Electronic Supplementary Material (ESI) for RSC Advances


# Supporting Information

## Wet-Milled Transition Metal Oxide Nanoparticles as Buffer Layers for Bulk Heterojunction Solar Cells

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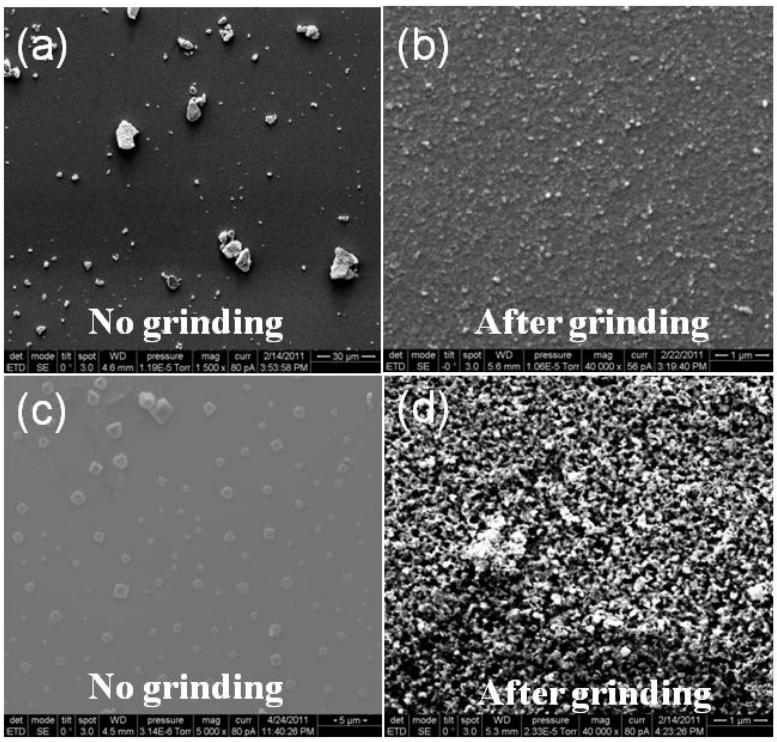


Figure S1. The comparison of SEM images for (a) raw $V_2O_5$; (c) raw $WO_3$ and (b) $V_2O_5$; (d) $WO_3$ after grinding. It can be found that the particle size of the $V_2O_5$ and $WO_3$ decreases significantly after grinding for 240 min.

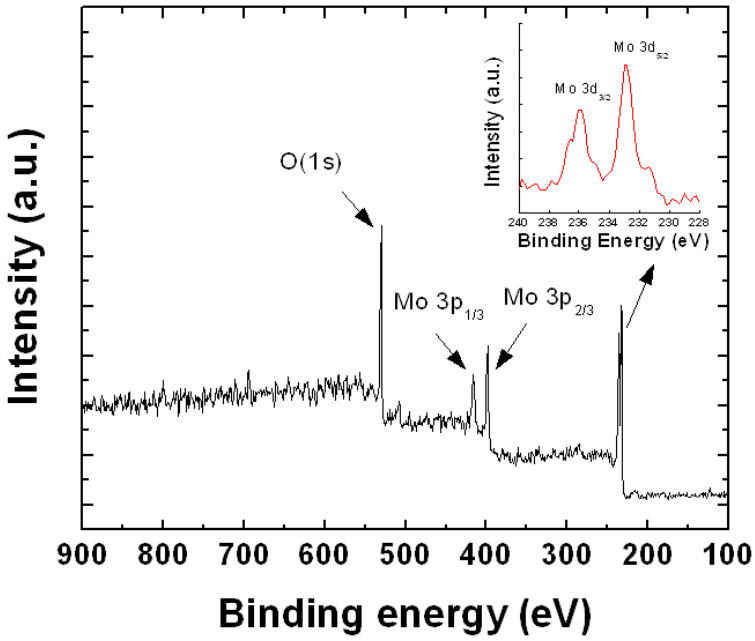


Figure S2. The XPS spectrum of the $MoO_3$ film cast from the as-prepared solution. Based on the survey spectrum, it can be found that the chemical composition is totally contributed from the $MoO_3$ powder without any impurity. This indicates that this solution–based method preserves the intrinsic electronic properties of $MoO_3$.

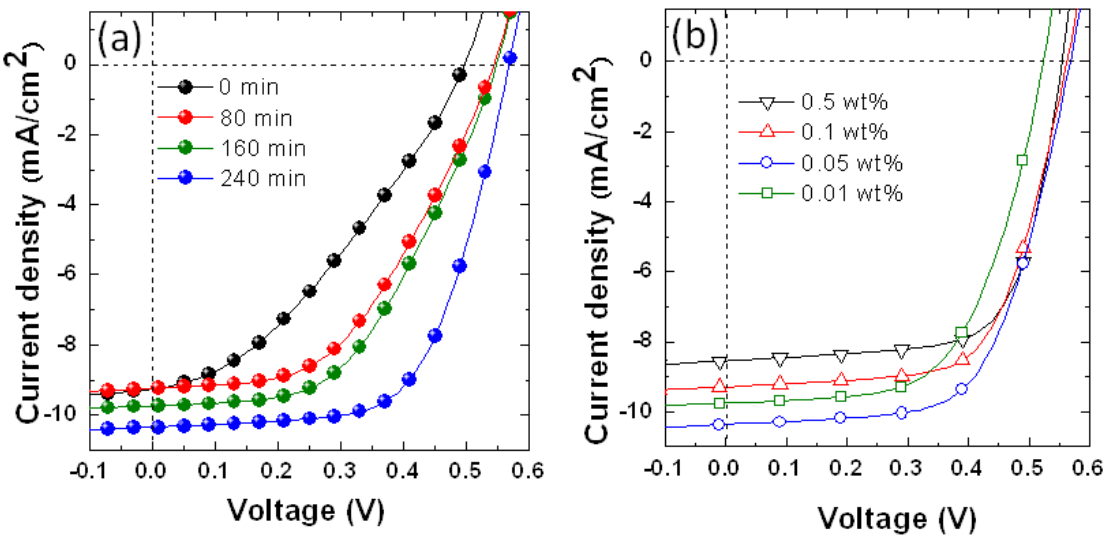


Figure S3. (a) The effect of grinding time on cell performance (P3HT:PCBM) with $MoO_3$ as buffer layers; (b) the effect of $MoO_3$ solution concentration on the cell performance.