

Abstract Submitted  
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**Crystallization Driven Responsive Janus Assembly** HAO QI, SHAN MEI, CHRISTOPHER LI, Drexel university, SOFT MATERIALS LAB TEAM — Responsive and dynamic nanostructures are ubiquitous in Nature, and they are also of utter importance for applications such as sensing and drug delivery. Herein we report a series of hierarchical block copolymer nanostructure that is able to undergo 2D (sheet-like) to 3D (bowl-like) shape changing upon specific external stimuli. Free-standing Janus nanosheets were prepared via crystallization-driven self-assembly of poly( $\epsilon$ -caprolactone)-*b*-poly(acrylic acid) (PCL-*b*-PAA) and subsequent crosslinking and disassembly process. Due to the mechanical contrast between the two layers, and the chemical responsiveness of the PAA layer, such Janus nanosheets transform a mechanically stable nanobowl upon pH change. Atomic force microscopy and transmission electron microscopy results confirmed the Janus structure and bending behavior. Detailed structural characterization and shape changing mechanisms will be discussed.

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