

ICTMC19 Symposium II

Advanced characterization of solar cells

- Characterization of CIGS and related thin film solar cells toward high-efficiency –

Symposium II

“Advanced characterization of solar cells”

Preface

Si solar cell is a giant of photovoltaics (PV), and we, attending this conference, believe CIGS ($\text{CuIn}_{1-x}\text{Ga}_x\text{Se}_2$) solar cell will lead the next generation PV industries. Fortunately, the recorded highest efficiency of CIGS solar cell reached up to 20.9%, and the production level exceeds 1GW/year, which is steadily scaling up. However, the deep understanding of material properties of CIGS is necessary in order to extract potentials of this magical material and to improve its efficiency. The low open-circuit voltage is one of the issues, and it is, as you know, strongly affected by the recombination of the photoexcited carriers. In this symposium, newly developed advanced methodologies will be presented with emphasis on photocarrier dynamics and native defects. Further, the perspective of the possibility of improved solar cell performance will be also reviewed on the understanding of the carrier dynamics in CIGS solar cells.

S. Shirakata (Ehime Univ.): Introductory Talk

M. Okano and Y. Kanemitsu (Kyoto Univ.): Photocarrier dynamics in CIGS, CZTS and related materials revealed by ultrafast optical spectroscopy

T. Takahashi (Univ. Tokyo): Photo-assisted scanning probe microscopy on CIGS solar cells

S. Kawakita (JAXA): Radiation-induced defects in CIGS films

T. Maeda and T. Wada (Ryukoku Univ.): First Principles insights on characteristics of CuInSe_2 and $\text{Cu}_2\text{ZnSnS}_4$ based photovoltaic semiconductors

S. Shirakata (Ehime Univ.): Photoluminescence characterization of CIGS solar cell process

A. Yamada (Tokyo Institute of Technology): Concluding Remarks

Symposium chairs

Sho Shirakata (Ehime Univ.)

Akira Yamada (Tokyo Institute of Technology)

Kazuki Wakita (Chiba Institute of Technology)

Norio Terada (Kogoshima Univ.)

Mitsuru Imaizumi (JAXA)