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Self-diffusion of nanoparticles in a crowded environment H.D. OUYANG, JOSEPH JUNIO, YI HU, Lehigh University — Diffusion is one of the most fundamental and important transport phenomena in a host of different chemical and biological processes. In crowded systems, neighboring particles can induce hydrodynamic, charge, and even entropic interactions that hinder free diffusion, complicating exact analysis. Using fluorescence correlation spectroscopy (FCS), we were able to investigate self-diffusion of fluorescently labeled tracer particles in a reservoir of non-fluorescent particles at varying mixing proportions. By using different sizes mixtures of colloids and polymers, we also explored regimes where suspensions were known to spontaneously phase separate due to entropic depletion, as diffusion has been found to both limit and induce such separation.

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