Abstract Submitted
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Complex fluids with robustly tunable optical properties: experiments and theory[1] T. CONG, S.N. WANI, A.S. SANGANI[2], R. SURESHKUMAR[3], Syracuse University, Syracuse, NY, 13244, U.S.A., SYRACUSE UNIVERSITY TEAM — Fluids with tunable optical properties are of fundamental and practical interest. They can be easily processed to manufacture thin films and interfaces for applications such as molecular detection and light trapping in photovoltaics. We use solution phase self-assembly to uniformly distribute various metallic nanoparticles to produce stable suspensions with localized, multiple wavelength or broad-band optical properties. Their spectral response can be robustly modified by varying the species, concentration, size and/or shape of the nanoparticles. Spectral behavior for finite particle concentrations can be predicted by an effective medium theory developed in this work. Structure, rheology and optical properties of these plasmonic suspensions as well as their potential application to high efficiency photovoltaics design will be discussed.

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