Interfaces in Halide Perovskite Solar Cells

SEMINAIRE

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In the past decade, metal halide perovskite (MHP)-based solar cells marked a breakthrough in photovoltaic technologies and reach power conversion efficiencies exceeding 25%. While MHPs exhibit a remarkable defect tolerance, film degradation will eventually deteriorate the optoelectronic properties and hence device performance. A key strategy to substantially enhance the stability is to tailor the interfaces in the device.[1]

Here, I will discuss the impact of interface formation on device performance also considering the effect of chemical reactions on interface energetics and durability,[2,3] In particular, I will describe our use of surface-sensitive photoemission spectroscopy (PES) as a primary tool to provide guidelines for controlling the chemistry and optimize the electronic properties of MHP interfaces.[4]

[1] Christians, J.A. *et al. Nature Energy* **2018**, *3*, 68–74.
[2] Schulz, P.; Cahen, D.; Kahn, A. *Chem. Rev.* **2019**, 119, 3349-3417
[3] Raninga, R. D. *et al. Nano Energy* **2020**, 75, 104946
[4] Dunfield S. P. *et al. Cell Rep. Phys. Sci.* **2021**, 2, 100520

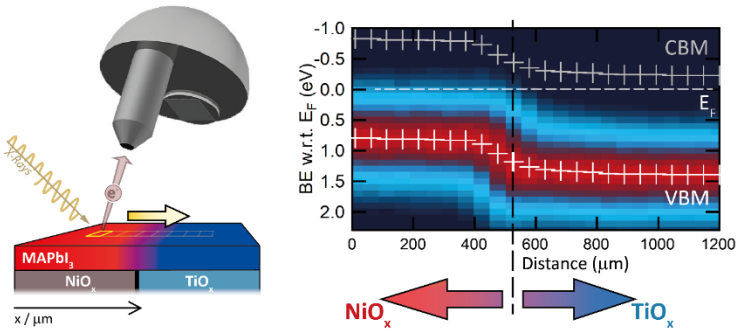

Figure : (left) Spatially resolved photoemission spectroscopy measurements of lateral heterojunctions of metal halide perovskite thin-films on patterned charge selective contacts for interdigitated back-contact solar cells applications. (right) The approach yields insight into the energy level alignment and carrier gradient in the perovskite film as a function of the buried contact layer.

Ce séminaire sera suivi d'une pause café

Formalités d'entrée : accès libre dans l'amphi du pavillon d'Accueil.
Si la manifestation a lieu dans le Grand Amphi SOLEIL du Bâtiment Central merci de vous munir d'une piece d'identité (à échanger à l'accueil contre un badge d'accès).

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