



Craig Hawker

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Craig Hawker is the Alan and Ruth Heeger Professor of Interdisciplinary Studies at the University of California, Santa Barbara, with appointments in the Materials Department and the Department of Chemistry & Biochemistry. He received his B.Sc. from the University of Queensland and a Ph.D. degree from the University of Cambridge before conducting postdoctoral research at Cornell University with Jean Fréchet. He began his independent career at the IBM Almaden Research Center prior to joining UCSB in 2004, where he has played a central role in building internationally recognized programs in polymer science, nanoscience, and interdisciplinary materials research. The Hawker group develops new strategies for the synthesis of advanced polymeric materials, with a focus on precision macromolecular design, scalable manufacturing, and the translation of fundamental chemistry into functional materials. His research spans controlled polymerization, sequence-defined macromolecules, block copolymer self-assembly, and high-throughput and automated approaches to materials discovery. These efforts have enabled advances in areas ranging from nanostructured materials and soft matter to sustainable polymers and industrially relevant technologies with a focus on polymer-based therapeutics and personal care systems. Craig has published over 600 scientific papers and holds more than 80 patents. He is a member of the National Academy of Sciences, the National Academy of Engineering, the National Academy of Inventors and the American Academy of Arts and Sciences, and a Fellow of the Royal Society. His recent awards include the Kathryn C. Hach Award for Entrepreneurial Success from the American Chemical Society and the Herman F. Mark Polymer Chemistry Award.

Abstract: “Enabling Accelerated Polymer Synthesis”

Advances in polymer science increasingly demand rapid access to well-defined macromolecules with precise control over composition, architecture, and function. This presentation will highlight recent efforts to accelerate polymer synthesis through the integration of controlled polymerization methods, automated and high-throughput workflows, and scalable purification strategies. By combining approaches such as modular monomer design, automated chromatographic separations, and parallel synthesis platforms, it is now possible to generate large libraries of polymers with systematically varied structures, enabling rapid mapping of composition–structure–property relationships. Examples will include the synthesis of precision block copolymers, sequence-controlled materials, and functional networks, as well as the use of these platforms to access previously inaccessible regions of polymer phase space. Collectively, these advances demonstrate how coupling synthetic innovation with automation and data-driven strategies can transform polymer discovery from an iterative process into a predictive and accelerated design framework.