

Nanotechnology in Energy Storage and Conversion

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Today, nanotechnology has been indispensable to very broad research fields from materials sciences to biology and medicine, and been generating new classes of materials and devices. This session focuses, in particular, on how nanotechnology can bring benefits in energy generation, storage, and efficiency. Gleb Yushin (Georgia Tech) will discuss the use of nanotechnology for the formation of nanocomposite materials for batteries and supercapacitors, thereby achieving a unique combination of higher energy density, stability, rate performance and, in some cases, multifunctionality in such devices. Daniel Steingart (Princeton University) will present how advanced diagnosis and nanomanufacturing could make an impact on advancing the energy storage technology for electric vehicles and storage for renewables. Seiya Tsujimura (University of Tsukuba) will present bioelectrochemistry at the interface between electrochemistry and biological redox reactions, more specifically engineered biocatalysts and nano-structured porous carbon electrode materials to design new biosensing system with higher accuracy and biofuel cells with higher power density. Last but not least, Eiji Iwase (Waseda University) will discuss the use of NEMS/MEMS technology for the implementation of energy devices at the societal level.