

Enhancing Stability of Colloidal Semiconductor Nanocrystals

우주영, 정소희¹, 이도창[†]
한국과학기술원; ¹한국기계연구원
(dclee@kaist.edu[†])

Colloidal semiconductor nanocrystals (NCs) have been intensively investigated during past decades because of their intriguing properties such as size tunable energy gaps, highly efficient multiple exciton generation (MEG), and high quantum yield (QY). However, fast degradation under ambient condition impedes broader utilization of NCs in optoelectronic applications. Here, we present efficient surface passivation strategies leading to the drastically enhanced air stability of NCs. High air stability of NCs (e.g., PbSe NCs, perovskite CsPbBr₃ NCs) were confirmed by absorption, PL spectroscopy and X-ray photoelectron spectroscopy (XPS). We believe that our surface engineered, highly stable NCs shine the light on the practical applications of NCs in solar cells and light emitting diodes (LEDs).