

# Oligomers of thieno[3,4-c]pyrrole-4,6-dione: Raman spectra

S. Medina Rivero<sup>1</sup>, X. Zhu<sup>2</sup>, P. Mayorga Burrezo<sup>2</sup>, J. Casado<sup>1\*</sup>

<sup>1</sup> Univ. Malaga, Dept. Phys. Chem., Campus Teatinos S-N, E-29071 Malaga, Spain, samara@uma.es

<sup>2</sup> Chinese Acad. Sci., Inst. Chem., CAS Key Lab. Organ. Solids, Beijing 100080, Peoples R China.

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Oligothiophenes are  $\pi$ -conjugated compounds made by concatenation of thiophenes. [1] Due to the low aromaticity of thiophene, inter-ring  $\pi$ -electron delocalization is favored which has strong implication in their electro-optical properties and in their applications in organic electronic devices. [2] In despite of the plenty of oligothiophenes reported so far, new derivatives are welcome which would enhance these properties in regard of their exploitation in new devices. [3] In this presentation, we will show our latest development of oligothiophenes based on the thieno[3,4-c]pyrrole-4,6-dione (TPD, See Figure 1) units, and with different size, from a dimer to a hexamer. In particular, thieno[3,4-c]pyrrole-4,6-dione (TPD) motifs are of great interest due to their high power conversion efficiency (PCE) and its moderate short-circuit current ( $J_{sc}$ ) in organic photovoltaic (OPV) devices, [4] when implemented in donor-acceptor polymers, making them excellent candidates for their application in polymer solar cells.

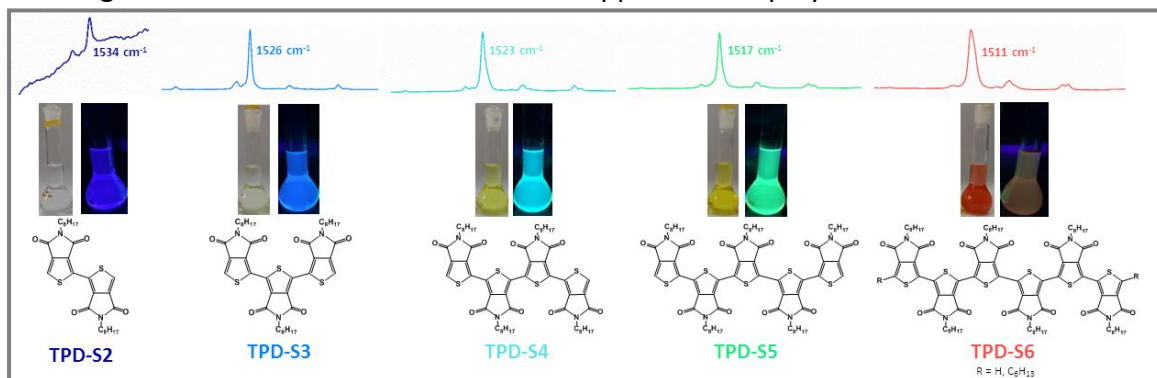


Figure 1

In this scenario, our group has characterized the electronic structures of TPD oligomers, both the neutral and the ionic forms, in order to understand their behavior and their applicability in OPV devices. For this goal, Raman, fluorescence and IR spectroscopies as well as UV-Vis-NIR spectroelectrochemistry were employed. New optical and structural properties of these oligothiophenes, unprecedented in this class of  $\pi$ -conjugating materials, will be disclosed and interpreted.

## Referencias

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