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Determining the Structure of Ring Polymers and Catenanes in Solution MICHAEL J. A. HORE, Case Western Reserve University, FARIHAH M. HAQUE, SCOTT M. GRAYSON, Tulane University — Small-angle neutron scattering (SANS) is used to investigate the conformation of ring polymers and catenanes (mechanically interlocked rings). The conformations and interaction parameters of cyclic polystyrene and its exact linear analog are determined from a random phase approximation (RPA) analysis of the scattering data, taken in deuterated cyclohexane as a function of temperature, using new scattering form factors. Scattering data show distinct differences between linear and ring polymers. Finally, SANS measurements from mechanically interlocked rings are presented, and compared to measurements of linear and cyclic polystyrene. Scattering from catenanes finds a conformation that is very similar to linear polymers.

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