

## Fluorination of Triarylamine-based Polymeric Hole Transporting Materials to Enhance Open Circuit Voltage for Highly Efficient Perovskite Solar Cells

김영웅, 정의혁<sup>1</sup>, 서장원<sup>1</sup>, 김범준<sup>2,†</sup>

KAIST; <sup>1</sup>한국화학연구원; <sup>2</sup>한국과학기술원

(bjkim02@kaist.ac.kr<sup>†</sup>)

A new series of poly(triarylamine) (PTAA)-based conducting polymers with different energy level, especially highest occupied molecular orbital (HOMO), was synthesized as hole transporting materials (HTM). To comprehend the effects of the HOMO of HTM on perovskite solar cells (PSCs) we fabricated the FAPbI<sub>3</sub>-based mixed system PSCs adjusting PTAA derivatives. The deeper HOMO level of HTM led to higher open circuit voltage ( $V_{OC}$ ), resulting in highly efficient PSC. Thus, the energy level of HTM is related to determining the  $V_{OC}$  of PSC, controlling the energy level of HTM is an effective mean of increasing  $V_{OC}$  to achieve efficient PSC.