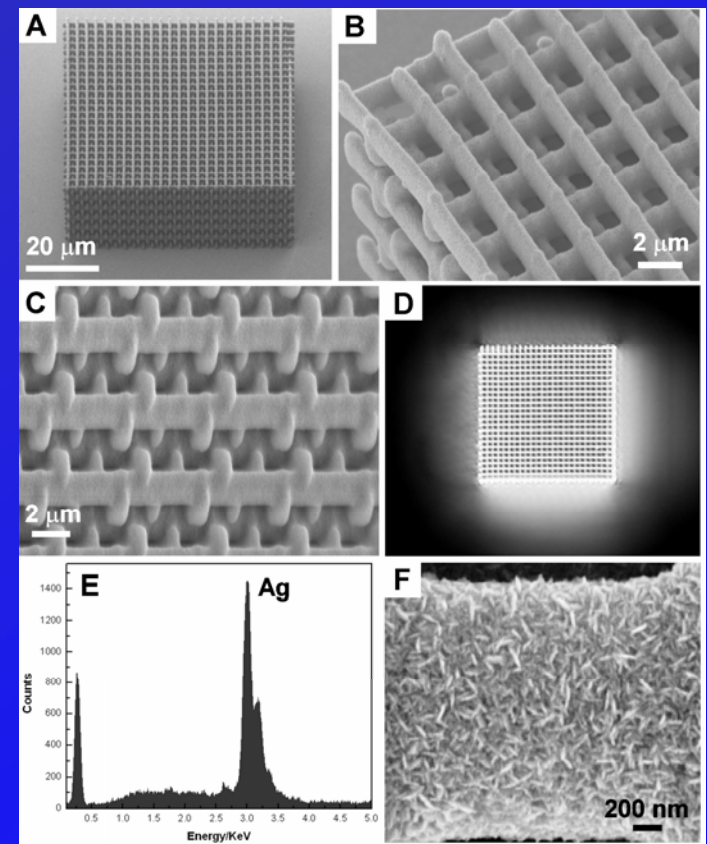
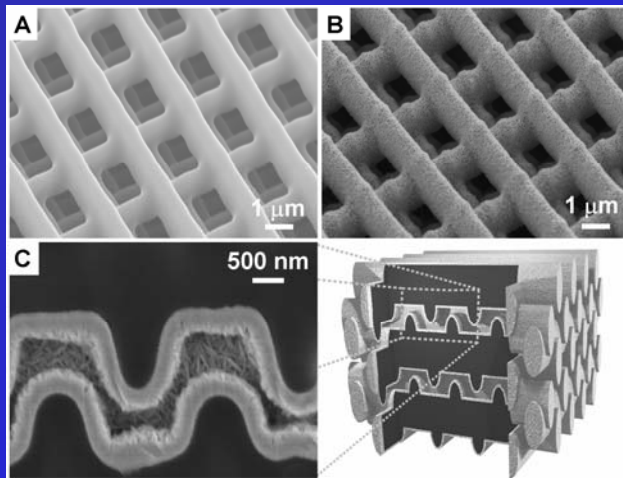


Polypeptide Nano-Templating: A New Method for Creating Metal and Semiconductor Nano-Scale Structures with 3D-Shape Control

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Electroless deposition (ED) onto polypeptide templates was examined as a means for generating shape-controlled nanostructures. Surface-functionalized polymers were used as test systems for examining how chemical and physical parameters could be used to control the nanoscale morphology of electrolessly deposited metal. All ED systems examined for Ag and Cu were found to generate nanocrystalline metal with grain size that was far large for use in PPNT.



In the course of studying ED onto polymeric surfaces, processes were developed that enable fabrication of complex 3D metallized polymeric micro-structures by ED of Ag or Cu onto cross-linked acrylate and epoxide templates (see scanning electron micrographs). These structures are electrically conducting and optically reflective (top-right panel). This work has opened an entirely new means for fabricating functional 3D metal-dielectric micro-structures, as reported by us in *Adv. Funct. Mater.* (2006, vol. 16, p. 1739) and *Chem. Mater.* (2007, vol. 19, p. 3858).