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Effects of solvent vapour annealing on the performances of benzo[1,2-b:4,5-b']dithiophene and 4,7-di(4-hexyl-thiophen-2-yl)-5,6-difluorine-2,1,3-benzothiadiazole-based alternating polymer solar cells with different configurations

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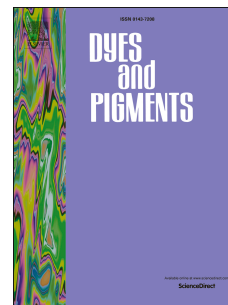
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1 **Effects of Solvent Vapour Annealing on the Performances of Benzo[1,2-b:4,5-**
2 **b']dithiophene and 4,7-Di(4-hexyl-thiophen-2-yl)-5,6-difluorine-2,1,3-**
3 **benzothiadiazole-Based Alternating Polymer Solar Cells with Different**
4 **Configurations**

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13 **Abstract:** Solvent vapour annealing (SVA) treatments have been proven to be an efficient
14 approach to optimize the morphology of the active layer in bulk heterojunction polymer solar
15 cells. For an alternating polymer based on dioctylthiophene substituted benzo[1,2-b:4,5-
16 b']dithiophene and 4,7-di(4-hexyl-thiophen-2-yl)-5,6-difluorine-2,1,3-benzothiadiazole
17 (**PBDTT-DFDTBT**), enhanced power conversion efficiency (PCE) from 7.65% to 8.06 % was
18 achieved in regular device configuration as ITO/PEDOT:PSS/**PBDTT-DFDTBT**:phenyl-C71-
19 butyric acid methyl ester (PC₇₁BM)/poly(9,9-bis(3-(N,N-dimethylamino)propyl)-2,7-fluorene)-
20 *alt*-2,7-(9,9-dioctylfluorene)(PFN)/Al after tetrahydrofuran (THF) SVA treatment. As for the
21 inverted device configuration of ITO/ZnO/PFN/**PBDTT-DFDTBT**:PC₇₁BM/MoO₃/Al with THF
22 SVA post-treatment, simultaneously decreased open-circuit voltage (V_{OC}) and short-circuit
23 current density (J_{SC}) were obtained, giving rise to a reduced PCE of 6.60%. We observed

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