

Practical Skills + Master Thesis:

Manufacturing and Characterization of Perovskite Solar Cells

Planned timeframe: May, June to Jan, Feb

Organic–inorganic metal halide perovskites are currently in the focus of semiconductor research promising to deliver the next generation of highly efficient and inexpensive photovoltaic systems. In under 10 years, prototype devices prepared on a lab scale demonstrated power conversion efficiencies (PCE) of over 25 % (find NREL Best Research-Cell Efficiency Chart).

In this project, the focus lies on preparing solid precursors and solutions for the different layers needed in a perovskite solar cells (see Fig. 1) and using the technique of spin-coating (Fig. 2 and [1]) to deposit thin film layers and completing the device. The main characterization method will be a solar simulator.

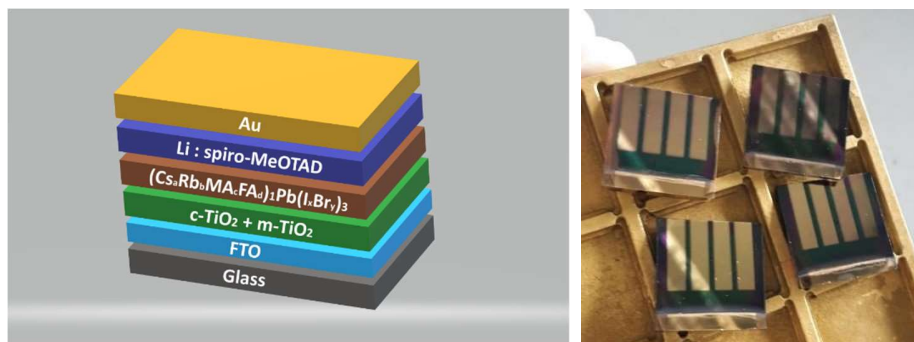


Fig. 1: Left: Material stack of a perovskite solar cell. Right: Completed Perovskite Solar Cells

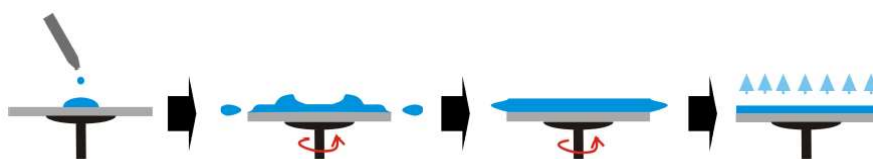


Fig. 2: Spin-coating process: 1: pipetting a solution, 2: spinning, 3: dispersion, 4: evaporation of solvent and formation of a thin film.



[1] Paper: A Review on Halide Perovskite Film Formation by Sequential Solution Processing for Solar Cell Applications. *Jueming Bing, Shujuan Huang, and Anita W. Y. Ho-Baillie*

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