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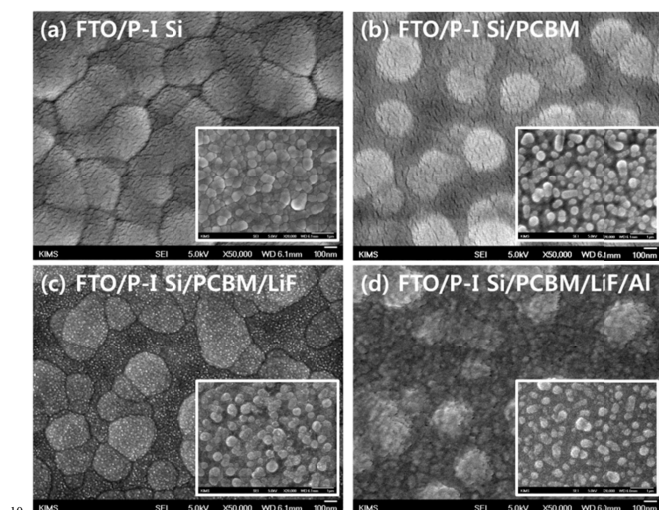
Highly efficient hybrid thin-film solar cells using a solution-processed hole-blocking layer

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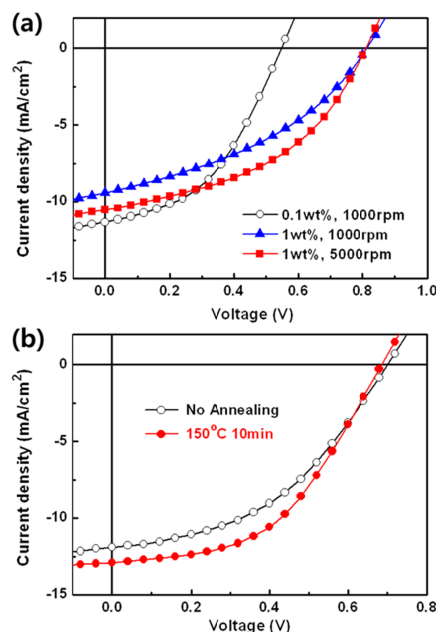
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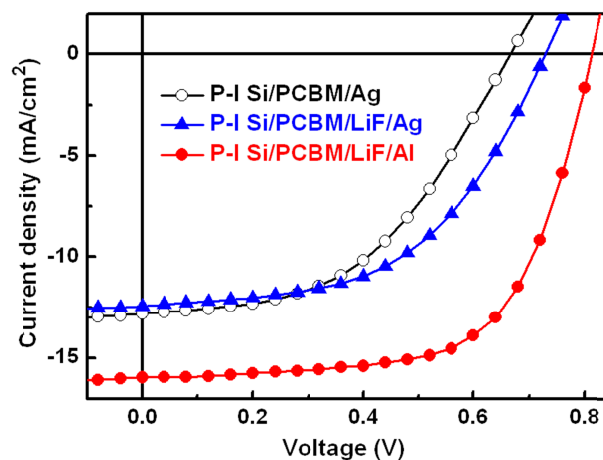
Supporting information



Supporting 1. FE-SEM images of (a) the P-I Si layer on the layer of FTO, (b) the PCBM/P-I Si stack on the layer of FTO, (c) the LiF/PCBM/P-I Si stack on the layer of FTO, and (d) the Al/LiF/PCBM/P-I Si stack on the layer of FTO.



Supporting 2. *J-V* characteristics of the hybrid thin-film solar cells for (a) various PCBM spin-coating conditions and (b) various thermal annealing conditions.



Supporting 3. *J-V* characteristics of the hybrid thin-film solar cells having different interlayer combinations.