

Abstract Submitted
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Thermal Properties of Particulate Suspensions REBECCA CHRISTIANSON, JESSICA TOWNSEND, Franklin W. Olin College of Engineering — It has been known since the 1800's that addition of solid phase particles to a liquid can improve the thermal conductivity of the liquid. However, the instability of such suspensions made them impractical for cooling applications. With the advent of affordable technology for synthesizing nanometer scale particles, it became possible for stable suspensions with improved thermal properties to be created. Initial investigations of nanoparticle suspension coolants (termed nanofluids) seemed to indicate an anomalous enhancement of the thermal conductivity above that predicted by conventional theories. However, subsequent experimental work showed issues with the reproducibility of these early results, which has been attributed by some sources to aggregation within the suspensions. I will present work from our group studying the properties and practical application of stable nanoparticle suspensions, as well as our initial findings on the effects of aggregation on the measured thermal properties of particulate suspensions.

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