Experimental investigation of the connection between thermophoresis and thermo-osmosis

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When a solid surface is exposed to the temperature gradient of fluids in contact, a creeping flow is induced along the surface. This thermal flow, often referred to as thermo-osmosis, plays an important role in micro- and nanoscale thermo-fluid mechanics. For instance, suspended particles in locally heated fluids are expected to move in the opposite direction of thermo-osmosis which is driven near the surfaces of particles. Such migration of particles is known as thermophoresis and was investigated experimentally in Ref [1] by characterizing the thermo-osmosis along the surface of thermophoretic microparticles. In particular, flow evaluation using the optical trapping of tracers revealed the connection between thermophoresis and thermo-osmosis [1].


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