Significantly Improving the Efficiency of Polymer Solar Cells through Incorporating Noncovalent Conformational Locks

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Fig. S1. $^1$H NMR spectrum of PDTffBT-TVT at 298K.
Fig. S2. $^1$H NMR spectrum of PDTffBT-TVTOEt at 298K.

Fig. S3. TGA thermograms of polymers under nitrogen.
Fig. S4. UV-vis (a) and photoluminescence (b) spectra of the solution of TVT and TVTOEt.

Fig. S5. Cyclic voltammograms of polymers’ films on Glassy Carbon electrode in 0.1 M Bu₄NPF₆ solution in acetonitrile with a scan rate of 50 mV/s.
Fig. S6. Photoluminescence of polymers: PC_{71}BM blend films

Fig. S7. J^{1/2}-V plots for hole-only devices based on polymer:PC_{71}BM.

Table S1 Summary of absorption and emission characteristics of the solution of TVT and TVTOEt

<table>
<thead>
<tr>
<th></th>
<th>$\lambda_{em}$ [nm]</th>
<th>$\lambda_{abs}$ [nm]</th>
<th>$\Delta\lambda$ [nm]</th>
</tr>
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<tbody>
<tr>
<td>TVT</td>
<td>416</td>
<td>345</td>
<td>71</td>
</tr>
<tr>
<td>TVTOEt</td>
<td>402</td>
<td>343</td>
<td>59</td>
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