

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Thermophoresis** **of**  
**micrometer-sized poly(N-isopropylacrylamide) microgel particles**<sup>1</sup> KEVIN  
APTOWICZ, West Chester University, TIM STILL, ARJUN YODH, University of  
Pennsylvania — We investigate the diffusion and thermodiffusion of micrometer  
sized poly(N-isopropylacrylamide) (PNIPAM) gel particles in a temperature gradi-  
ent. Recently published results of the thermophoretic mobility of PNIPAM systems  
are puzzling. Cross-linked microgel particles show unusually large thermophoretic  
mobility whereas the mobility of core-shell colloids and linear polymers are more  
consistent with other aqueous systems. Our experiments add to our empirical under-  
standing of thermophoresis of PNIPAM particles. In particular, we study micrometer-  
sized PNIPAM particles, which are an order of magnitude larger than those previ-  
ously studied. The size of the particles prohibits the use of optical beam deflection,  
the standard measurement technique. Instead, the thermophoretic mobility of the  
particles is measured using a novel optical system utilizing video microscopy and  
ring traps generated with holographic techniques.

<sup>1</sup>KBA acknowledges support from grant DMR-1206231. AGY acknowledges sup-  
port from grants PENN-MRSEC DMR11-20901, NASA NNX08AO0G, and DMR-  
1205463.

Kevin Aptowicz  
West Chester University

Date submitted: 13 Nov 2014

Electronic form version 1.4