Preparation of mono-particulate film by self-assembly of nanoparticlus

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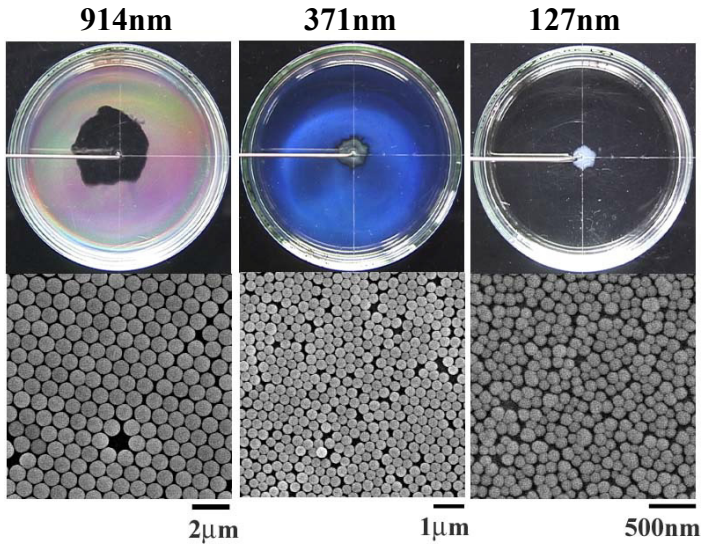
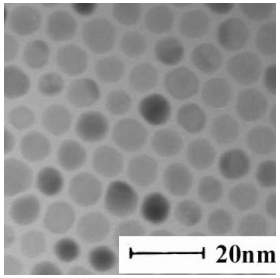
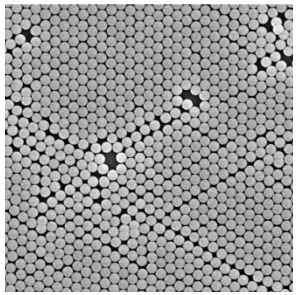


SiO_2 particulate films ordered on water surface and SEM images of films transferred to glass substrate



TEM image of spontaneously ordered gold nanoparticles (particle diameter : 5 - 7 nm)



Particle film transferred to glass substrate from water surface
(particle diameter : 0.7 μm)

Content:

There has been much interest in the application of nanoparticles because of their notable properties. However, the applications have been limited by difficulties in handling. If the nanoparticles could be ordered on a substrate in a single layer, some additional concerted function might be expected. Such additional functions might produce some new applications to some devices such as electrodes, optical devices, catalysis and so on. To prepare the mono-particulate film on substrate the surrounding conditions in which the nanoparticles would be ordered spontaneously should be arranged (self-assemble). We are developing such self-assembly fabrication process. In the left figures, we showed some results on the ordered mono-particulate films of surface chemically modified silica particles on the water surface and SEM images of particulate films transferred to a glass substrate. Furthermore, we showed TEM image of the gold nanoparticles which were spontaneously ordered on the substrate. The uniform size nanoparticles would yield the ordered particle film by a simple process.

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