



**CENTRE FOR ADVANCED MATERIAL  
APPLICATION CEMEA**

Slovak Academy of Sciences  
Dúbravská cesta 9  
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SLOVAKIA

Invites you to a talk of

**Dr. Viktor ŠKORJANC**

Helmholtz-Zentrum Berlin (HZB), Germany



**Interface Engineering of Co-Evaporated Metal Halide  
Perovskite Films for Efficient Perovskite-Silicon Tandem Solar  
Cells**

Wednesday 18<sup>th</sup> March 2026, 13:00

QUTE auditorium

Development of up-scalable deposition methods is essential for large-scale deployment of metal halide perovskite solar cells. Co-evaporation is a single-step deposition technique that is particularly relevant for fully-textured perovskite-silicon tandem solar cells, as it allows for conformal coverage of micron-sized pyramid texture. However, the growth of co-evaporated metal halide perovskites is particularly sensitive to the properties of the substrate surface. In this talk, I will show a systematic study of the influence of inorganic seed layers on metal halide perovskite growth. CsCl is selected as the optimal seed layer for the studied system, producing films with  $\sim 1.68$  eV band gap for perovskite-silicon tandem solar cells and a single-junction solar cell with 19.6% efficiency with improved stability. Nano-scale analysis using infrared scattering-type scanning near-field optical microscopy and X-ray photoemission electron microscopy reveals that CsCl mitigates inhomogeneities in the carbazole-based hole-extraction layer, preventing the formation of interfacial PbI<sub>2</sub>. Applied to perovskite-silicon tandem solar cells, CsCl improved fill factor and open-circuit voltage, yielding a certified tandem efficiency of 29.7%.