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Structure of Block Copolymer Hydrogel Formed by Complex Coacervate Process SOOHYUNG CHOI, JULIA ORTONY[1], DANIEL KROGSTAD, JASON SPRUELL, NATHANIEL LYND, SONGI HAN, EDWARD KRAMER, University of California, Santa Barbara — Complex coacervation occurs when oppositely charged polyelectrolytes associate in solution, forming dense micron-sized droplets. Hydrogels with coacervate block domains were formed by mixing two ABA and A'BA' triblock copolymer solutions in water where the A and A' blocks are oppositely charged. Small-angle neutron scattering (SANS) was used to investigate the structure of hydrogels formed by ABA triblock copolymers (A block: poly(allyl glycidyl ether) functionalized with guanidinium (A) or sulfonate (A'), B block: poly(ethylene oxide)). By using an appropriate fitting model, structural information such as coacervate core block radius and water volume fraction w can be extracted from SANS data. The results reveal that w in the coacervate core block was significantly higher than in conventional triblock copolymer hydrogels where microphase separation is driven by the hydrophobicity of the core-forming blocks.

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