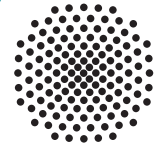


Stuttgarter Physikalisches Kolloquium

Max-Planck-Institut für Festkörperforschung
Fachbereich Physik, Universität Stuttgart

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16.15 Uhr

Lecture Hall 2D5

Max-Planck-Institut für Festkörperforschung, Heisenbergstraße 1, 70569 Stuttgart-Büsnau

Metal Halide Perovskites – Tuning the next generation of solar cells

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Abstract

Currently the vast majority of commercially available solar cells are based on the semiconductor silicon. In the last decades a lot of research and development has gone into the optimization of silicon solar cells. As a result, their efficiencies are now coming close to the theoretical limit for silicon and new strategies and materials are needed to further improve solar cells. A very promising group of materials are the metal halide perovskites. They combine many intriguing properties from a tunable bandgap to processibility at low temperatures. This has led to them being investigated for use in a wide range of semiconductor devices including solar cells and LEDs as well as photodetectors, transistors and even lasers. In this talk I will introduce the properties of this intriguing material class and show promising methods to scale it to industrial sizes. I will give insights into the advantages of vacuum-based deposition techniques and the high solar cell efficiencies that have been achieved with them. I will also illuminate which gaps in understanding need to be investigated further and how this research area may develop in the coming years.