

### **579f On the Mesoscale Imprinting of Silica Via Self Assembly**

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The design and synthesis of imprinted silica using gold-silica core-shell nanoparticles as imprints is described. Our objective is to use colloidal gold as a template for the organization of thiol and amine functional groups via self-assembly. Silica materials consisting of over 30% by weight in gold have been synthesized via a novel sol-gel route relying on the condensation of hybrid organic-inorganic core-shell nanoparticles at controlled pH. These materials consist of a porous silicate framework that allows for the removal of the gold templates via etching to leave behind the functional group organization created by the imprinting process as well as the synthesis of imprinted pockets surrounding these organized functional groups. We describe our recent success in this approach as well as the characterization of the materials before and after gold removal. Efforts to employ the strong interaction between thiols and gold for this imprinting approach are also summarized.