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**Rattle, restrict, and release in entangled polymer solutions** SUBHALAKSHMI KUMAR, TSANG CHI HANG BOYCE, SUNG CHUL BAE, STEVE GRANICK, University of Illinois at Urbana Champaign — The nature of entanglement release and chain fluctuation is studied in entangled solutions of high molecular weight PEG in water. Reporter fluorescent polystyrene particles of radius comparable to the entanglement length are suspended in solution and tracked individually with nm resolution using epifluorescence microscopy. Thousands of single particle trajectories are analyzed to quantify caging and hopping dynamics. The cage relaxation time changes by orders of magnitude depending on the polymer concentration, but is faster than and therefore more accessible within experimentally accessible time scales, than for colloidal glasses.

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