

2018 Helmholtz – OCPC – Programme for the involvement of postdocs in bilateral collaboration projects

PART A

Title of the project: Lead-free perovskite solar cells

Helmholtz Centre and institute: Helmholtz-Zentrum Berlin Für Materialien und Energie

Project leader: Antonio Abate

Web-address: https://www.helmholtz-berlin.de/forschung/oe/ee/stabile-perowskitesolarzellen/index_en.html

Description of the project:

Fighting the climate change demands for a boost in the rise of renewable energies. ABX_3 halide perovskites are newly discovered photovoltaic materials with potential to provide a disruptive new solar cell technology.

As their analogues silicon and cadmium telluride solar cells, PSCs can convert the energy of the solar light directly into electric power with the highest efficiency. In addition to established technologies, halide perovskites are prepared from inexpensive materials, which are compatible with highly productive deposition methods already in use for organic electronics. Since their first demonstration in 2009, the reported power conversion efficiency raised to over 22%, which makes ABX_3 halide perovskites one of the most serious contenders to design the next generation of solar cells.

A currently most debated topic in PSCs concerns the use of lead, which comprises most of the halide perovskites so far demonstrated as effective photovoltaic materials. With this project, we aim to prepare new lead-free halide perovskite compositions and to demonstrate them in highly efficient solar cells, which are stable under real working condition.

Description of existing or sought Chinese collaboration partner institute (max. half page):

The project leader (PL) is a Visiting Professor at Fuzhou University supported by funding from National Natural Science Foundation of China international cooperation and exchange program (ID: NSFC 21750110442). The PL has an active collaboration with Prof Wei in Fuzhou, which results in a joint scientific manuscript recently submitted to the peer-reviewed journal ChemSusChem. Dr. Juming Li, currently working within the PL team, has a joined appointment with Fuzhou University funded by 2017 Helmholtz – OCPC – Programme for the involvement of postdocs in bilateral collaboration projects.

Required qualification of the post-doc:

- PhD in chemistry, physics or materials science
- Experience with optoelectronic device or solar cells fabrication and testing
- Additional skills in data analysis

PART B

Documents to be provided by the post-doc:

- Detailed description of the interest in joining the project (motivation letter)
- Curriculum vitae, copies of degrees
- List of publications
- 2 letters of recommendation

PART C

Additional requirements to be fulfilled by the post-doc:

- Max. age of 35 years
- PhD degree not older than 5 years
- Very good command of the English language
- Strong ability to work independently and in a team