



# Improvement of pentathiophene/fullerene planar heterojunction photovoltaic cells by improving the organic films morphology through the anode buffer bilayer

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Résumé en anglais	Organic photovoltaic cells (OPVCs) are based on a heterojunction electron donor (ED)/electron acceptor (EA). In the present work, the electron donor which is also the absorber of light is pentathiophene. The typical cells were ITO/HTL/pentathiophene/fullerene/Alq3/Al with HTL (hole transport layer) = MoO <sub>3</sub> , CuI, MoO <sub>3</sub> /CuI. After optimisation of the pentathiophene thickness, 70 nm, the highest efficiency, 0.81%, is obtained with the bilayer MoO <sub>3</sub> /CuI as HTL. In order to understand these results the pentathiophene films deposited onto the different HTLs were characterized by scanning electron microscopy, atomic force microscopy, X-rays diffraction, optical absorption and electrical characterization. It is shown that CuI improves the conductivity of the pentathiophene layer through the modification of the film structure, while MoO <sub>3</sub> decreases the leakage current. Using the bilayer MoO <sub>3</sub> /CuI allows cumulating the advantages of each layer.
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## Liens

[1] <http://okina.univ-angers.fr/publications?f%5Bauthor%5D=21424>

[2] <http://okina.univ-angers.fr/publications?f%5Bauthor%5D=3568>

[3] <http://okina.univ-angers.fr/publications?f%5Bauthor%5D=21447>

- [4] <http://okina.univ-angers.fr/publications?f%5Bauthor%5D=21448>
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- [11] <http://dx.doi.org/10.1051/epjap/2015150335>
- [12] <https://www.epjap.org/articles/epjap/abs/2016/05/ap150335/ap150335.html>

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