

分子集合解析研究領域の研究紹介

Molecular Aggregation Analysis Laboratory (Wakamiya Lab.)

分子集合解析研究領域 (若宮研究室)

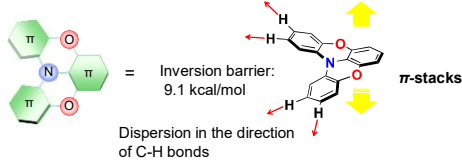
若宮淳志 (教授) リチャード マーディー (講師)
 中村智也 (助教) Minh Anh Truong (助教) 平井圭子 (秘書)
 大橋昇 (PD) 酒井智香子 (PD) Namrata Pant (PD) 金子竜二 (PD) 能條航 (PD)
 嶋崎愛 (研究員) 石倉靖久 (研究員) 鈴木良枝 (研究員)
 若崎保子 (技術補佐) 松重優子 (技術補佐)
 Shuaifeng Hu (D1) 大塚健斗 (M2) 橋本壘人 (M2)
 木下純 (M1) 中野修一 (M1) Tiancheng Tan (M1)



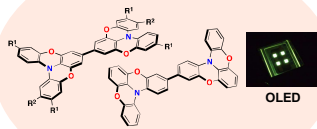
homepage

π -conjugated Materials for Organic Electronics

Quasi-planar Skeleton

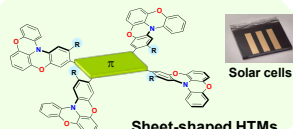


Hole-Transporting Materials



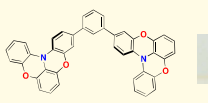
Angew. Chem., Int. Ed. 2014, 53, 5800.
 Bull. Chem. Soc. Jpn. 2016, 89, 726.

HTM for Perovskite Solar Cells



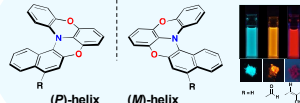
Sheet-shaped HTMs
 J. Am. Chem. Soc. 2015, 137, 15656.
 Chem. Eur. J. 2019, 25, 6741. (Cover picture)

Transparent Hole-transporting Materials



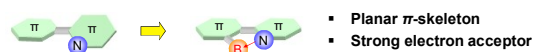
Chem. Lett. 2017, 46, 817.

Full Color CPL Materials

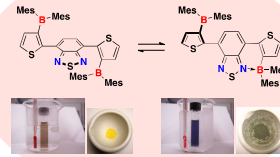


J. Org. Chem. 2017, 82, 5242.

Intramolecular B-N Coordination Bond

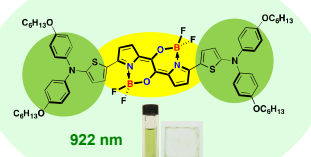


Chromic Systems



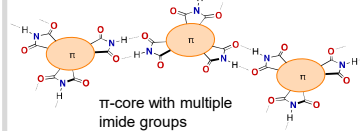
Chem. Eur. J. 2017, 23, 3784.

Photostable NIR Dyes



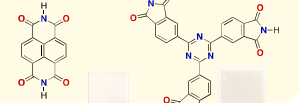
Org. Lett. 2018, 20, 5135.

Intermolecular Hydrogen Bonds



2D Hydrogen Bond Networks

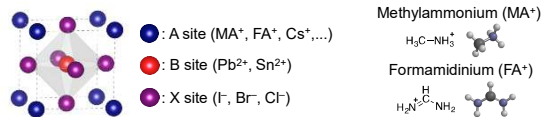
Transparent Electron-transporting Materials



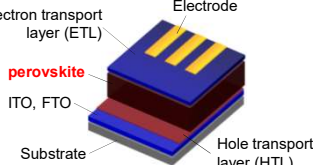
Chem. Mater. 2019, 31, 1729. ChemPlusChem 2019, 84, 1396. (Cover picture)

Design and Fabrication of Perovskite Solar Cells

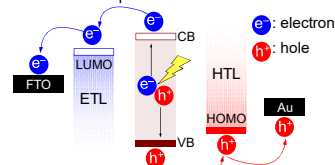
ABX₃-type perovskite



Device architecture

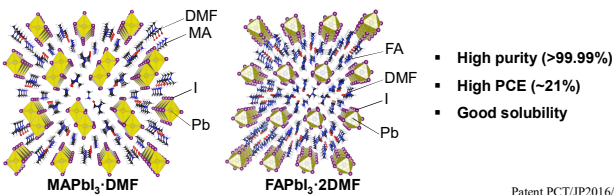


Mechanism



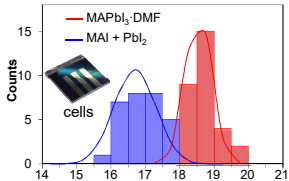
Lead-based Perovskite Solar Cells and Modules

Development of Key Precursor Materials

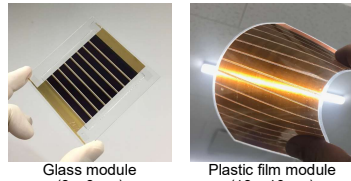


Patent PCT/JP2016/087529.

Improved Reproducibility



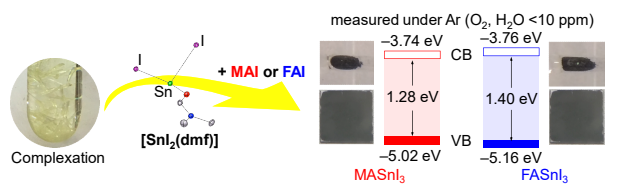
Large Area Applications



Angew. Chem., Int. Ed. 2019, 58, 9389.

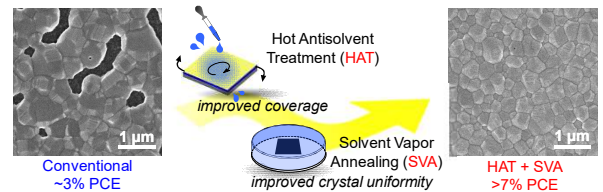
Tin-based Perovskite Solar Cells and Modules

Purified SnI₂ Precursor Materials



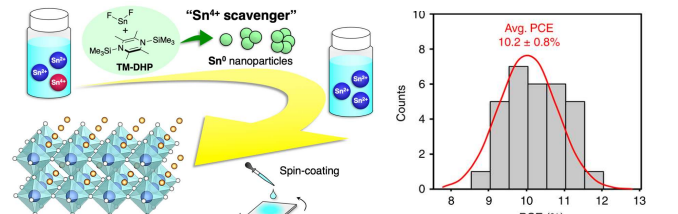
ACS Omega 2017, 2, 7016.

Improved Film Fabrication Methods



Angew. Chem., Int. Ed. 2018, 57, 13221.

Sn⁴⁺-free Perovskite Fabrication Methods



Nat. Commun. 2020, 11, 3008.