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Seeing small: Enabling new discoveries in energy materials through advanced transmission electron microscopy

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Aberration-corrected transmission electron microscopy (TEM)/ scanning transmission electron microscopy (STEM) and *in-situ* TEM have emerged as powerful tools for the characterization of energy materials. Aberration-corrected TEM/STEM enables atomic and structural imaging resolution below 0.1 nanometers while performing chemical analysis at the atomic level. *In-situ* TEM allows dynamic real-time imaging of energy materials behavior. In this talk, a brief overview of aberration-corrected TEM/STEM and *in-situ* TEM will be presented and related to the quest for investigating energy materials. Subsequently, the power of these techniques in providing scientific insight into developing Li-ion batteries, proton exchange membrane fuel cells and catalyst nanoparticles will be discussed.

Biography

Paulo J. Ferreira is currently Associate Professor at the University of Texas at Austin, USA and the Director of the electron microscopy facility at the Texas Materials Institute. He has a Ph.D. in Materials Science and Engineering from the University of Illinois, USA and has done his post-doctoral work at MIT in Materials Science and Engineering. He concentrates his scientific research in the areas of nanomaterials, nanotechnology and electron microscopy applied to alternative energy technologies. He is co-author of the book "Nanotechnology for Architects, Designers and Engineers" with co-authors D. Schodek (Harvard University) and Michael Ashby (University of Cambridge, UK).

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