

# PEDOT/hydroxypropyl $\beta$ -cyclodextrin polyrotaxane: Synthesis and photophysical characteristics

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In the past decades, much attention has been dedicated to the development of new polyrotaxane (PRs) architectures, which offer the opportunity to generate smart polymeric functional materials. In this regard, poly(3,4-ethylenedioxythiophene) (PEDOT) has received tremendous attention due to its practical optoelectronic applications. Herein, we present a continuation of our work regarding the beneficial effect of the encapsulation of poly(3,4-ethylenedioxythiophene) (PEDOT) chains into the cavity of the hydroxypropyl  $\beta$ -cyclodextrins (HP $\beta$ CD) [1,2].

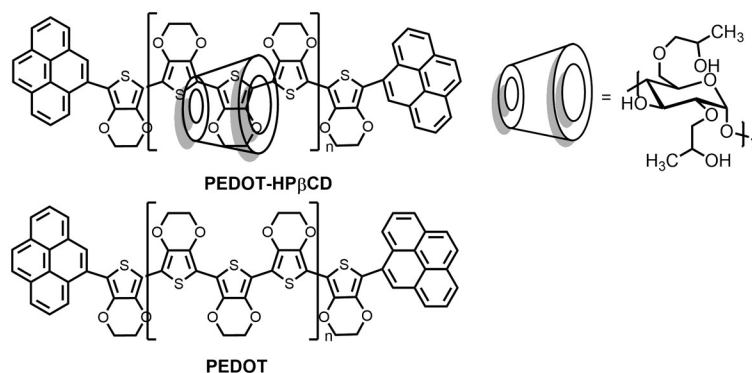


Figure 1. Schematic representation of the PEDOT-HP $\beta$ CD polyrotaxane and the reference polymer structures.

The morphological, photophysical, and thermal properties of this material have been evaluated and compared to the pristine PEDOT. The achieved results indicated improvements in the photophysical and thermal properties of the polyrotaxane structures.

**Keywords:** PEDOT, hydroxypropyl  $\beta$ -cyclodextrin, polyrotaxane, optical properties

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## References

- [1] Resmerita, A.-M.; Asandulesa, M.; Bulai, G.; Farcas, A. Novel Supramolecular Networks Based on PEG and PEDOT Cross-linked Polyrotaxanes as Electrical Conductive Materials. *Eur. Polym. J.* **2019**, *114*, 39-46.
- [2] Haitami, A. E.; Resmerita, A.-M.; Ursu, L.E.; ; Asandulesa, M.; Cantin, S.; Farcas, A. Novel Insight into the Photophysical Properties and 2D Supramolecular Organization of Poly(3,4-ethylenedioxythiophene)/Permodified Cyclodextrins Polyrotaxanes at the Air-Water Interface. *Materials* **2023**, *16*, 4754.