

Large area DSSCs. Facing stability issues from test cells to final modules

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Dyes Sensitized Solar Cells technology was identified as promising technology in applications such as Photovoltaic Building Integrated facades and Agrivoltaics. Beyond the high efficiency and good stability obtained with small test-cells ($\leq 0.25 \text{ cm}^2$) on a lab-scale, it is necessary to understand the stability issues related to large area cell ($\geq 2 \text{ cm}^2$), that in turn will be used for the realization of the final operative large area modules. To this aim a MasterPlate Toolbox approach based on JV, IPCE, EIS and UV-vis measurements, will be introduced to study the thermal degradation of the main components of a dye sensitized solar cells: dyes and electrolytes, with an outlook on how different realization methods can affect the final stability of devices. Data coming from the MasterPlate Toolbox will be then used to realize the final large area modules, then tested in compliance with the standard normative for thin-film solar cell devices. Solvents effect on the liquid electrolyte formulation and on the sensitization process, along with effect of different sealants in the realization of the final devices will be presented and discussed.