

Project 3.2 Development of strategies for improving stability of perovskite solar cells

Supervisor: dr hab. inż. Daniel Prochowicz, profesor instytutu

Institute: IPC PAS Group

Unit: No. 26. Semiconducting Materials and Optoelectronic Devices - dr hab. inż. Daniel Prochowicz, profesor instytutu

www: <https://ichf.edu.pl/zespoly/materialy-polprzewodnikowe-i-urządzenia-optoelektroniczne>

Background:

Solar energy is one of the most promising and renewable energy sources that has minimum harmful impact on the environment, as compared to other sources like fossil fuels or nuclear energy. A few years ago, research interests of the photovoltaic community have focused on hybrid organic–inorganic metal halide perovskites for photovoltaic application. These semiconductor materials have attracted increasing attention and exhibit unique physicochemical properties such as low band gaps, high extinction coefficients and high carrier mobilities. Despite the success in boosting the efficiency of PSCs, the devices are still facing several critical challenges that hinder their commercialization e.g. low stability of perovskites under high relative humidity. In this context, developing methods to produce new perovskite systems with desirable chemical and physical properties for applications in photovoltaic market continues to be a still challenging task.

Aim:

The overall goal of this project is to develop advantageous methods for the preparation of new lead halide perovskite compositions showing high stability in high humidity conditions for application in photovoltaic.

Requirements:

- a university degree in chemistry or materials science, experience in laboratory,
- work in field of inorganic and coordination chemistry, knowledge in spectroscopic methods,
- independence to design and execute experiments/characterizations,
- and analytical mindset for interpreting measured data.