

Accurate Control of Chemical Activity in Nano Devices

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Categories:

- Materials and Manufacturing
- Micro & Nanotechnologies

Keywords:

- Aeronautics
- Materials and Manufacturing
- Measurements
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Applications of nanoscale devices with exposure to extreme environments suffer from a lack of characterization methods capable of offering in situ performance measurements.

Researchers at Purdue University have developed a technique called spectral tomography to address this issue. This technique uses spatial and temporal non-contact measurements of mechanochemistry in material systems. Predicting mechanical and thermal properties of extreme-scale electronics in high-temperature energy systems, such as nuclear energy and hypersonic air vehicles, measuring thermal cycling and charge-discharge cycle induced dielectric breakdown with corresponding life-cycle failure, e.g., Li-ion battery technology, and transferring in vitro measurements to in vivo measurements/observations are a few of the capabilities of this technology. It offers resolution, temperature, and environment dependence accuracy not currently possible in commercial use. This technology's potential use includes nanoelectronics, alternative energy, and biotechnology.

Advantages:

- Allows for in situ performance measurements
- Transfers in vitro measurements to in vivo measurements/observations
- Offers resolution, temperature and environment dependence accuracy

Potential Applications:

- Nanoelectronics
- Alternative Energy
- Biotechnology

People:

- Tomar, Vikas (Project leader)

- Gan, Ming

Intellectual Property:

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Contact OTC:

Purdue Office of Technology Commercialization

The Convergence Center

101 Foundry Drive, Suite 2500

West Lafayette, IN 47906

Phone: (765) 588-3475

Fax: (765) 463-3486

Email: otcip@prf.org