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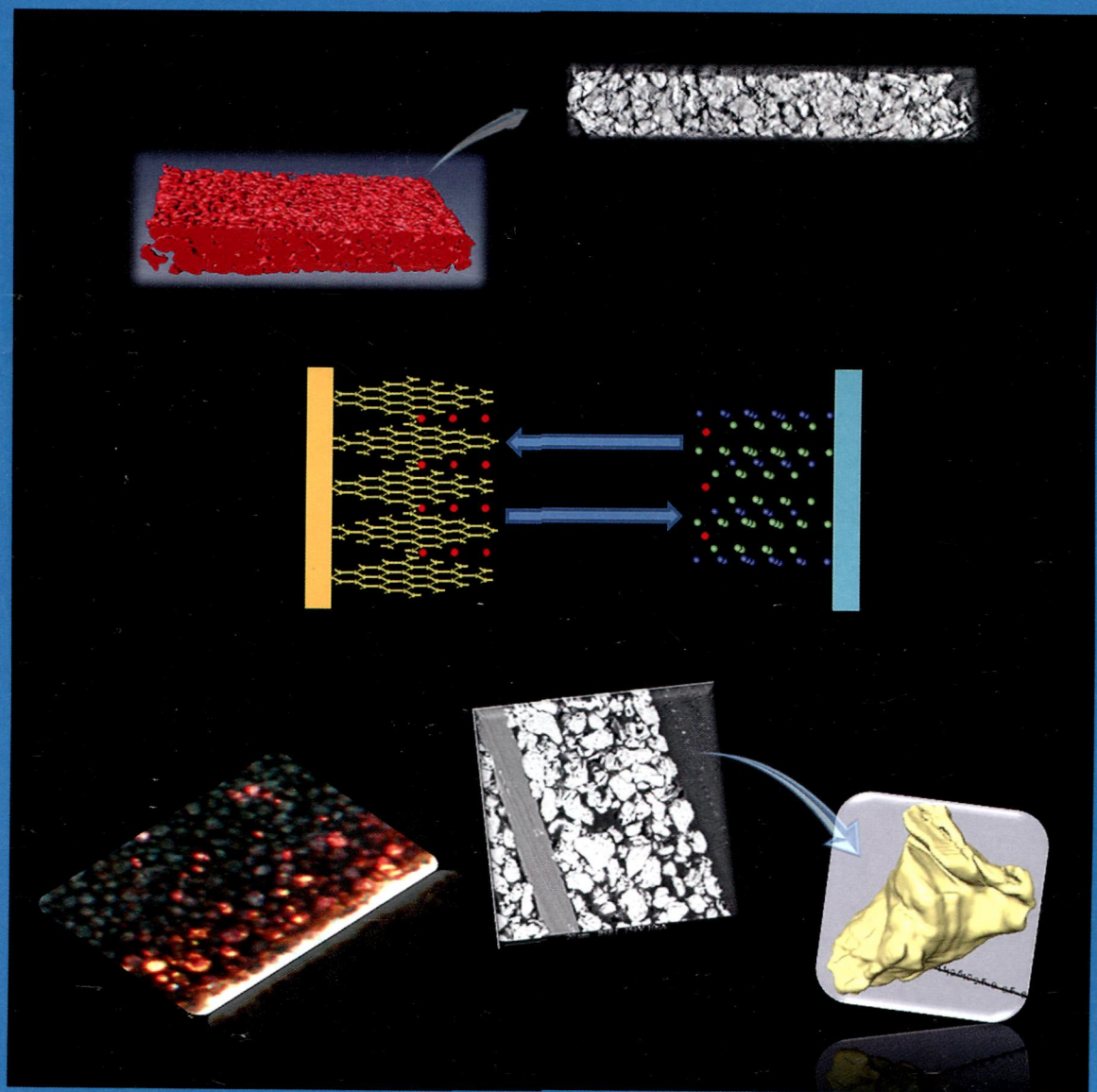

Mesoscale Complexity and Inhomogeneity in Li-ion Batteries (see page 5A)

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ON THE COVER: Mesoscale complexity and inhomogeneity in Li-ion batteries. Most Li-ion battery failures can be ascribed to the presence of nano- and microscale inhomogeneities that interact at the mesoscale. In an ideal Li-ion battery, the only steps that should occur are Li moving back and forth between and into the electrodes. In contrast, in a failed battery, inhomogeneities (regions with sharply varying mechanical, electrical, morphological, or chemical properties, including interfaces) act by hindering Li transport so that Li does not get to the right place at the right time. A detailed understanding of the electrode structures and inhomogeneities at all scales, from nano- to mesoscale (where inhomogeneities interact), can lead to improved understanding of durability and failure mechanisms, ultimately leading to longer-lived batteries, with all of their attendant advantages. See page 6481.

Feature Article

Articles

Energy Conversion and Storage; Energy and Charge Transport

Surfaces, Interfaces, Porous Materials, and Catalysis

Plasmonics, Optical Materials, and Hard Matter

Physical Processes in Nanomaterials and Nanostructures

Comments

Additions and Corrections

(S) Supporting Information available via online article