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Delocalization of  $\pi$  electrons and trapping action of ZnO nanoparticles in PPY

matrix for hybrid solar cell application

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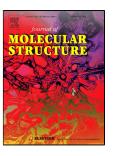
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#### ACCEPTED MANUSCRIPT

## Highlights

- > PPY-ZnO nanomposites were synthesized via in-situ polymerization
- ➤ Incorporation of ZnO into PPY provided semi-crystalline behavior
- > Electron mobility increased due to higher size of the grain domain
- > PPY-ZnO (1:4) nanocomposite imparted better thermal stability
- Almost 1.2 times increase in peak current occurred for PPY-ZnO (1:1)

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