



2023 Helmholtz – OCPC – Programme for the involvement of postdocs in bilateral collaboration projects

PART A

Title of the project:

Development of flexible and light-weight silicon heterojunction solar modules

Helmholtz Centre and/or institute:

Forschungszentrum Jülich

Project leader:

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Description of the project (max. 1 page):

Flexible solar panels are thin, lightweight modules that can be bent and integrated onto non-flat surfaces. Their small weight makes them suitable for application in the transport sector e.g. vehicle, motorhomes or yachts. Silicon heterojunction solar cell has excellent passivation and symmetrical structure, which can achieve >23% photoelectric conversion efficiency even at the wafer thickness of 100 µm. Thus, thin silicon heterojunction solar cell is a promising candidate for high efficiency and flexible solar module. The task of this project is the development of flexible and light-weight modules including 1) the encapsulation of flexible and light-weight module with different materials, module structures and interconnection technologies; 2) photoelectric performance characterization and optimization of flexible module; 3) the long-term reliability and safety test and evaluation of flexible module.



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

A strategic partnership already exists with the Research Center for New Energy Technology (RCNET) at the Shanghai Institute of Microsystem and Information Technology (SIMIT) under the framework of the Virtual Joint Research Institute on Functional Materials and Electronics. Further collaborations with Institute for Solar Energy System, Sun Yat-sen University (SYSU-ISES) and Institute of Electrical Engineering, the Chinese Academy of Sciences (IEE-CAS) exist. Chinese research institutes with state-of-the-art c-Si solar module technology platform can be considered as collaboration partner institutes.

Required qualification of the postdoc:

- PhD in physics, chemistry, material sciences, electrical engineering or a comparable discipline
- Fabrication of crystalline silicon solar module, in particular silicon heterojunction or passivated contact
- Additional skills in scientific English writing and presentation and evaluation tools e.g. Originlab