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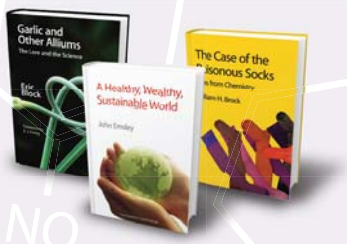

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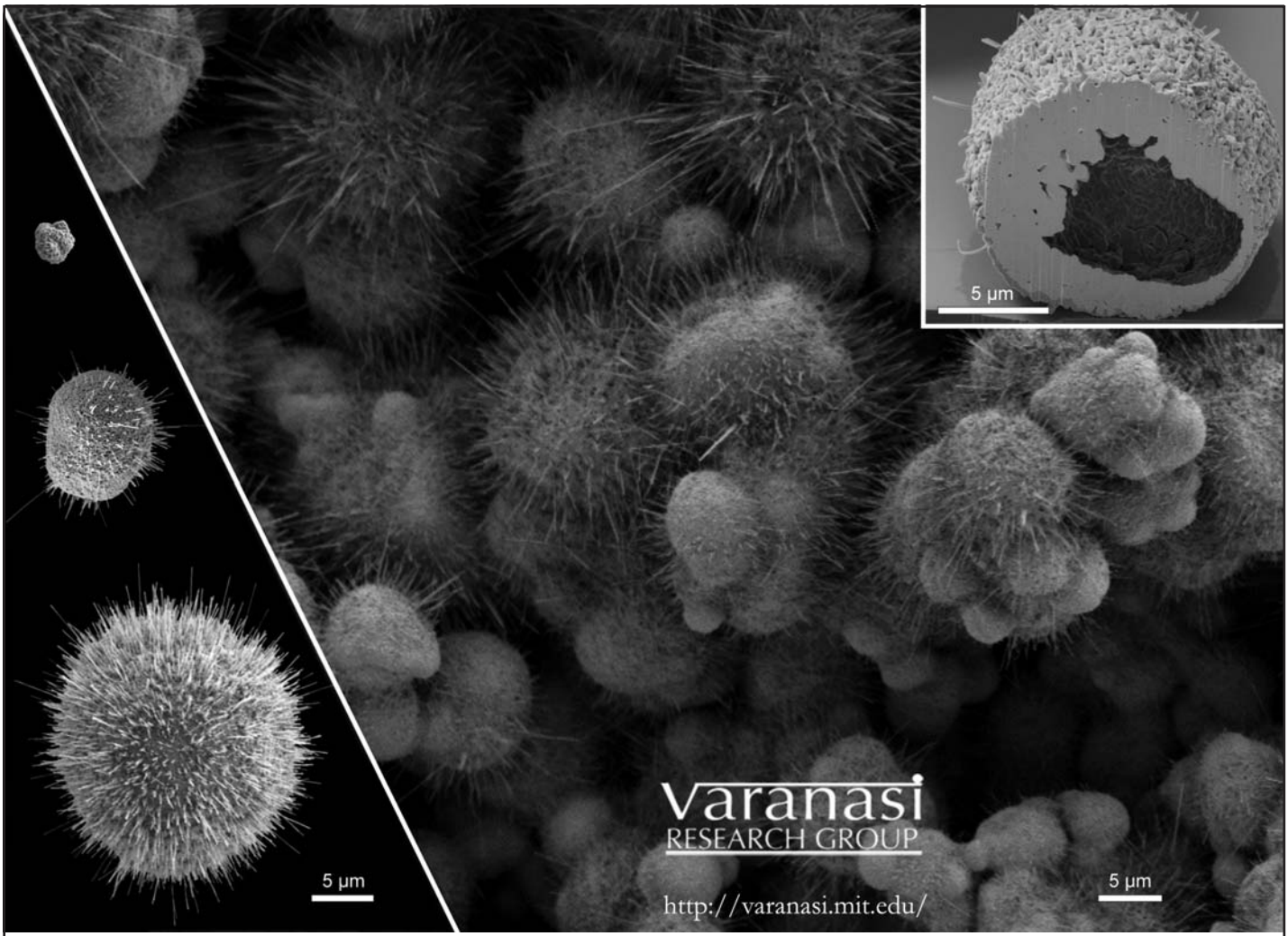

Showcasing research from the Varanasi Group, MIT, Cambridge, MA, USA.

Title: Size-dependent thermal oxidation of copper: single-step synthesis of hierarchical nanostructures

The mission of the Varanasi Group at MIT is to bring about transformational efficiency enhancements in various industries including energy, water, agriculture, transportation, and electronics cooling by fundamentally altering thermal-fluid-surface interactions across multiple length and time scales.

For the first time, we have demonstrated size-dependent thermal oxidation and nanowire coverage of copper particles. Focused-ion beam results demonstrate that the oxidized particles are hollow and confirm our proposed mechanism based on in-situ X-ray diffraction and thermogravimetric analysis. This simple and scalable manufacturing process can be used to create new hierarchical structures in bulk for applications in a variety of areas including catalysis and thermal management.

As featured in:

See Varanasi *et al.*, *Nanoscale*, 2011, **3**, 4972.

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