
Symposium | Symposium | Present Situation and Future Prospects of Organic-Inorganic Perovskite Solar Cells

[14p-1G-1~10]Present Situation and Future Prospects of Organic-Inorganic Perovskite Solar Cells

座長:山岸 英雄(CEREBA),久保 貴哉(東大),尾込 裕平(九工大)

Mon. Sep 14, 2015 2:00 PM - 6:15 PM 1G (Reception Hall 2)

△ : Young Scientist Oral Presentation Award Applied

▲ : English Presentation

▼ : Both Award Applied and English Presentation

2:30 PM - 3:00 PM

[14p-1G-2]Photoinduced Carrier-Transfer Dynamics at Surfaces/Interfaces

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Keywords:perovskite solar cells,First-principles calculations

The effective masses of photocarriers and the role of methylammonium (MA) cation in $\text{CH}_3\text{NH}_3\text{PbI}_3$ are studied based on density functional theory. Effective masses of photogenerated electrons and holes are estimated to be $m_e^* = 0.23m_0$ and $m_h^* = 0.29m_0$, respectively, including spin-orbit coupling effects. This result is consistent with the long-range ambipolar transport property and with the larger diffusion constant for electrons compared with that for holes in the perovskite, which enable efficient photovoltaic conversion. We also have focused our attention on the MA cation and studied the role it plays in the electronic/optical features of the perovskite.