

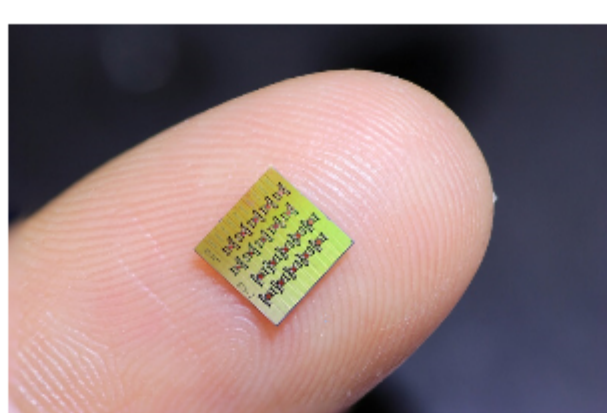
TECH PULSE

Spectroscopy Tech Pulse is a special edition newsletter from Photonics Media covering key developments in spectroscopy technology. Manage your Photonics Media membership at [Photonics.com/subscribe](https://www.photonics.com/subscribe).

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**Researchers Achieve Magnet-Free Optical Isolation**

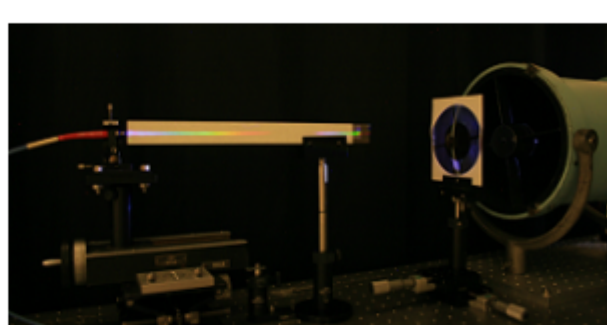
A collaboration between École Polytechnique Fédérale de Lausanne (EPFL) and Purdue University has led to the development of an electrically driven, magnet-free optical isolator that enables light routing on a chip. Typically, optical isolation is achieved through the use of magnetic materials or magnetic fields. However, these are incompatible with current semiconductor foundry processes.



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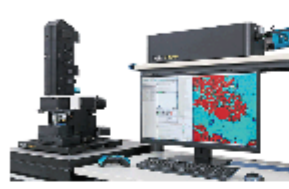
**Holographic Space Telescope Takes Aim at the Next 'Planet Earth'**

To support the discovery of planets outside the solar system, scientists at Rensselaer Polytechnic Institute (RPI) created an experimental space telescope that can directly analyze the spectra of an exoplanet. The main component of the Dual Use Exoplanet Telescope (DUET) is a Fresnel hologram that can transform incident starlight directly into a spectrogram.



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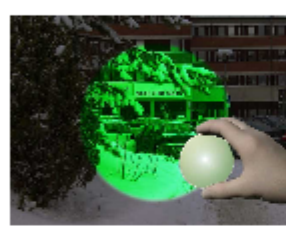
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**Raman Spectroscopy and Machine Learning Team Up to Predict Immunotherapy Response in Patients**

Using Raman spectroscopy and machine learning, a team at Johns Hopkins University developed a noninvasive technique to assess how cancer patients will respond to immunotherapy. The researchers used Raman spectroscopy to map the biochemical composition of tumors in detail, and machine learning to determine biomarkers indicating patient response to immunotherapy treatment.

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**Light Design and Fabrication Process Spurs Possibilities for Molecular Sensing**

Researchers at Vanderbilt University and Penn State University developed an approach to design and fabricate thin-film infrared light sources with near-arbitrary spectral output driven by heat, along with a machine learning methodology called inverse design. The methodology reduced optimization time from weeks and months to just a few minutes on a consumer-grade computer.

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**Fluorescent Sensors with Noncanonical Amino Acids Could Broaden Sensor Use in Biological Studies**

Although fluorescence tools for biological study abound, some processes, such as the interactions between proteins and metabolites, are challenging to investigate with the tools that currently exist. However, a research group led by professor Jeremy Mills at Arizona State University (ASU) is working to change that by using a fluorescent noncanonical amino acid to generate new proteins.

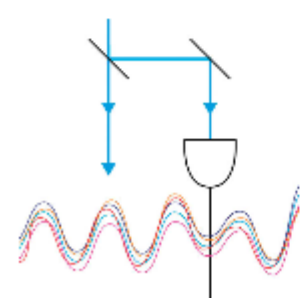
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**Photon-Phonon Combination Will Enable Multi-Technique Spectroscopy Advances**

City College of New York (CCNY) researchers have demonstrated the ability to combine topological photons with lattice vibrations, or phonons, to manipulate their propagation in a robust and controllable way.

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**Get More Out of Your Optical Measurements**

Tue, Nov 16, 2021 11:00 AM - 12:00 PM EST

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