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**Shape Transformation of Fluctuating Vesicles Filled with a Ferrofluid Emulsion** ZHANG TAO, Nanjing University, Nanjing, China, WANG YAFEI, Beijing Normal University, Beijing, China, HU GANG, Hong Kong Baptist University, Hong Kong SAR, China — By transferring inverse double emulsion (O/W/O) droplets from an oil phase into a water phase we have assembled asymmetric vesicles containing monodisperse submicron-sized emulsion droplets, which are made of an oil-based ferrofluid. Under a magnetic field the submicron-sized ferrofluid droplets trapped inside flexible vesicles form chain structures, which depend on the size and the shape of vesicles. The formation of chains of trapped ferrofluid droplets can also induce shape changes in fluctuating vesicles. We examine the metastable shapes of lipid vesicles manipulated by an external magnetic field. The responsive vesicles provide a model system to study the topological and rheological properties of biological membranes. The equilibrium shapes and stability of the vesicles under various ionic strengths are also studied.

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