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Light transport through soft colloidal glasses SOFIA MAGKIRIADOU, Harvard Physics Department, Cambridge, MA, USA, JIN-GYU PARK, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, USA, YOUNG-SEOK KIM, Korea Electronics Technology Institute, S.Korea, GI-RA YI, Department of Engineering Chemistry, Chungbuk National University, S. Korea, VINOTHAN N. MANOHARAN, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, USA — We have developed a novel colloidal system for the fundamental study of light propagation through disordered media. Our colloids contain core-shell particles with scattering cores and transparent shells which are self-assembled into amorphous, glassy configurations. The core-shell structure of the particles allows us to independently control two key parameters for light propagation: their scattering cross-section, which is determined by the cores, and their spacing, which is determined by the shells. Thus, our system is ideally suited for the study and manipulation of the optical properties of disordered materials. In particular, we aim to investigate how photonic stop bands arise in disordered media and how near-field coupling between scatterers affects light transport. We intend to use this knowledge to make amorphous colloids with various angularly-independent structural colors.

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