

### Study of high-efficient, stable solar cell based on InAs colloidal quantum dots

박영상<sup>1,2</sup>, 배성용<sup>3</sup>, 김태완<sup>2</sup>, 이도창<sup>1</sup>, 최효성<sup>3</sup>, 정소희<sup>2</sup>, 김영훈<sup>4,†</sup>

<sup>1</sup>한국과학기술원; <sup>2</sup>성균관대학교; <sup>3</sup>한양대학교; <sup>4</sup>대구경북과학기술원

RoHS compliant have extended the category of restriction for manufacturing of electronic devices. The recent trend encourages many researchers to involve in eco-friendly based study. Quantum dot solar cells are representative solar cells among emerging PVs, and have come to close to the commercialization. In order to realize it, lead based material must be replaced. InAs quantum dot is one of candidates for Pb-free optoelectronics. Herein, we synthesized the size-tunable InAs quantum dots using continuous slow injection method. Also, optical and electrical properties of them were investigated. We found that energy level of InAs was varied with changing size and various ligands. Finally, we fabricated the solar cell by combining it with polymers to form a junction, and showed high performance and long stability.