

Fabrication of quantum dots nanocomposite with enhanced thermal and moisture stability using cyclic olefin copolymer (COC) as a matrix

백선희, 이강택[†]

연세대학교

(klee@yonsei.ac.kr[†])

Quantum dots (QDs) are semiconductor nanocrystal with excellent optical properties such as tunable energy band gap and narrow emission bandwidth. However, quantum dots have poor thermal and moisture stability. To complement thermal and moisture stability of quantum dots in nanocomposite, many researchers have studied encapsulating quantum dots or dispersing quantum dots in polymer such as polymethylmethacrylate and polydimethylsiloxane, etc. To enhance thermal and moisture stability, we fabricated nanocomposite of quantum dots by solvent casting method with cyclic olefin copolymer (COC) that has high transparency, moisture resistance and thermal stability as a matrix. In addition, we used indium-based quantum dots because cadmium-based quantum dots have severe toxicity and environmental issues. After fabricating nanocomposite, we analyzed thermal and moisture stability of quantum dots nanocomposite. Through this study, we expected to increase thermal and moisture stability of the quantum dots in nanocomposite.