

Abstract Submitted
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Stable thermophoretic trapping of generic particles at low pressures¹ LONG FUNG FRANKIE FUNG², Univ of Chicago — We demonstrate levitation and three-dimensionally stable trapping of a wide variety of particles in medium vacuum through thermophoresis. Typical sizes of the trapped particles are between 10 μm and 1 mm; air pressure is between 1 and 10 Torr. We describe the experimental setup used to produce the temperature gradient, as well as our procedure for introducing particles into the experimental setup. To determine the levitation force and test various theoretical models, we examine the levitation heights of spherical polyethylene spheres under various conditions. A good agreement with two theoretical models is concluded. Our system offers a platform to discover various thermophoretic phenomena and to simulate dynamics of interacting many-body systems in a microgravity environment.

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