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**Evaporative Organization of Hierarchically Structured Polymer Blend Rings**[1] MYUNGHWAN BYUN, SUCK WON HONG, Iowa State University, FENG QIU, The Key Laboratory of Molecular Engineering of Polymers at Fudan University, Shanghai, China, ZHIQUN LIN, Iowa State University — We report the first study of the controlled, evaporative self-organization of a polymer blend from a sphere-on-flat geometry. In this study, a drop of polystyrene (PS) and poly(methyl methacrylate) (PMMA) toluene solution evaporated in the sphere-on-flat geometry. The combination of controlled, consecutive pinning-depinning cycles (i.e., "stick-slip") of the contact line at the edge of the geometry, spontaneous phase separation of incompatible polymers at the microscopic scale, and a dewetting process in the late stage of phase segregation led to the formation of gradient, hierarchically structured polymer blend rings composed of phase-separated PS and PMMA. This facile approach offers a new way of simultaneously processing two or more nonvolatile components via controlled evaporation to produce new kinds of structures with hierarchical order in a simple, robust, and one-step manner.

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