The manuscript entitled "Hybrid ZnO Electron Transport Layer by Down Conversion Complexes for Dual Improvements of Photovoltaic and Stable Performances in Polymer Solar Cells" focuses on the effect of the introduction of Eu(TTA)phen (ETP) into the cathode transport layer (ZnO). The research undertaken by the Authors is important and interesting. The manuscript is well written. It can be accepted after improvement. The issues are listed below:

**Question 1:** Figure 1b: The structure of PTB7-Th is incorrect.

**Answer:** Thank you very much for the kind suggestions. We are very sorry for this mistake, after comparing with the structure drawing provided by Solarmer Materials Inc., we have corrected the structure of PTB7-Th in Figure 1 (b) in Page 4 as follow:

![Figure 1.](image)

(a) Schematic illustration of the device architecture in this work. (b) The molecular structure of polymer PTB7-Th and PC71BM. (c) Absorption spectra of the neat PTB7-Th and PC71BM films and PL spectra of ZnO and ZnO:ETP. (d) Energy level diagram of the components of the device.

**Question 2:** Figure 1c: The PL spectrum of ZnO:ETP is shown. It should be compared with the PL spectrum of ZnO. It is important for confirmation that ETP is the source of emission.

**Answer:** Thank you very much for this good suggestion. We added the PL spectrum of ZnO in Figure 1 (c), we added some clarification to confirm that ETP is the source of emissions in Page 4(line 160). The description is as follow in the revised manuscript:
The absorption spectra of the neat PTB7-Th and PC_{71}BM films and PL spectra of ZnO and ZnO:ETP are shown in Figure 1 (c). ZnO has weak fluorescence at 420nm-675nm, and there is no obvious peak at 612nm, and the ETP complexes are excited by UV light and re-emits red light (612 nm), indicating that ETP is the source of emission. In addition, it is matched well with the absorption of the donor material (PTB7-Th), thus helping to enhance photovoltaic performances in PSCs.

**Question 3:** Figure 2: The description of the axis should be made in larger fonts, similar to fonts on other figures.

**Answer:** Thank you very much for your suggestion. We have adjusted the font of the description of the axis in Figure 2 by comparing it with other figures to be consistent with the font in other figures in Page 5 as follow:

![Figure 2](image)

**Question 4:** Line 159: It is not clear how the HOMO/LUMO values of ZnO:ETP (-7.63/-4.31 eV) were estimated, maybe it is from some references? It should be clarified.

**Answer:** Thank you very much for the kind suggestions. We are very sorry for this mistake. The specific HOMO and LUMO values are uncertain, but considering that the amount of doping is extremely small, the energy level will not change too much. The energy level of ZnO:ETP in Figure 1 (d) is derived from the energy level of ZnO in the literature, which has been deleted in Figure 1 (d).