

# Custom Solutions

And contract manufacturing



Imaging system design and manufacturing services  
Customized product design



## How we work

Unlike other design or product development houses, Prior Scientific becomes your long-term, end-to-end manufacturing partner by completing the design and prototyping of your product at a greatly reduced cost and seamlessly transitioning to production.

***We have specific expertise in the design and production of imaging systems and single and multi-axis stages: don't waste time and money working with a non-specialist with no market experience.***

We work with you to design, test, manufacture, and brand your system to your specifications. Because this happens under one roof, it accelerates both product development and manufacturing.

When you choose to work with Prior, an experienced in-house design team, consisting of mechanical, optical, electronics, control and software professionals will work as part of your team to create your product. We provide regular product updates with one point of contact. Our holistic approach significantly reduces both time to market and project complexity while maximizing your ROI.

We match the design of your product to our manufacturing capabilities in the most efficient and effective way possible. Prior Scientific's consultative approach builds partnerships early on to deliver your product on time and within budget.

## Complete product lifecycle management

We manage the entire product life cycle for you and can also assist with the process of certification and accreditation.

We adhere to stringent testing and certification standards, which are routinely updated. We will test to your specific requirements and certify the testing. Our comprehensive quality management system evaluates each project first-hand. Prior Scientific's products are both ROHS and CE compliant and we are ISO 9001 certified.

# Accelerating product development and manufacturing

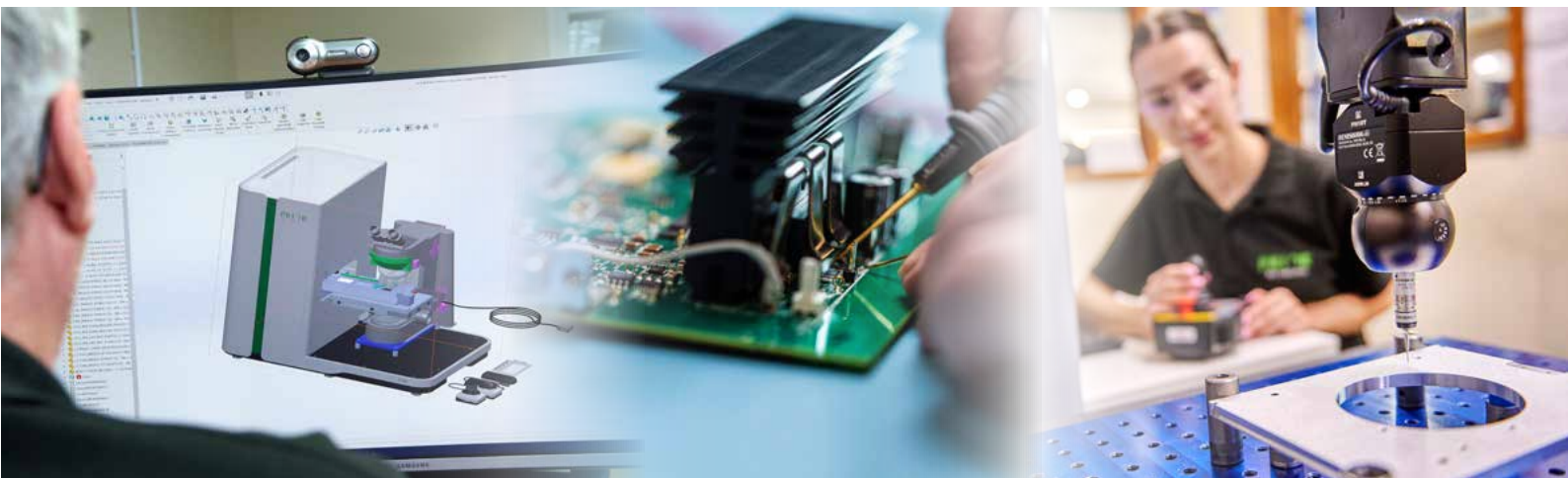
Prior is the global development partner for many leading scientific instrumentation companies and institutions around the world. Our partners value our expertise in customizing electro-mechanical and imaging components and designing complete scanning or imaging systems.

## Experts in

- Customized automated microscopes and imaging systems
- Precision stages and XY tables
- Piezo-based nanopositioning
- Robotic sample handling
- Illumination
- Laser autofocus
- Control electronics

## Applications/techniques

- Industrial imaging
- Slide scanning
- Multimodal white light imaging
- RAMAN/FTIR spectroscopy
- Total Internal Reflection Fluorescence Microscopy (TIRF)
- Confocal and super resolution microscopy
- Light sheet microscopy
- Widefield fluorescence microscopy
- Metrology and semiconductor imaging



## Reliable, high-quality supplier

- High volume capabilities: over 5000 m<sup>2</sup> (54,000 ft<sup>2</sup>) of manufacturing space in the UK and US
- Quality assured: ISO 9001 certified manufacturing sites
- Sustainable supplier: certified to ISO 14001:2015 (Environment) and ISO 45001:2018 (Health and Safety) in UK facilities
- Global support: offices in Europe, North America, Japan and China.

## Markets

- High-end microscopy
- Industrial
- Diagnostic instruments
- High-throughput screening
- Semiconductor fabrication



# Why choose Prior as your development partner?

We have specialist experience and resources to strengthen a small in-house team.

No matter how enthusiastic, experienced, and dedicated your in-house product development group is, they may not have the expertise or bandwidth for your next project. Prior Scientific will step in to complement your existing team's strengths and expertise, working closely with your staff to extend your engineering and development capacity.

One example of this is **SPARTA Biodiscovery**, a start-up which grew out of research at Imperial College London. They developed a benchtop system, which uses a laser source to 'trap' particles, for composition analysis of novel drug products for cancer treatments, vaccines, and gene and cell therapy.

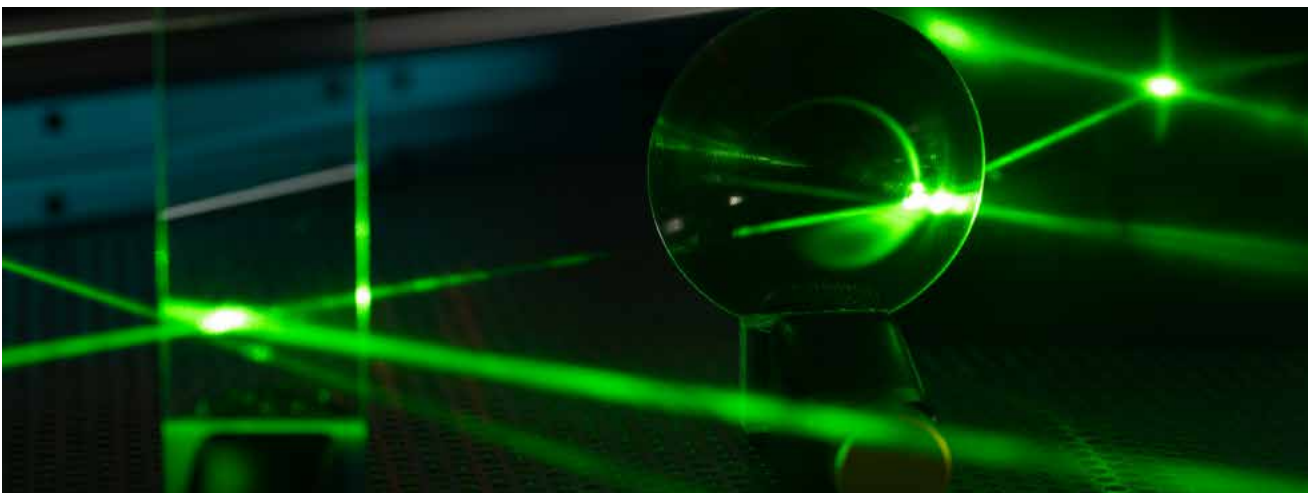
When they were ready to commercialize their product, we acted as part of their development team with scheduled weekly progress meetings, plus informal communication to answer questions as they arose. For the product, we provided a solution that combined elements from our OpenStand system with third-party components (a camera and class 3 laser source), together with a custom-designed fault-tolerant laser safety mechanism. We also designed a branded enclosure that met both safety and end-user requirements. Certification is a vital element of any product commercialization and we also dealt with the applications and necessary EMC testing.

One of the key benefits of our approach is the speed to market. With the OpenStand, we were able to provide an early prototype within weeks.



*'It has been a pleasure working with the dedicated team at Prior Scientific these last few years. There is true value in having an experienced manufacturing partner nearby with a team that we feel we can really rely on to help grow our business and put the best product possible on the market'.*

Jelle Penders, Founder and CEO, SPARTA Biodiscovery



## We have the capacity for contract manufacturing.

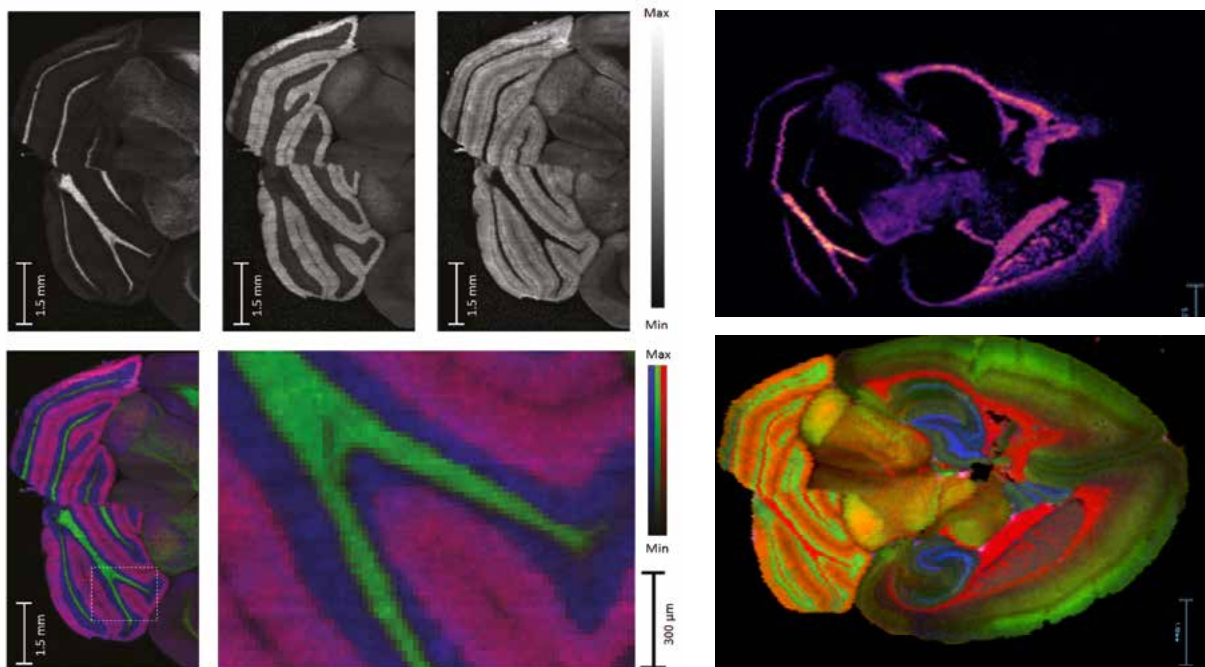
With most design houses, once the product is tested and market-ready, the relationship ends and you need to source a manufacturing partner. Because Prior design, develop, test, and manufacture under one roof, communication is simple and straightforward.

At Prior, we seamlessly transition from the design and approvals phase through to manufacturing. Not only does this simplify the initial launch of the product, it means that we are always on hand to offer advice as your product becomes more established. This may involve suggesting improvements to components or helping to further reduce manufacturing costs once the product is selling at higher volumes.



**Waters Corporation** is a global pioneer of chromatography, mass spectrometry, and thermal analysis innovations. When they wanted to re-engineer their market-leading mass spectrometry imaging source, Waters decided to work with Prior Scientific as a development partner. While Waters worked on making improvements to their Desorption Electrospray Ionization (DESI) technology in-house, Prior developed a customized stage to ensure precision positioning for the new source and worked on a partially sealed housing to increase stability and reduce atmospheric interference and meet health and safety requirements.

For Waters, this means that they don't need to invest in new tools or training for assembly operators and they only need to deal with a single supplier for DESI XS orders.



Waters Corporation – DESI™ XS Mouse Brain extracted ion images

## We reduce the risk, expense, and time needed to bring new imaging concepts to market.



OpenStand is a modular imaging platform, designed to enable complete flexibility in the choice of imaging technologies, illumination and motorization. OpenStands are tested as full systems, meaning your configuration is a fully qualified imaging solution upon delivery, rather than a set of components. This makes it an ideal development platform, allowing companies to prove their concepts and move to a full prototype in a short time.

Because Prior Scientific has development and production under the same roof, communication flows seamlessly between different departments from the concept phase to prototype and finally to manufacture. And once your prototype is ready for production, any changes needed post-production can be done flexibly and fast.

**Semimetrix Ltd**, the semiconductor analysis company, in partnership with Durham University, used the Prior OpenStand imaging system to develop their automated wafer scanning microscope.

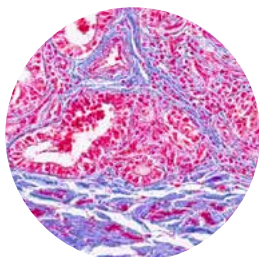
Semimetrix configured their OpenStand with a triggerable episcopic light source, motorized three-axis movement and a motorized objective nosepiece. As all of these components were sourced from Prior, they could all be controlled via the same electronics package, which saved time during software development.

As well as using standard components, Prior also worked with Semimetrix to develop a pair of modulated infrared laser devices to facilitate their unique semiconductor analysis method by allowing the investigation of intraband transitions in semiconductors. This custom solution was necessary as the chosen wavelengths were critical for differentiating between intraband and band-to-band transitions.

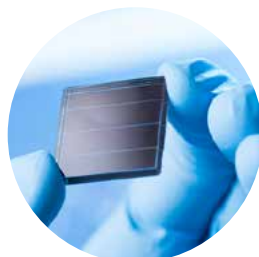
Prior's research and development team designed the optics and ensured they would integrate fully in the OpenStand. Prior also sourced a suitable camera and casework for imaging at the long wavelengths specified by Semimetrix to complete the system. The result is a complete, unique, automated system used to map electronic structures to physical sample morphology using a non-contact, minimally invasive method.

The result of this design process was that Semimetrix launched from a research instrument concept to a production-ready, fully motorized solution more rapidly than would have been possible even with a manual system.

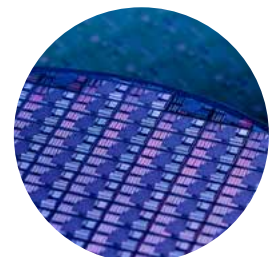
## Prior OpenStand: customizable and flexible



Life sciences



Materials



Semiconductor

## Reliable supplier for high quality, customized components.

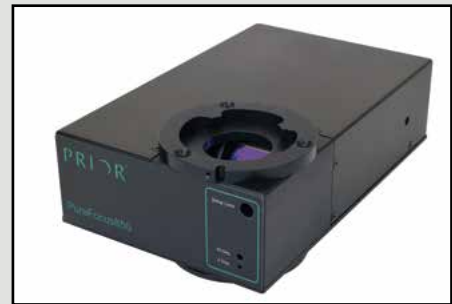
While Prior has an extensive range of robust motorized components which are proven in a broad spectrum of applications, there are also many clients with specialized requirements for whom the standard products are not suitable.

Our component customization process allows our clients to take established, proven products and modify them to suit their OEM designs. This approach not only reduces the risk of developing a completely new solution but also the number of development cycles to reach a market-ready product.

A German market-leader in confocal microscopy required an autofocus solution to enhance their customers' timelapse and fluorescence lifetime experiments. Prior Scientific's PureFocus850 is a proven hardware autofocus solution for many life science imaging applications, but is also designed to allow the fitting of customized optics to specific applications. For high-end applications like confocal microscopy, ensuring that the internal optics are optimized is essential.

Prior and the client worked together to identify numerous suitable new components for the PureFocus850 from reputable sources to ensure that the point spread function of the imaging system was optimized. The wavelength of the PureFocus850's laser diode was also changed at the client's request.

The result of these changes, after a collaborative assessment of the new unit's performance within the imaging system, was a new OEM device that met the client's expectations. The client could also take advantage of Prior's autofocus production line and have fully assembled and tested devices delivered to them, rather than having to upgrade a standard product in the field, reducing their costs.



**Ligero Technical Services**, a Texas-based company that specializes in laser ablation, was searching for a versatile platform for their AutolazeQC laser micromachining systems. The AutolazeQC is suitable for machining most metals and dielectrics as well as many plastics and ceramics.

Ligero chose Prior's new H275LMT extended travel focus column as a main component to provide fast, controlled movement of the optical system. The H275LMT's high load capacity enables complex system assemblies like the AutolazeQC to be simply mounted above the sample to accommodate samples as thick as 200 mm.

Combined with Prior's ProScan high precision stages, ProScan controller and joysticks, the final system is capable of up to 300 mm of stage range in X and Y and is capable of spotting sizes as small as one micron making it an ideal platform for marking, failure analysis,

test and general circuit editing. Showcasing its versatility, some users even use the AutolazeQC as just a stand-alone milling machine. The robust features along with proven performance, made the H275LMT extended travel focus column combined with the additional Prior components an ideal solution for this product line.



Discover more...



## Queensgate Nanopositioning

Piezo-driven, flexure guided positioning stages for high-speed, high precision applications.



## Prior OpenStand

Customized optical systems that evolve with development work. Fast-track platforms for prototyping and proof concept.



**PRIOR**<sup>®</sup>  
Scientific

 [prior.com](http://prior.com)  
 [linkedin.com/company/prior-scientific](https://www.linkedin.com/company/prior-scientific)  
 [@PriorScientific](https://twitter.com/PriorScientific)

### UNITED KINGDOM

Prior Scientific Instruments Ltd.  
Units 3-4 Fielding Industrial Estate  
Wilbraham Road, Fulbourn  
Cambridge, CB21 5ET  
United Kingdom  
**Email:** [inquiries@prior.com](mailto:inquiries@prior.com)  
**Phone:** +44 (0)1223 881711

### U.S.A.

Prior Scientific, Inc.  
80 Reservoir Park Drive  
Rockland, MA. 02370  
U.S.A.  
**Email:** [info@prior.com](mailto:info@prior.com)  
**Phone:** +1 781 878 8442

### GERMANY

Prior Scientific Instruments GmbH  
Maria-Pawlowna-Str. 4  
07743 Jena, Germany  
**Email:** [jena@prior.com](mailto:jena@prior.com)  
**Phone:** +49 (0)3641 242 010

### JAPAN

Prior Scientific KK  
Kayabacho 3rd Nagaoka Bldg 10F,  
2-7-10, Nihonbashi Kayabacho, Chuo-Ku,  
Tokyo103-0025, Japan  
**Email:** [info-japan@prior.com](mailto:info-japan@prior.com)  
**Phone:** +81 (0)3-5652-8831

### CHINA

Room 1812, Honghai Building,  
72 Xingdu Street, Suzhou Industrial Park,  
Suzhou, 215000, China  
**Email:** [info-china@prior.com](mailto:info-china@prior.com)  
**Phone:** +86 (0)512 6617 5866



Copyright © by Prior Scientific Limited, United Kingdom, 2024  
ProScan and OpenStand are trademarks of Prior Scientific Instruments Limited. Subject to changes without notice.  
DEM-V2.2-0524-EN