Materials Science and Engineering Department

Fall Seminar Series

Self-Assembly, Nanoparticles, and Photothermal Processing for Optical and Energy Storage Devices

Prof. James Watkins
Department of Polymer Science and Engineering
University of Massachusetts Amherst

November 2, 2022
3-4PM | Hill Seminar Room (LeBow 240)

We use the self-assembly of bottle brush block copolymers, well-defined na noparticles, and rapid heating via photothermal processing as building bloc ks to enable scalable fabrication routes to high-performance optical, electro nic and energy storage devices. Examples include large pore, few-layer grap hene materials for supercapacitors, nanoimprinted nanoparticle-based mater ials for metalenses and AR/VR/XR optics, and combinations of metasurfaces and layered polymer composites for integrated plasmonic-photonic color-sh ifting systems.

James Watkins is a Professor of Polymer Science and Engineering and Director of the C enter for Hierarchical Manufacturing, a National Science Foundation Nanoscale Science and Engineering Center (NSEC) at the University of Massachusetts, Amherst. Prof essor Watkins received his B.S. and M.S. degrees in Chemical Engineering from the John s Hopkins University and his Ph.D. in Polymer Science and Engineering from the Univers ity of Massachusetts. He joined the Chemical Engineering faculty at UMass in 1996 and the Polymer Science and Engineering Faculty in 2005. Prof. Watkins is a recipient of the Camille Dreyfus Teacher-Scholar Award and a David and Lucile Packard Foundation Fell owship for Science and Engineering. He is a fellow of the American Physical Society.

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