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Three-Dimensional Lock and Key Colloids YU WANG, YUFENG WANG, XIAOLONG ZHENG, Molecular Design Institute and Department of Chemistry, New York University, New York, New York 10003, USA, GI-RA YI, Department of Polymer Science and Engineering, Sungkyunkwan University, Suwon 440 746, Republic of Korea, STEFANO SACANNA, Molecular Design Institute and Department of Chemistry, New York University, New York, New York 10003, USA, DAVID PINE, Center for Soft Matter Research and Department of Physics, New York University, New York, New York 10003, USA, MARCUS WECK, Molecular Design Institute and Department of Chemistry, New York University, New York, New York 10003, USA — Colloids based upon silica patchy particles featuring a (trimethoxysilyl)propyl methacrylate matrix are synthesized. Selective etching of the silica patches results in the controllable fabrication of colloids with three-dimensional multicavities. The obtained hollow particles exhibit depletion interaction-driven self-assembly with polystyrene spheres in the presence of poly(ethylene oxide), demonstrating for the first time three-dimensional lock and key colloids.

Yu Wang
Molecular Design Institute and Department of Chemistry,
New York University, New York, New York 10003, USA

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