RUPRECHT-KARLS-
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Colloquium on Advanced Materials

Novel multi-absorber structures for photovoltaic converters: materials science challenges and application perspectives

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Photovoltaic solar energy converters have reached technological maturity after extended R&D work. But so far only very limited number of materials are applied (Si, CdTe, CIGS) and promising alternatives are not yet applied. Also efficient storage technologies have not been realized so far to compensate for the volatility of solar energy.

A possible solution would be provided by the development of cheap thin film multi-junction (absorber) solar cells also to be used as photosynthetic H_2 producing electrochemical cells. The perspectives of such cells will be introduced by considering novel semiconductor materials and adapted device structures. Limitations and challenges in materials science, which so far do not allow to reach the physical given limits, will be presented and discussed in relation to the chosen synthesis and processing parameters.

Still given limitations in the fundamental understanding and the research efforts for the needed urgent improvements of knowledge will be addressed introducing rather efficient thin film Si based multi-junction cells and presenting possible routes for their further improvements by adopting novel semiconductor materials as e. g. perovskites.

Date:
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Time:
17:00 (s.t.)

Place:
Kleiner Hörsaal, Hörsaalzentrum Chemie

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