

# Efficient Polymer solar cells with an homojunction doped hole transport layer

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## **Abstract :**

So far, PEDOT-PSS has been the most commonly used hole transport layer (HTL) in printed organic photovoltaic (OPV). However, it is known that this conducting polymer can be the source of various degradations including delamination. There is a need to develop novel printable alternative HTLs. The use of other conducting polymer, and especially the one used in the active layer as a HTL has only been explored rarely due to solvent orthogonality issues. Here, we report a 2 steps fabrication of OPV devices using the doped donor polymer from the active layer as an HTL in homojunction with the active layer. These solar cells exhibit similar performances to PEDOT:PSS based references with power conversion efficiencies (PCE) over 10% and an improved stability. This achievement was made possible thanks to fine tuning of the conductivity and the work function of the polymer using a strong oxidant dopant. Care was taken to make sure the vertical composition of the device hasn't been deteriorated by the non-respect of the solvent orthogonality.