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**Sound propagation in nanofluids** X. XIE, R. ANNAMALAI, R. SOORYAKUMAR, D. STROUD, V. SUBRAMANIAM, J. HEREMANS, The Ohio State University — The thermal properties of nanofluids, i.e. liquids containing nanoparticles of sizes in the 3 to 100 nm range, have recently been shown to exhibit an unexpectedly large enhancement in thermal conductivity. While this enhancement has been observed for metallic nanoparticles and carbon nanotubes, the physical origin of the enhancement remains to be understood. The propagation of acoustic waves through a nanoparticle-laden colloidal fluid system offers many advantages towards understanding its thermal properties. We report on results of Brillouin scattering which probes the frequency range of $\sim$1 – 100 GHz to study sound propagation in such complex fluids which possess structures on length scales larger than the molecules that comprise the host fluid. Thus compared to simple liquids, nanofluids possess additional relaxation mechanisms that can be observed in the frequency dispersion of the sound propagation. We present light scattering results from nanofluids comprised of a suspension of relatively long (1 - 2 $\mu$m) 20 nm diameter single-walled carbon nanotube bundles dispersed in N,N dimethylformamide.

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