

# This Week in PHOTONICS

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## Top Stories

### SPIE announces finalists for 2023 Prism Awards

Cutting-edge technologies and companies ranging from exciting and emerging startups to longtime industry stalwarts are among this year's finalists for the SPIE Prism Awards. The 24 companies, across eight categories, will be honored during a 1 February 2023 gala evening at SPIE Photonics West.

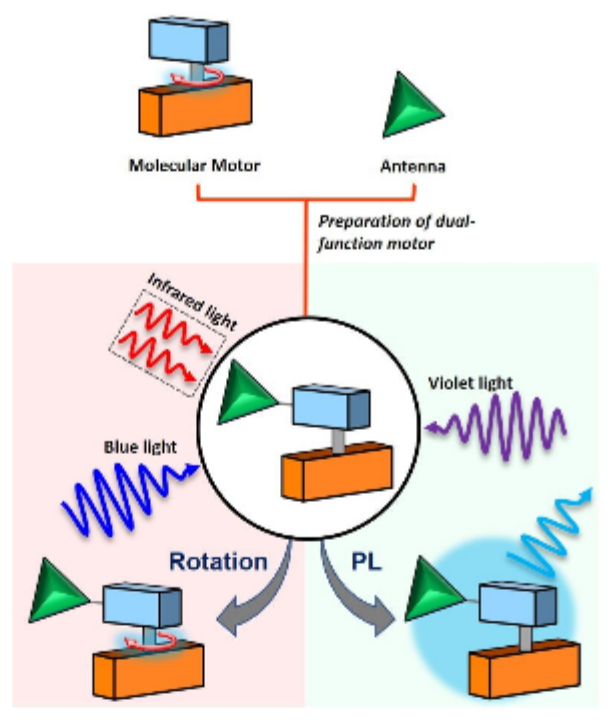
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### Light-Activated Molecular Motors Achieve Fluorescence

In their study of rotary molecular motors, researchers in the laboratory of Ben Feringa at the University of Groningen have combined two light-mediated functions — motion and fluorescence — within a single molecule. The advancement is poised to benefit the construction of advanced molecular machines and, according to the researchers, provide prospects toward photoactive multifunctional systems that perform molecular rotary motion while tracking its location in a complex environment.

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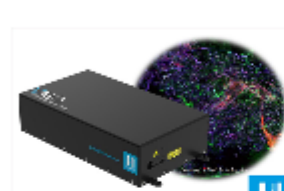
### Embedded AI Localizes Data Processing for Greater Speed and Security

Although AI-enabled devices are firmly integrated with daily life, the processing of data inputs takes place on large, external servers. Edge AI is poised to change this by allowing those processing tasks to take place directly on the device. However, the performance of AI, especially in very small devices, has so far been limited. Now, researchers at Fraunhofer IPMS are working to remedy this by networking expertise and developments from disparate research areas.

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## Featured Products & Services



### Ultrafast Fiber Lasers with <50 fs

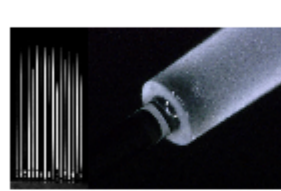
HUBNER Photonics GmbH

HÜBNER Photonics' VALO

Aalto femtosecond fiber lasers have pulse durations of <50 fs and peak powers of >2 MW from compact and stable turn-key systems. The lasers have very attractive features for applications in biomedicine, spectroscopy and micro-machining.

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## Upcoming Webinars



### The Laser-Driven Light Source: Theory, Practice, and Applications

Thu, Dec 1, 2022 1:00 PM - 2:00 PM EST

Numerous applications require broadband light sources that have stable output, high brightness, stable spectral composition, and a high degree of spatial coherence. The traditional broadband light sources such as thermal black bodies or plasma discharge tubes, satisfy some of these performance requirements but rarely all. The Laser-Driven Light Source (LDLS) offers a significant performance

improvement over traditional sources and is rapidly becoming the light source of choice in applications such as semiconductor wafer inspection, image sensor characterization, and the testing of optical systems such as telescopes. Slawomir Piatek, Ph.D., briefly reviews the traditional broadband sources and compares them with the LDLS. He focuses on the operating principles of the LDLS, its optical characteristics, and existing and future applications. Sponsored by Hamamatsu Corp.

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### Fused Silica in Radiation Environments

Tue, Dec 13, 2022 1:00 PM - 2:00 PM EST

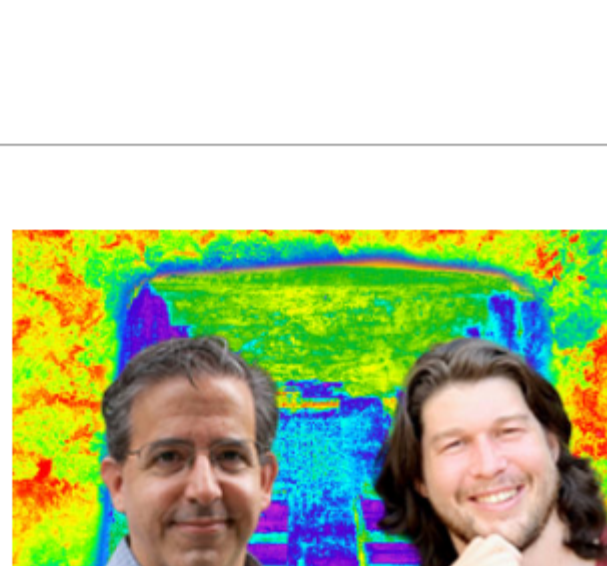
An increasingly wide range of applications need to be able to function in harsh environments, not only on space missions but also here on Earth, in particle detectors, for example. It is important to understand radiation's key processes and their effects on fused silica in order to design optical instrumentation that can avoid harm to its systems, enabling it to complete its mission. Eduard Klett of Heraeus Conamic provides an overview of fused silica as an optical material and how it is affected by different types and doses of radiation. He classifies types of radiation and discusses their material. Presented by Heraeus Conamic.

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## All Things Photonics

Two lidar imaging use cases are explored. In segment one, the Texas Water Development Board's **Joey Thomas** and **Saul Nuccitelli** explain how the organization uses topobathymetric lidar to help prevent flooding along the South Llano River. Later, the collaborative team of **Kathryn Reese-Taylor**, **Felix Kupprat**, and **Juan Carlos Fernandez Diaz** employs the method to investigate beneath the Calakmul biosphere's forest canopy.

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