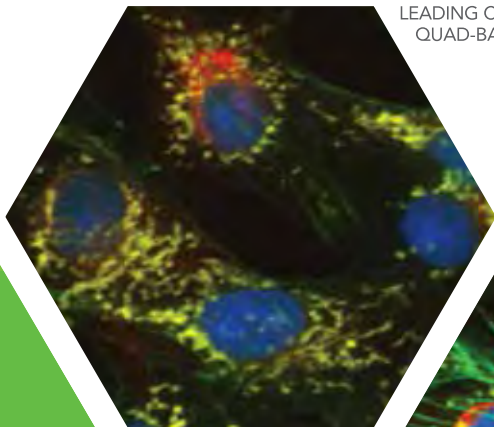
We've implemented proprietary thin film design software to complete spectrally complex tasks in minutes. Now we can typically design and quote a prototype within a week, where previously it could take two to four weeks.

Modeling Toolbox

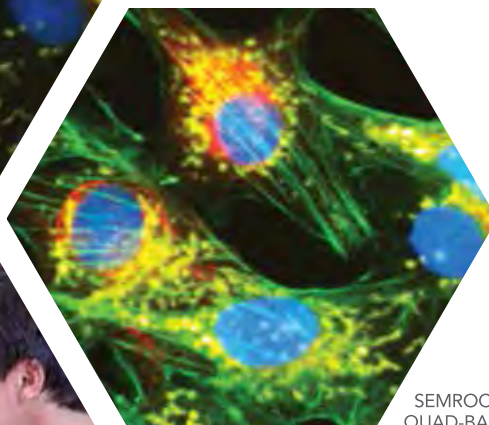
We use our own state-of-the-art software to simulate complex coating runs before they reach manufacturing to ensure high confidence in the engineering design.

Custom Evaluation

By evaluating the entire optical system, we can design and optimize the right filters the first time. This inclusive approach minimizes system redesigns.



LEADING COMPETITOR'S
QUAD-BAND "PINKEL" FILTER SET



SEMROCK BRIGHTLINE
QUAD-BAND "PINKEL" FILTER SET



ARE THE FILTERS IN YOUR MICROSCOPE REDUCING SYSTEM PERFORMANCE?

What if you were able to improve the performance of your microscope by simply replacing the optical filters? The frustration of low performing systems is a common one in an industry where every ounce of signal counts. Older filters can degrade with time causing less signal to get through. It's also possible the original filters, even in a newer microscopes, were never the proper fit for your application needs. By replacing them with optimized Semrock filters you can increase overall performance without replacing the entire system.

SEARCHLIGHT™

SearchLight is a dedicated website that allows fluorescence microscope users and optical instrument designers to evaluate the optimal spectral performance of fluorophores, filter sets, light sources, and detectors as components of an overall system. Will your existing filter set work with a new fluorophore or light source? What if a new exciter was installed or you changed cameras? With this tool, you can compare optical signal to noise while changing any and all components of your system. SearchLight allows you to upload your own spectra for any component and also save and share results securely. SearchLight can be found at: <http://searchlight.semrock.com>.



Diffraction-Limited Imaging

GET EXACTLY THE IMAGING PERFORMANCE YOU NEED

Microscope objectives are the heart of an imaging system. Objectives not only dictate image formation, but their design is critical for optimizing illumination uniformity and camera selection to maximize resolution and system throughput. Objectives maximize fluorescence signal collection from the sample and minimize wavefront distortions through the optical path, thereby enabling accurate image representation of the samples while maximizing sensitivity and accuracy.

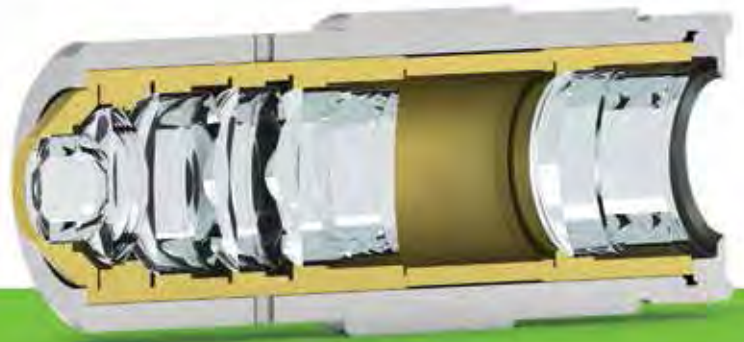
However, most off-the-shelf objectives available and in use today limit imaging throughput. This is because objectives are generally optimized for illumination and imaging performance near the center of the field of view (FOV), and color correction may be limited for specific applications.

Another limitation is the difficulty to precisely quantify or model the actual performance of available off-the-shelf objectives that are designed to work with specific tube lenses. Optical modeling of the objective and tube lens combination is needed to achieve optimal optical system design for throughput and cost. Overall, commercial objectives generally exhibit high performance variability and thermal sensitivity, failing to meet today's demanding instrument repeatability requirements for quantitative imaging applications.

Gain a Competitive Edge with Our Custom Objectives

By specifically addressing your requirements, our custom optical designs reduce your overall system complexity and minimize cost while significantly improving performance compared to off-the-shelf objective solutions.

- › High-NA, wide-FOV, diffraction-limited resolution performance
- › Customization for your optical and physical requirements, including telecentricity, laser damage threshold, and thermal sensitivity
- › Full flexibility and control over your overall system design
- › Superior repeatability and guaranteed performance from prototype through high-volume production
- › Outstanding wavefront, color and distortion correction over the entire FOV



CUSTOM-ENGINEERED OPTICAL SOLUTIONS FOR YOUR APPLICATION

We combine advanced optical design and manufacturing technology with decades of experience in critical applications, and our global manufacturing and engineering support are ready to take you from first designs to ongoing marketplace success.

Optical Solutions to Meet Your Need

Optical Assemblies

Multi-element objective and tube lens assemblies, custom-designed, precision-crafted, and tested to meet your exact performance requirements.

Illumination Solutions

Fully integrated illumination engines with custom-engineered beam-shaping and calibrated to deliver the light precisely where and how you need it.

Optomechanical Assemblies

Fully assembled optical units, mounted and calibrated to perform in your product.

Complete Optical Systems

Complete photonic solutions, from the light source to the detector, ready to plug into your instrument.

Performance

IMAGING OPTICS WITH OPTIMIZED PRICE & PERFORMANCE

At IDEX Health & Science we recognize our customer's unique needs of each optical system, and we develop custom design and manufacturing solutions that optimize price and performance.

- › We have developed a proprietary suite of lens assembly techniques for diffraction-limited imaging performance enabled by Alignment Turning System (ATS) technology, for products popular in life science applications such as Next-Generation Sequencing (NGS), spatial transcriptomics, and liquid biopsy.
- › For cutting-edge applications, our proprietary "Exact Placement" approach minimizes centration error in optical assembly and sets unprecedented performance standards.
- › Price and performance trade-offs are optimized utilizing integrated design and tolerancing methods as well as mounting strategies for each application, from simple drop-in lens assemblies, to complex integrated optomechanical systems with critical alignment and mechanical stability requirements.
- › Optical design models enable seamless system integration and performance optimization of sub-components impacting overall instrument's imaging performance.

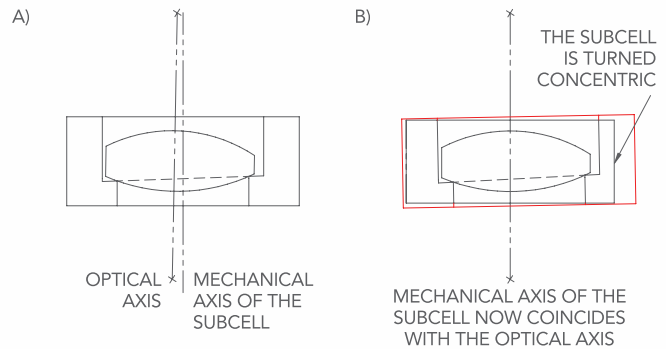
We use state-of-the-art manufacturing techniques and processes, along with the most advanced measuring metrology tools and

vertically integrated production capabilities. The result is a robust and reliable product, with superior and consistent system-level performance from prototypes to high volume production.

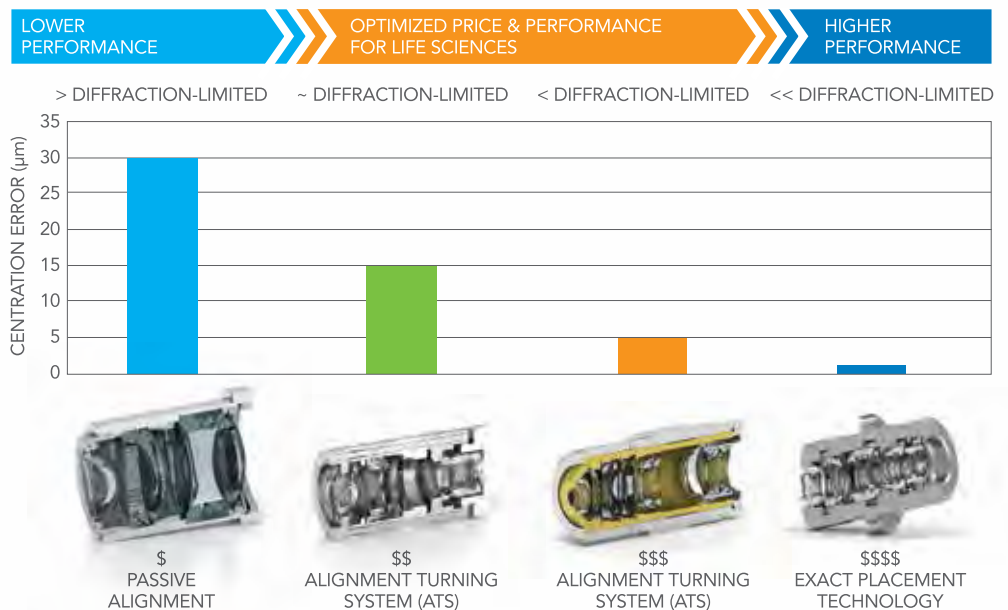
By working closely with our customers, we have routinely completed challenging projects successfully, meeting aggressive timelines and cost constraints, and delivered optimal solutions for the most demanding applications for high-throughput and high-resolution subcellular imaging in life science and medical instrumentation.

Alignment Turning System

- A) THE OPTICAL AXIS OF THE MOUNTED LENS IS DETERMINED,
- B) THE SUBCELL IS TRIMMED TO FINAL SIZE WITH ITS OUTER DIAMETER ALIGNED PARALLEL TO THE OPTICAL AXIS.



GET EXACT IMAGING PERFORMANCE



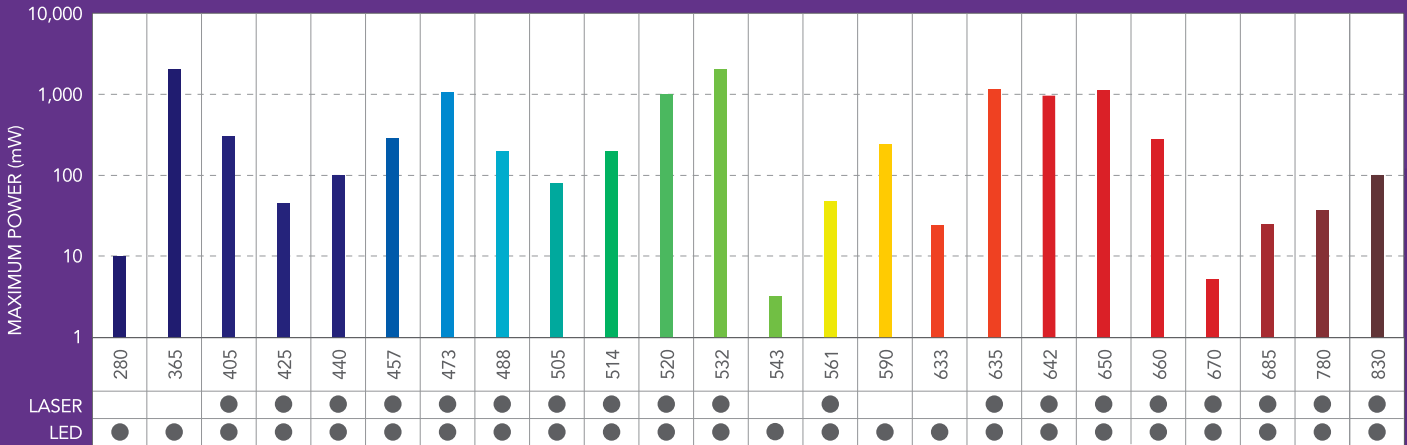


Illumination Solutions

DELIVER LIGHT WHERE YOU WANT IT, HOW YOU WANT IT

We offer a wide range of laser and LED illumination light engines to meet your application needs from Next Generation Sequencing, Cytometry, Fluorescence Microscopy, and Spectroscopy in clinical and research environments.

Available Laser Wavelengths (nm)



COMPACT AND EFFICIENT LED AND DIODE LASER MODULES

Features

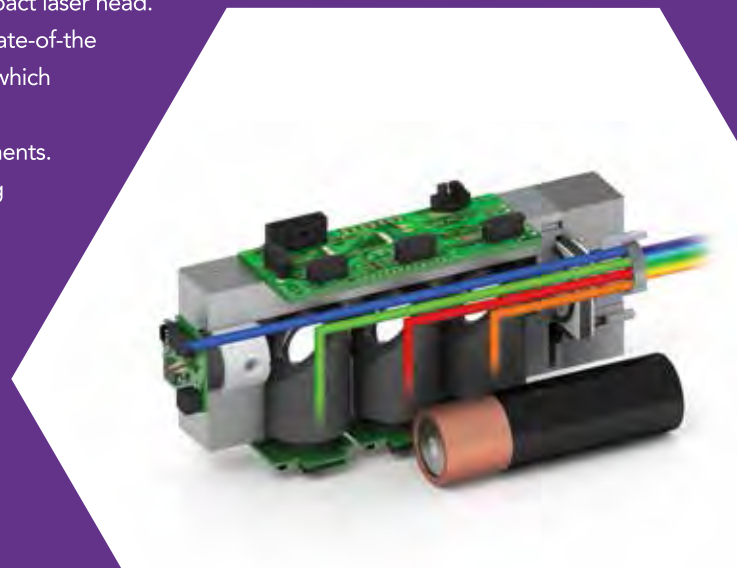
- › Wide range of wavelengths and power
- › Combination of diode laser and LED
- › Built in custom beam shaper with flat-top profile
- › Speckle reduction
- › Low optical noise characteristics
- › Excellent power stability over operation temperature
- › Internal controller
- › Closed loop power stability
- › USB interface
- › Adjustable power
- › Analog and digital modulation

Illumination modules providing extremely compact and reliable sources of laser and LED light with minimal heat generation and maximum resistance to mechanical shock and vibration.

Our standard Diode Laser Systems provide excellent output power and pointing stability from an ultra-compact laser head. This is achieved through state-of-the-art thermal management, which improves performance and reliability in harsh environments. Best in class beam pointing stability and modulation.

Custom Diode Laser and LED Systems for OEM applications can be configured for direct analog and/or digital modulation, eliminating the cost, complexity, and alignment challenges associated with external modulators.

We also specialize in custom-tailored beam profiles that deliver the precise spot you need at the point of work, dramatically reducing system complexity and cost — and significantly improving system performance.



MODULE OPERATION ILLUSTRATION AND ACTUAL SIZE COMPARISON. LED-LASER COMBINER DIMENSIONS: 103MM X 26MM.

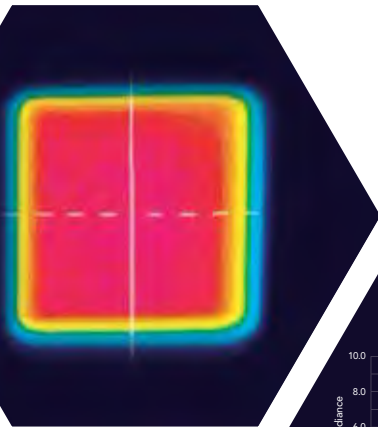
WIDE FIELD ILLUMINATION

Many fluorescence-based instruments need to analyze or image large areas quickly — from flow cells and multi-well plates, to the entire field of view of a microscope. The throughput of these instruments, however, is often limited by their ability to uniformly illuminate the full field of view with sufficient excitation light of the right wavelengths. As molecular diagnostics and sequencing find increasing application in clinical treatment, throughput is a significant cost barrier to widespread adoption.

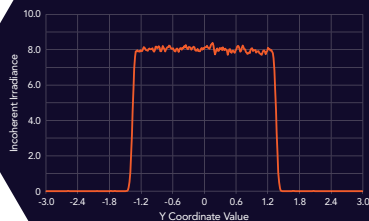
IDEX Health & Science has developed a Wide Field Illumination Module capable of delivering uniform, high-intensity output over a large field of view at multiple wavelengths. Designed for drop-in OEM integration, the module may be customized with up to five LED and/or laser sources to provide fields of view of up to several millimeters. Using proprietary beam-shaping technology, the module can redistribute even the most non-uniform source beam distributions to have better than 10% beam uniformity.

The Benefits of Beam Shaping

Beam shaping is a natural solution for these issues, but has traditionally been either difficult or expensive to implement in commercial instrumentation for multi-wavelength sources. We created a flexible OEM platform capable of homogenizing almost any input source profile, with minimal dependence on input alignment and beam shape for robust, long-term performance. This allows us to leverage both laser and LED wavelength availability by combining the two source types into one module without impact to the uniformity and intensity of the output flat top beam profile.



ABOVE:
SQUARE FLAT TOP BEAM PROFILE CREATED
BY WIDEFIELD ILLUMINATION MODULE



Module Performance

While each module design is unique to the customer, >80% efficiency can be expected for all integrated light sources. Spatial variation of the customized illumination beam is typically <10% when input into the instrument's optical system, regardless of the input beam profiles.

Module Design

Each module is designed as a drop-in illumination subassembly for an OEM customer's instrument, including sources, drive and monitoring electronics, thermal management, and power for multiple diode lasers and/or LEDs.

The exact number and choice of wavelengths can be customized to the needs of each application, depending on the fluorophore(s) being used and the excitation intensity desired at each wavelength.

Our process includes extensive design validation including mechanical shock and vibration, thermal and humidity testing, regulatory approvals and certifications as appropriate to ensure robust and reliable performance.

Global Leaders

YOU SEE INNOVATION, WE SEE INTEGRATION

Whether you're pursuing a complex consumables design or a life-of-instrument flow cell, we support and guarantee your success with extensive experience that unites the intersections of fluidics, optics, and chemistry.

We are a strong force of committed people and innovative products for your complete optofluidic pathway. By continually increasing our product offering and expanding our market relevance by connecting to new customers, we strategically position ourselves as global leaders in optofluidic engineering.

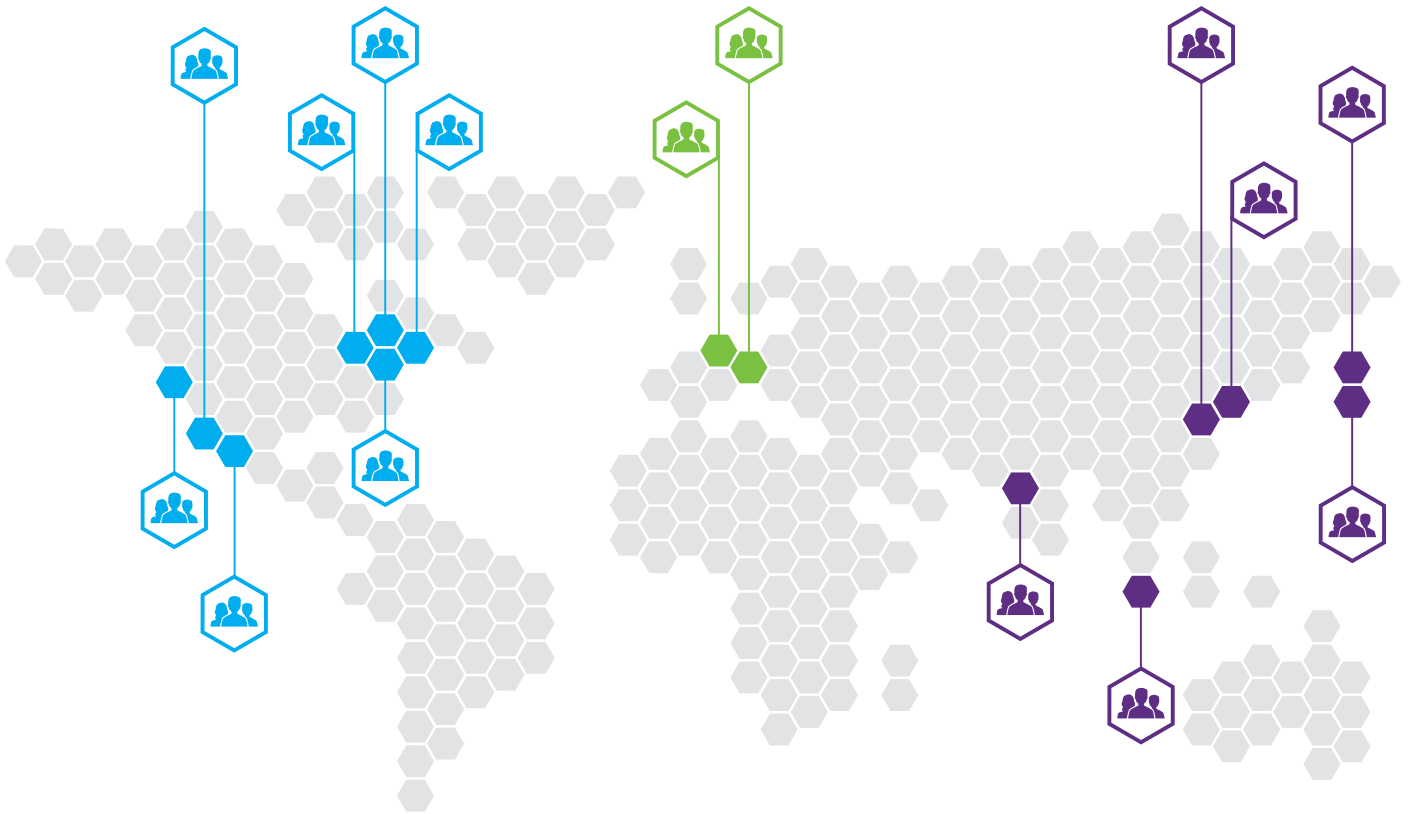


WORLDWIDE OPTOFLUIDICS

As a global company, IDEX Health & Science has an international network of direct sales professionals and distribution partners in place to provide personal service to every customer. Our experts are ready to visit your operation, assess your needs, and develop intelligent solutions for your challenges.

CORPORATE RESPONSIBILITY

IDEX Health & Science is committed to preserving the environment. Our continuous improvement programs hold our facilities accountable to reduce waste, prevent pollution, and conserve resources. Many products comply with REACH and RoHS regulations.



North America			Europe		Asia	
Binghamton, NY, USA	Middleboro, MA, USA	Rohnert Park, CA, USA	Didam, Netherlands		Saitama, Japan	Mumbai, India
Bristol, CT, USA	Oak Harbor, WA, USA	Wallingford, CT, USA	Zweibrücken, Germany		Shanghai, China	Singapore, SG
Carlsbad, CA, USA	Rochester, NY, USA				Beijing, China	

Quality & Certification



We are dedicated to upholding to the highest standards of quality. IDEX Health & Science ensures the quality of both new and existing product designs using Statistical Quality Control (SQC) methods to monitor our processes. We are committed to providing top quality components and subassemblies.



For ordering and technical support,
please visit [idex-hs.com/optics](https://www.idex-hs.com/optics)

