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Proactive Design of Sustainable Nanomaterials

ABSTRACT:

Engineered nanoparticles are increasingly being incorporated into devices and products across a variety of commercial sectors – this means that engineered nanoscale materials will either intentionally or unintentionally be released into the ecosystem. The long-term goal of the presented work is to understand the molecular design rules that control nanoparticle toxicity using aspects of materials science (nanoparticle design, fabrication, and modification), analytical chemistry (developing new assays to monitor nanotoxicity), and ecology (monitoring how nanoparticles enter and accumulate in the food web through bacteria and how these nanoparticles influence bacterial function). Taken together, these data suggest that proactive design of safe and sustainable nanoscale materials is possible.

BIO:

Christy Haynes is the Distinguished McKnight University Professor at the University of Minnesota where she leads the [Haynes Research Group](#), a lab dedicated to applying analytical and nanomaterials chemistry in the context of biomedicine, ecology, and toxicology. Professor Haynes completed her undergraduate work at Macalester College in 1998 and earned a Ph.D. in chemistry at Northwestern University in 2003 under the direction of Richard P. Van Duyne. Before joining the faculty at the University of Minnesota in 2005, Haynes performed postdoctoral research in the laboratory of R. Mark Wightman at the University of North Carolina, Chapel Hill. Among many honors, she has been recognized as an Alfred P. Sloan Fellow, a Searle Scholar, a Dreyfus Teacher-Scholar, and a National Institutes of Health "New Innovator." In addition to wide recognition for her research contributions, including over 200 peer-review publications, she has been recognized by her university as an Outstanding Postdoctoral Mentor and the Sara Evans Faculty Woman Scholar/Leader Award. Professor Haynes is currently the Associate Head of the University of Minnesota Department of Chemistry, the Associate Director of the National Science Foundation-funded [Center for Sustainable Nanotechnology](#), and an Associate Editor for the journal *Analytical Chemistry*.