POSTER - INTRINSIC STABILITY OF PEROVSKITE SOLAR CELLS

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In the field of photovoltaics, the recent concept of perovskite solar cells has attracted great interest due to their high efficiency combined with a potential low cost and good versatility. The main remaining challenge now concerns their intrinsic stability. There is a vital need for a better understanding of the degradation mechanisms and thereby the possible mitigation strategies. The presented work focuses on the stability of perovskite solar cells depending on the ETL and HTL used in the architecture of the cell. The studied perovskite material is a Cl containing $MAPbI_3$ system, that may lead to high efficiency [1;2]. A comparison of the ETL stability (aluminium doped zinc oxide (AZO) and tin oxide (SnO_2)) has been conducted in the planar NIP architecture. A detailed study with complementary characterizations techniques helped understanding the degradation processes in the active layer. Infrared spectroscopy had for instance been sparsely employed to characterize perovskite. It was found appropriate to reveal the environment of the methylammonium into the perovskite structure. Additional characterizations with XRD, photoluminescence, UV-Visible absorption, and of course JV curves brought a new understanding of the local degradation mechanisms and their consequences on the macroscopic yield. A schematic presentation of our experimental approach is presented in Fig 1. The goal is to track the intrinsic degradation of the active layer in these NIP solar cells, and the correlation with the nature of the surrounding layers. .

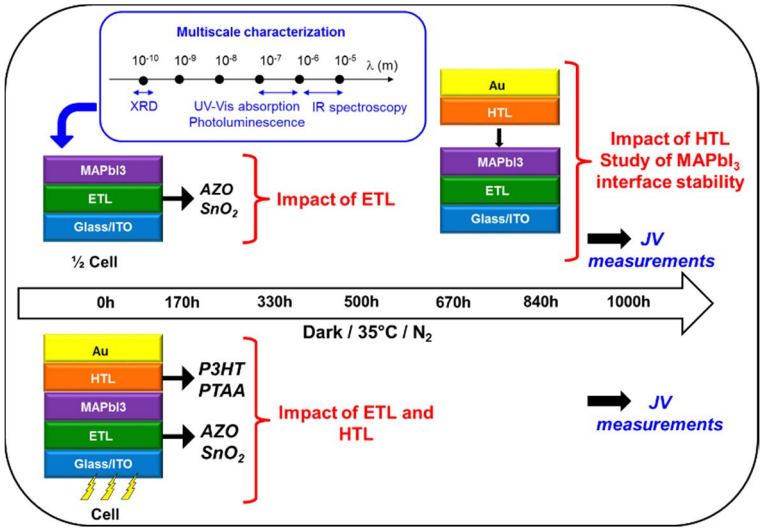

Figure 1: Evaluation of intrinsic stability of perovskite solar cell

References

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