



ZDI

ZEM Dynamics Imaging, LLC

At ZDI, we strive to bring innovation and value to Life Science imaging applications, and to customize each system to our customers' needs. Often our clients will be looking to buy an integrated solution, but no such product exists in the mainstream imaging market for their applications.

Our goal is to provide a proven integrated solution based on high performance components and our novel technology, with flexibility and ease of use in mind at all times. Each member of our development team has spent years in research labs in various imaging fields, and we continue to collaborate with researchers across the globe.

ZDI can build and integrate systems from around the world, and supply powerful software to run them. We have over fifteen years' experience in high performance Biological imaging applications ranging from cell biology and neuroscience imaging to laser-based confocal microscopy, FRET, FRAP and spinning disk confocal systems.

UV laser Uncaging System released

Check out our new Microchip 355 nm laser system for UV uncaging! Our directly coupled microchip laser offers fantastic power delivery to the specimen in the ideal wavelength for neuroscience/calcium uncaging work. UVMC-CAGE uses the same galvanometer scan head from our FRAP system. See the article on page 2 for details.

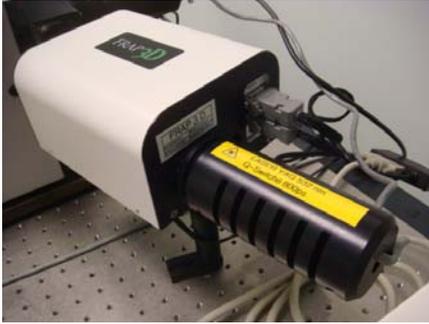
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Laser cutting with picosecond 532 nm

The second harmonic of the Nd:YVO4 laser gives a 532 nm wavelength, which is easier to work with than the 355 nm third harmonic, and offers great power for laser cutting/scissors applications.

Small form factor and easy coupling to the galvo scan head mean the picosecond green laser is extremely convenient and

powerful at the same time.

Since our engineered optical system can deliver a diffraction-limited laser spot, all the available laser intensity can be targeted to the precise location the user designates. Any sort of region can be drawn in the image and laser light will be filled based on user preferences for spot density and dwell time.

High speed control and precise calibration of each laser delivery system mean the light goes where you want, when you want, with as much or as little power as you require.

European Development

Much of current microscopy technology originates outside the United States, and there can be a significant lag in the arrival of certain systems onto the North American scene.

Our development team works closely with cutting edge researchers throughout the world, especially Europe, to bring new techniques both ways between continents.

Rapid development and thorough validation are critical to our model; we are continually evaluating new techniques and developing instrumentation for novel applications within the U.S. and in Europe.

Microchip 355 nm laser for UV uncaging

Working closely with our advanced Research and Development group in Europe, ZDI has developed a powerful laser-based UV uncaging system with galvanometer scan head for fluorescence microscopy. We use the same proven scan head from the FRAP system to deliver the laser throughout the microscope field of view. Our Q-switched laser system enables enough power for uncaging as well as laser cutting, while being easily modulated to low power when needed.

One of the keys to our system is the direct coupling we use to deliver the laser into the microscope without the use of fiber optics. While convenient, most fiber optics do not transmit well in this wavelength, nor are the optical couplers required easily aligned with invisible light. Our direct coupling and extremely high transmission efficiency means the UVMC-CAGE system will always have enough power, and requires no fiber optic coupler alignment.

The fast galvanometer scanning system is driven by analog voltage for millisecond time control of uncaging regions. Most often our customers use MetaMorph™ software from Molecular Devices Corp to control the imaging system and laser delivery via a digital-analog PC card. Easy and familiar software allows use of most existing components, and continuity of imaging protocols and data analysis. For certain applications, custom software may also be available.

Compatible with most modern microscopes, the UVMC-CAGE system has been proved in various laboratories in Europe, and is now available for the first time in the U.S.



Multi-laser FRAP/photoactivation

FRAP, or fluorescence recovery after photobleaching, has become a standard technique in the study not only of molecular diffusion, but also protein binding kinetics in living cells. Researchers most often use laser scan confocal systems to do frap, but these have the disadvantage of being slow to switch from bleaching to imaging as well as delivering toxic laser levels.

Our dedicated laser-based frap system can be fitted to most modern microscopes and used with spinning disk confocal systems, or in widefield mode. Our proven galvanometer head is in use in dozens of labs with a wide range of laser wavelengths such as 491 nm or 561 nm for typical probes like GFP or mRFP. Easy software allows for high speed kinetic imaging with variable timing modes, fast laser bleaching, and built-in correction for photobleaching due to imaging.

In addition, we offer a 405 nm line photoactivation of various dyes such as paGFP or EOS/Kaede. Our proprietary laser launch unit combines each line into a fiber optic, as well as having built-in safety shutters and AOTF for fine control of laser power and fast switching between lines.

Spinning Disk Confocal integration

The increasing use of live cell experiments has greatly expanded demand for confocal imaging systems which protect living cells. Traditional laser scanning confocal microscopes deliver toxic amount of laser light to cells. All of our imaging systems are compatible with spinning disk confocal imaging, allowing the latest high resolution techniques to be used and live cells to be preserved.



Giving Back

Part of the mission statement of Zem Dynamics includes giving back to the scientific research community. Our goal is to give at least 10% of our net profits to charitable organizations dedicated to research areas close to our hearts, such as cancer, heart disease and stroke.

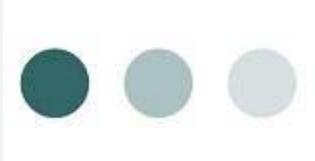
Initially, we plan to donate to outside organizations that we respect. Eventually, our goals include the formation of our own foundation to manage the distribution of direct grants toward developing novel imaging techniques that further research in these vital areas.

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*Innovative hardware and software
solutions for microscopy.*

Find us on the Web:
<http://www.zemdynamics.com>



All your favorite gear

ZDI can supply most of your favorite imaging equipment from various manufacturers! Our supplier relationships throughout the imaging industry enable us to provide the very best equipment available, at competitive prices. We offer a complete solution in all cases, with integration and installation of all components. As always, you have our complete guarantee, not just for the components, but for the entire system and its use for your application.

Innovation

Our mission is to address application needs in Life Science research where commercial systems do not exist, bringing cutting edge technology to biological imaging.

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