分類C　　産研 ISIR *　　海外共同研究　　IF=5.066

有機太陽電池応用に向けた溶液塗布型MoO_xバッファ層における過酸化水素を用いた価電子状態の変調

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(産研)Shuren Cong, 菅原 徹, Jinting Jiu, 廣瀬 由紀子, 長尾至成, 菅沼 克昭, (imec)Afshin Hadipour, Samaneh Ranjbar, Tom Aernouts,(昆明理工大)Tingthing Wei, (金沢大)辛川 誠

Modifying the valence state of molybdenum in the efficient oxide buffer layer of organic solar cells via a mild hydrogen peroxide treatment

Shuren Cong, Afshin Hadipour,* Tohru Sugahara,* Tingting Wei, Jinting Jiu, Samaneh Ranjbar, Yukiko Hirose, Makoto Karakawa,Shijo Nagao,Tom Aernouts, Katsuaki Suganuma

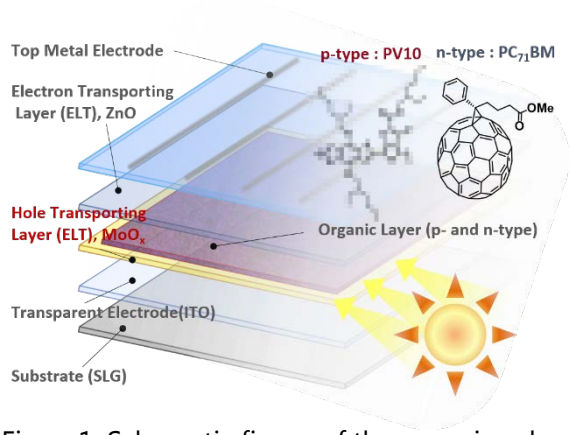

Figure1. Schematic figure of the organic solar cell in this study.

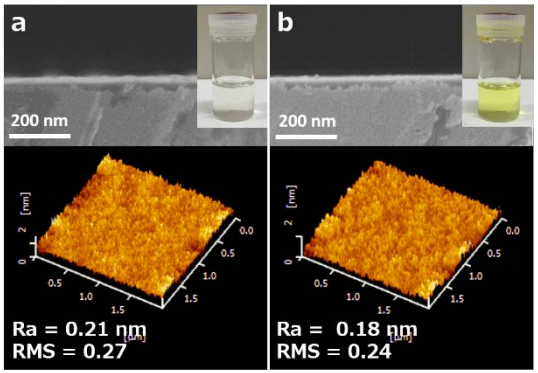

Figure2. Cross-sectional SEM images and AFM images of the MoO_x HTL film on the ITO substrate from precursor (a) without H_2O_2 and (b) with H_2O_2

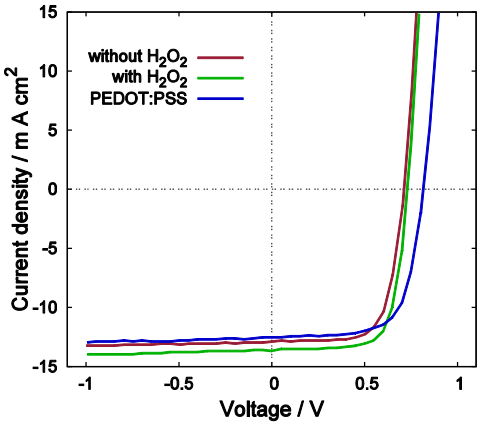

Figure3. J–V curves of three types of HTL-based OSCs under illumination.

酸化モリブデン（MoO_x)は、多様な結晶構造と価電子状態を有することから、特異な物性を示す半導体材料として近年注目されています。前駆体溶液に過酸化水素水を混合することで、MoO_x膜の価電子状態（酸素濃度）を制御することに成功しました。この手法を用いて最適な正孔濃度とエネルギー準位に制御した有機太陽電池のMoO_xバッファ層は、既存の溶液法（MoO_x膜）から約3%の曲率因子を向上させることに成功しました。

Molybdenum oxide (MoO_x) which has attracted attention in recent years due to showing unique physical properties thorght various crystal structures and valence electron states as a semiconductor material. The controlling of valence state of the MoO_x film was succeed by mixing H_2O_2 into the precursor solution. The MoO_x buffer layer of the OPV controlled to the optimum hole concentration and energy level with the method, improving the fill factor of about 3% from the conventional solution method.