

THE MANY FACETS
OF
ORGANOMETAL
HALIDE
PEROVSKITES:
CHALLENGES AND
OPPORTUNITIES

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4-5:00 PM

Refreshments will be served at 3:45 PM



Despite the tremendous progress observed in the development of high-efficient 3D organic-inorganic halide perovskites (OIHPs) with power conversion efficiencies (PCEs) above 24%, there is still a significant challenge for the field related to addressing their poor stability towards extrinsic (i.e., moisture and oxygen) and intrinsic factors (ion migration, water intake, thermal instability). To ameliorate these notorious pitfalls that deleteriously affect PCEs and the long-term stability of OIHP solar cells, the photovoltaics field has shifted to developing and understanding the properties of 2D OIHPs as the organic cation spacers comprising these layered systems do provide superb environmental stability to the structure. However, this increase in stability is often accompanied by a decrease in PCEs. Hence, the task posed by the field deals with increasing the PCEs of 2D OIHPs without compromising their stability. In this talk, I will discuss the role of excitons/free carries, sample heterogeneity, orientation, and bias stress effects on the photovoltaic performance of OIHPs. I will then discuss the exciton dynamics of 2D OIHPs and how phase and quantum well purity may affect exciton transitions and binding energies.