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Self assembled organic and organic-Inorganic nanopillars

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Abstract

With the ultimate objective of the miniaturization of electronic device components, various well-defined nanostructures have been studied, not only to improve device performance, but also to take advantage of the remarkable properties of nanostructures that raise new possibilities at the nanoscale. Significant progress has been made in the area of nanopillar that has opened up potential applications in nanoelectronics, imaging, sensors, catalysts, etc. Recently, we discovered that an array of well-defined hexagonal nanopillars of cyanuric acid and melamine complex can form on a gold surface through a simple and efficient self-assembling procedure. We also developed organic-inorganic hybrid nanopillars through a self-assembly process. This is a new approach to assemble organic molecules and organic-inorganic hybrid into nanostructures. The nanoassemblies prepared by this method could be made in large quantities at a low cost due to the facile method, which makes them competitive for preparing nanostructure-based devices or coatings.

Biography

Dr. Hai-Feng Ji is an associate professor in the Department of Chemistry in the College of Arts and Sciences at Drexel University. Before that, he was an associate professor in the Department of Chemistry in the College of Engineering and Sciences and a faculty research in Institute for Micromanufacturing (IfM) at Louisiana Tech University (LaTech) (2000-2008). His current research interests include micromechancial sensors for biological and environmental applications, nanopillars for energy applications, cancer detection and treatment, etc. He has published more than 120 peer-reviewed journal publications.