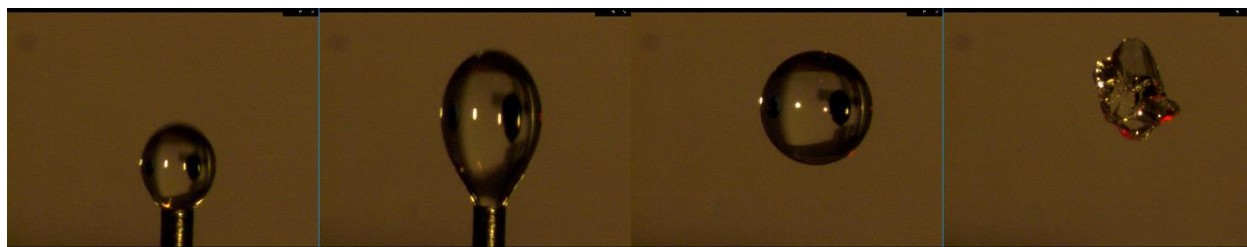


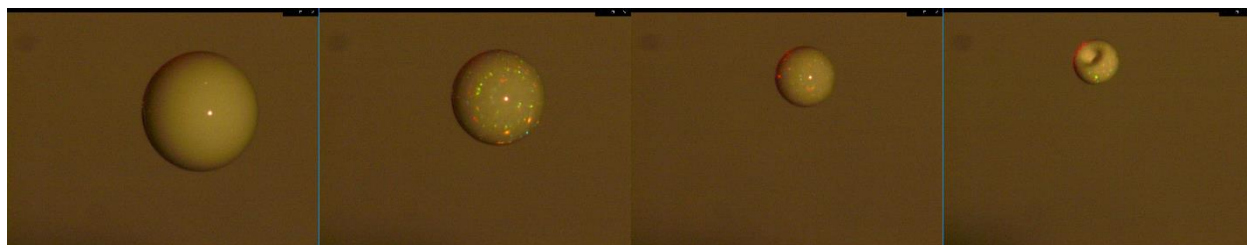
One undergraduate research assistant position is available immediately in the Advanced Materials and Processes Laboratory. Main responsibility includes developing and modifying LabView codes for the control of electrostatic levitators and data processing. Strong skills on LabView are required.

A qualified student will also have an opportunity to join the development of the low-temperature electrostatic levitator (LT-ESL, in 1049 Black Engineering Building). The LT-ESL allows for containerless processing of aqueous solutions, colloidal suspensions, protein solutions, polymers, and biomaterials. By eliminating a container, solutions or molten materials become able to reach unprecedentedly deep supersaturation where one can observe interesting physical and chemical phenomena that can be utilized to synthesize new functional materials.

If interested, please email a resume to Prof. Jonghyun Lee ([jolee@iastate.edu](mailto:jolee@iastate.edu)).



*A sodium sulfate solution is levitated by LT-ESL. The size of the droplet decreases due to continuous evaporation of water, which leads to deep supersaturation. The solution eventually crystallizes. We are studying how the molecular structure changes as a function of supersaturation and how such structural change influences on the phase selection during crystallization. This knowledge, for instance, would enable the fabrication of functional food- or drug- crystals of a desired dissolution rate by controlling which crystal phase nucleates first.*



*A colloidal suspension (Water + 1 μm polystyrene spherical particles) droplet is levitated. The second picture shows light diffracted by the particles. The droplet shrinks gradually as the water continuously evaporates. The particles eventually crystallize by self-assembly. Levitation allows us to observe the self-assembling behavior of colloidal particles without disturbance of a container. An understanding of the mechanism behind the particle self-assembly would enable the control of particle structures, which can be utilized to fabricate optical filters, foods, paint,... of desired structure-dependent properties.*