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Tailoring the Structure of Polymer Networks with Photo-Controlled Radical Polymerization AWANEESH SINGH, Univ of Pittsburgh, OLGA KUKSENOK, Clemson University, JEREMIAH A. JOHNSON, Massachusetts Institute of Technology, ANNA C. BALAZS, Univ of Pittsburgh — Using dissipative particle dynamics (DPD) approach, we developed a novel computational model to study the photo-controlled radical polymerization (photo-CRP) within polymer networks with embedded iniferters. The polymerization process can be turned "on" or "off" in response to light and the polymerization rate can be modulated by altering the light intensity. This "photo-growth" approach allows us to impart changes in the gel network pore size and composition to form photo-tunable smart materials. For example, our approach allows us to design gel composites that are comprised of two distinct layers made of two compatible components at low photo-iniferter concentrations or gel composites that are comprised of two incompatible components that are relatively well intermixed at high photo-iniferter concentration.

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