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Effect of Temperature and Strain on a Self–assembled Gel SATISH MISHRA, SANTANU KUNDU, Mississippi State University — Gels are widely used in food industry and biomedical field. For physically associating gels, mechanical properties depend on the nature of association between the polymer and the solvent. A thermoreversible, physically associating gel is considered here, which consists of 10% (v/v) poly (methyl methacrylate) - poly (n-butyl acrylate) - poly (methyl methacrylate) in butanol, a midblock selective solvent. Below gelation temperature, the end blocks collapse and form aggregates, and the mid-blocks act as bridges between those aggregates. Rheo-SANS experiments were conducted on these samples where small angle neutron scattering (SANS) and shear-rheology experiments are combined. SANS data were collected over a wide temperature range, from 65C to -10C with and without strain. Near the gelation temperature, SANS data can be fitted with hard sphere model. However, with decrease of temperature, structural changes, due to clustering of aggregates, are observed. The SANS and rheological results in combination provide insight in structural changes of the gel with strain and temperature, respectively.

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