

Studying the indium carboxylate formation with different steric carboxylic acids and their effect on the nucleation and growth of InP QDs

이승준, 조준희, 이강택[†]
연세대학교
(kilee@yonsei.ac.kr[†])

Environmentally friendly InP QDs have emerged as an alternative to Cd QDs for display material. At a similar size distribution as Cd QDs, large Bohr radius and small band gap of InP QDs makes their emission spectra broad and hard to control. In this study, we modified the current standardized InP core synthesis method to achieve narrower size distribution. In most InP core synthesis, an indium carboxylate precursor is generated from $\text{In}(\text{acetate})_3$ reacting with long-chain carboxylic acid (e.g. myristic acid, palmitic acid, etc). Indium carboxylate as starting material for nucleation and growth, their uniform formation is critical. However, the acetates are not easily displaced by long-chain carboxylic acids and this makes it difficult to control nucleation and growth of InP core. To address this issue, we used carboxylic acid with different steric properties to stabilize and enhance indium carboxylate formation.