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From Gelation and Glass Transition of Colloidal Systems to Polymers CHARLES HAN, ICCAS and IAS of SZU, GUANGCUI YUAN, ICCAS, HE CHENG, ICCAS and IHEP — Charles C. Han, Guangcui Yuan and He Cheng Joint Laboratory of Polymer Science and Materials, ICCAS, Beijing, China and Institute for Advanced Study, Shenzhen University, Shenzhen, China Aggregation and gelation behavior of mixed suspensions of polystyrene microspheres and poly(N-isopropylacrylamide) microgels have been studied. In dilute microsphere suspensions, with increasing concentration of microgel (MG), microspheres (MS) first aggregated with each other through the bridging of the microgels, then dispersed individually when saturated adsorption was achieved, and finally depletion clusters formed at even higher concentrations of microgel. In concentrated microsphere suspensions, with saturated MG adsorption, a state transition from attractive glass to repulsive glass can be observed. This type of system can be viewed as a molecular model system which has a long range repulsive interaction potential and a short range attractive potential. A comparison between the glass transition of the colloidal systems and the glass transition of polymeric systems can be made.

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