

AKE 4: Photovoltaics

Time: Monday 15:30–16:00

Location: U A-Esch 1

Invited Talk

AKE 4.1 Mon 15:30 U A-Esch 1

Photovoltaics: perspectives for new materials — ●SUSAN SCHORR — Helmholtz-Zentrum Berlin für Materialien und Energie, Germany

Materials are the fundamental basis for solutions to the most pressing issues in energy generation. In many cases, long-term solutions to these problems will depend on breakthrough innovations in materials. Meeting this challenge will require new materials and technologies for producing, storing and using energy with performance levels far beyond what is now possible.

Photovoltaics (PV), the direct conversion of sunlight into electrical

energy, plays a key role within the renewable energies. Thin film solar cells using compound semiconductors as absorber material are foreseen as one of the most promising and cost-efficient technology. To achieve further cost reductions in PV module efficiency must be increased beyond the single-junction limit (Shockley-Queisser limit).

The talk will present an overview on recent developments of new materials for solar energy conversion focusing on semiconductors which are potentially suitable for wide-bandgap applications such as multi-junction solar cells. Three material groups will be presented: (1) organic (A) metal (M) halide (X) perovskites (AMX₃), (2) quaternary chalcogenide semiconductors and (3) ternary II-IV-V₂ nitrides, like ZnSnN₂ and ZnGeN₂.