Graphene-Perovskite photovoltaics

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Abstract

In this talk I will present the progresses made in the use of Graphene and other related 2D materials (GRM) such as MoS2 and MXenes to improve the performance and the stability of perovskite solar cells. The use of 2D materials allowed us to reach more than 26% efficiency in a tandem graphene-perovskite/silicon cell and permitted to realize a solar farm with 0.5 sqm panels obtained with single junction graphene-perovskite sub-modules with efficiency up to 16% (on a substrate area of more than $100cm^2$). With a thorough multiscale experimental investigation, we point out that GRM can tune interfaces properties, reduce ion migration and modify the work-function of the perovskite absorber and charge transporting layers, all aspects that directly impact on the final efficiency and the stability under accelerated stress tests.

References

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