

## Fabrication of Spherical Colloidal Crystals by Electrohydrodynamic Atomization

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Colloidal assemblies have been of special interest due to their specific properties such as photonic bandgap and high packing density. Colloidal assemblies have been patterned and mounted for useful objects. Among the various kinds of mounted shapes, a sphere may represent the simplest form driven by the minimization of interfacial free energy, which can be realized by using droplets. In this experiment, we prepared uniform-sized suspension droplets that contain silica beads by electrohydrodynamic atomization (EHDA) and subsequently spherical colloidal crystals by evaporation-induced self-assembly inside the droplets. The size of the suspension droplets was controlled by the electric field strength and flow rate. For optical applications, spherical colloidal crystals were prepared in the size range of 30~40 $\mu$ m with silica beads in size range of 200~350 nm, which was determined by SEM and reflectance spectrometer. This kind of materials can be applicable to electronic paper ink, smart sensor.