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Advanced Technology for 3D Nanoprinting †

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Abstract: Today, additive manufacturing research and development rely heavily on 3D printing. While there is a wide choice of commercial 3D printers, few reach nanometer resolution and feature size. The difficulties arise from special high precision required for materials delivery and registry among layers in the printing process. Scanning probe microscopy (SPM) has been widely used by the research and development community to visualize specimens with unprecedented resolution: reaching nanometer levels routinely and atomic and molecular levels on occasion. , The localization of SPM at atomic and molecular scale, has been harnessed to control interactions of molecules toward 2D and 3D nanolithography. Combining SPM's spatial precision with advanced local delivery methodologies, including microfluidics, this presentation demonstrates feasibility and examples to reach 3D nanoprinting as well as new materials chemistry. Potential applications will also be discussed.

Keywords: 3D nanoprinting; scanning probe microscopy; nanolithography; nanofabrication; self-assembly, controlled-assembly.

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Conflicts of Interest

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