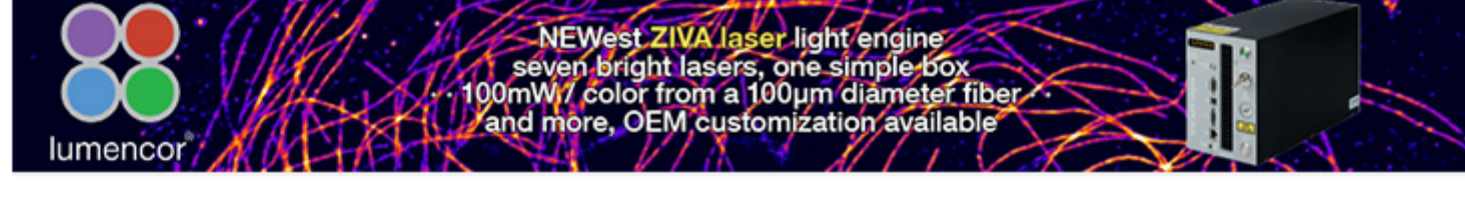


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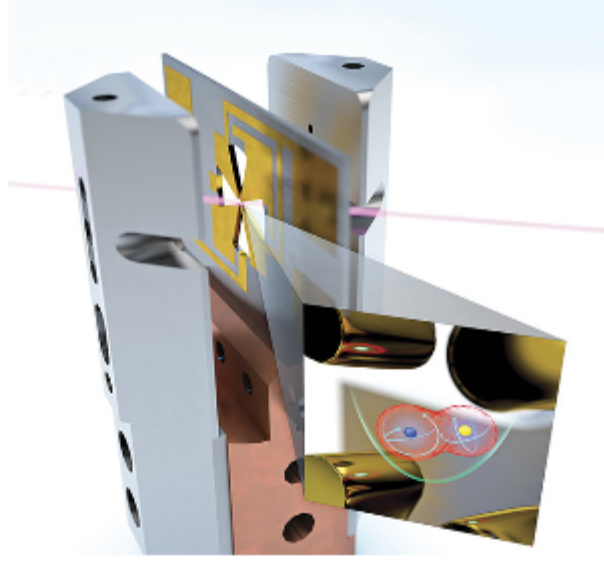


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Tiny Quantum Effects Promise Big Impact on Future Instruments

While the quantum world may seem abstract and remote from day-to-day life, researchers are discovering that quantum effects such as photon entanglement could improve the performance and precision of everyday tools. Advancements in quantum metrology could help sharpen sensor location data, improve the precision of atomic clocks, or enable more versatile detectors for sensing greenhouse gas emissions.

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Islam's Golden Age Sparks a Spectrum of Optical Knowledge

The history of optics traces back to the primitive lenses of the ancient Egyptians and Mesopotamians, the rudimentary logical conjectures of the ancient Greek philosophers, and the simple geometrical optics of figures such as Euclid, Ptolemy, and Hero of Alexandria. Often overlooked in this history are figures from the Islamic Golden Age, which is generally considered to have spanned the period between the 8th and 14th centuries, beginning with the overthrow of the repressive apartheid regime of the Umayyad caliphate by the Abbasid Revolution and ending with the Mongol invasions and the siege of Baghdad.

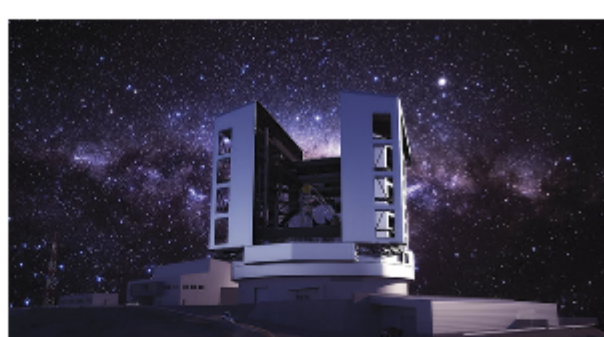
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The Fight for First Light: Extremely Large Telescopes

The 2020 U.S. Decadal Survey on Astronomy and Astrophysics, a type of survey in which astronomers set priorities to guide federal budgets during the next 10 years, is in the process of listing its most important projects. Asteroid detection and Mars exploration are high on the list, as is continued support of a new cadre of extremely large telescopes already under construction around the world, with effective mirror apertures measuring 20, 30, or 40 m in diameter. Astronomers hope these giant ground-based light buckets will provide capabilities exceeding anything else humans have ever built, and will witness new scientific paradigms such as life on other planets, the birth of new stars, and the formation of galaxies.

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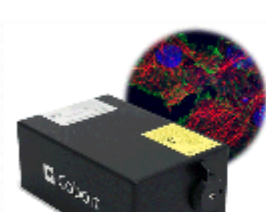


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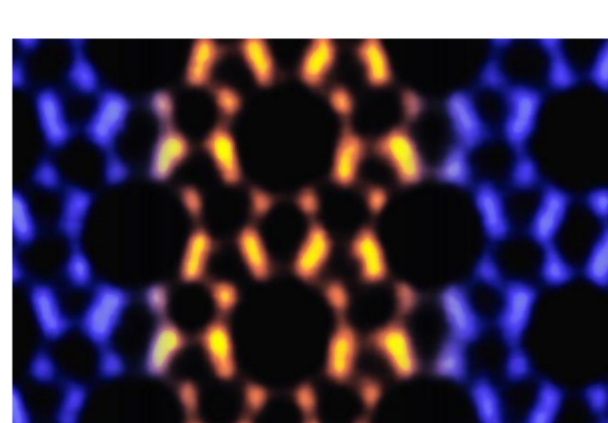
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:: In Case You Missed It

Atomic-Scale Imaging Reveals Strength Capabilities of Thin Film

Researchers at the University of Minnesota have used high-resolution TEM microscopy to image the atomic structure of ultrathin zeolite nanosheets, which are used by industries as specialized molecular filters.

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Microresonator Measures and Images Nanoparticles with High Degree of Sensitivity

Scientists at the Okinawa Institute of Science and Technology Graduate University have developed a light-based device that can act as a biosensor, detecting biological substances in materials, such as pathogens in food. Microresonators are central to a new method for single-particle photothermal absorption spectroscopy, whereby the microresonators act as microscale thermometers to detect the heat dissipated by optically pumped, nanoscopic targets.

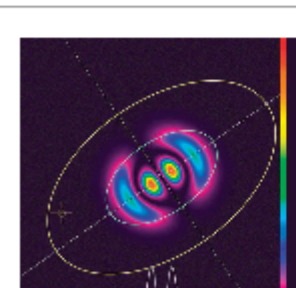
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Robust Laser Technology Will Enable Satellite to Measure Greenhouse Gas

The MERLIN satellite, a collaboration between DLR RfM in Germany and CNES in France, will use a radar-like laser system to measure the methane concentration in Earth's atmosphere. The satellite's Integrated Path Differential Absorption (IPDA) lidar will send laser light to Earth's surface and analyze the backscattered signal.

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:: Upcoming Webinars



Principles of Laser Beam Profiling

Wed, Sep 16, 2020 1:00 PM - 2:00 PM EDT
 Laser users often wonder if they need to profile their lasers, but may have nagging doubts as to why. In this talk, presented by Ophir, sales director Derrick Peterman, Ph.D., will outline the standard techniques involved with beam profiling and the key practices that produce reliable beam profiling results, as well as instrumentation, issues related to attenuation, and real world applications.

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