

Abstract Submitted
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Active motion induced break-up of colloidal gels MEGAN SZAKASITS, MICHAEL SOLOMON, University of Michigan — We found that fractal gel networks of polystyrene colloids can be broken up by active motion of Janus colloids that have been incorporated into them. Janus particles were synthesized by electron beam deposition of platinum onto one micron carboxylate modified polystyrene particles. Through addition of the divalent salt magnesium chloride, an initially stable suspension of Janus and polystyrene colloids, present in equal proportion, underwent aggregation to yield a fractal gel. The Janus colloids were activated by addition of 30% v/v hydrogen peroxide through a porous hydrogel membrane. Changes in structure and dynamics were visualized by two channel confocal laser scanning microscopy (CLSM). By means of image analysis, we calculated the mean squared displacement (MSD) and radial distribution function (RDF) for gel samples before and after addition of hydrogen peroxide. The MSD confirmed the Janus particles we synthesized undergo active motion. The RDF and cluster size distribution of gel samples before and after addition of peroxide demonstrate how active motion broke apart the gel network into smaller clusters.

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