Abstract Submitted
for the DFD16 Meeting of
The American Physical Society

Deposition of a large area of nanoparticles at an interface onto a substrate[1] DUCK-GYU LEE, THANH-BINH NGUYEN, HYUNEUI LIM, Korea Institute of Machinery and Materials — Inspired by the antireflective function of moth eyes, attributing to the nanostructures on the surface of eyes, it has been a growing interest to fabricate a well-ordered array of nanoparticles. In this study, we demonstrated a simple fabrication method to generate a large area of close-packed nano-particles at a liquid-gas interface for depositing the particles onto a substrate. We experimentally found the optimal concentration of particles with a surfactant which enables the particles float at an interface in the form of a uniform array of particles. Then we gradually attached the array of particles to the surface of inclined substrate with an angle in water by reducing the level of water. It was observed that the flow rate of reducing water level and the inclination angle of the submerged substrate play an important role in determining the uniformity of the deposited monolayer on the substrates. To find the conditions under which the flow rate and the inclination make the uniform monolayer on the substrates, we made a regime map based on dimensionless parameters.

[1]This research was supported by Korea Institute of Machinery and Materials under Grant NK196D

Duck-Gyu Lee
Korea Institute of Machinery and Materials

Date submitted: 31 Jul 2016 Electronic form version 1.4