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Characterization of diffusion in supersaturated solutions using T-sensors[1] KRISTEN BLOSCHOCK, Georgetown University Department of Physics, RUSSEL ROSS, Georgetown University Department of Physics, EDWARD VAN KEUREN, Georgetown University Department of Physics — Measurement of the molecular diffusivity has provided much of the evidence for cluster formation in supersaturated solutions. The recent development of the T-sensor, a microfluidics laminar flow device, enables rapid determination of molecular diffusion coefficients. In this device, fluids in two channels meet and undergo laminar flow, with diffusion occurring perpendicular to the direction of flow in the channel. We have used fluorescence imaging of molecules in a T-sensor to study diffusion in supersaturated solutions of several dyes. When they self-assemble, these molecules exhibit characteristic changes in fluorescence emission. Therefore, using imaging we can determine both the state of aggregation and the diffusion coefficient. We will present results of experiments with one channel containing a molecular solution and the second a miscible non-solvent; the diffusional mixing induces nucleation and growth of nanocrystals.

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