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Topical Collection: “Progress and Challenges for Emerging Integrated Energy Modules”

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The development of integrated energy modules, including photovoltaic, thermoelectric, photoelectrochemical, fuel cells, and batteries that are safe, reliable, cost-effective, and environmentally benign, is one of the most important challenges today. Integrated energy modules will provide sustainable power for human-centric infrastructure including smart cities, transport, and the myriad of sensors needed to enable the internet of things (IoT). The development of efficient and sustainable energy modules involves not only electronic materials that meet certain requirements, but also the integration of electronic energy materials with interconnects and packaging, so identification of weak links in integrated systems is critical.

This topical collection will highlight the recent progress and challenges in developing emerging integrated energy modules, and explore the challenges faced when integrating electronic energy materials, interconnects, and packaging into efficient sustainable integrated energy systems.

Topics covered include but are not limited to:

- Integrated solar-driven water-splitting systems
- Thermoelectric and thermophotovoltaic energy conversion modules
- Fuel cell and electrolyzer modules
- Batteries and supercapacitors
- Energy interconnects and packaging for reliability
- Printed interconnects for monolithic thin film energy modules
- Theoretical modeling of integrated energy systems
- Operando studies of integrated energy systems

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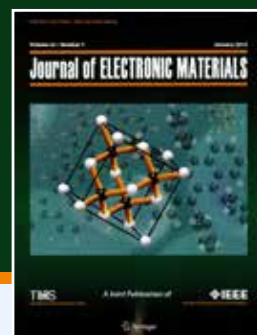
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