

The novel method for determination of nanoparticle aggregation in high concentrated colloids using silica/quantum dot/silica particles

_____,
*
(kilee@yonsei.ac.kr*)

High concentrated colloids have been used in many fields such as chemical mechanical polishing (CMP) and colloidal ink. However, scratches on the wafer surface after the CMP process would occur when the particles in high concentrated colloids aggregate. Therefore, it is important to check whether the particle aggregation occurred. The conventional method to figure out the particle dispersion is the measuring the size change by using dynamic light scattering (DLS). However, this conventional method is not appropriate to the high concentrated colloids state. In this regards, we have investigated the new methods for determination of nanoparticle aggregation in high concentrated colloids, like slurry used in CMP process. First, silica slurry (12 wt% silica colloid) was synthesized via stober method. Next, silica/quantum dot/silica (SQS) nanoparticle was synthesized by using the as-synthesized silica particles. After dispersing water-soluble SQS nanoparticles in various concentrations of silica colloid, we analyzed the quantum yield change of the SQS nanoparticles.