



Low Band Gap Donor-Acceptor Conjugated Systems Based on 3-Alkoxy or 3-Pyrrolidino-4-cyanothiophene and Benzothiadiazole Units

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Résumé en anglais	<p>3-Hexyloxy-4-cyanothiophene, 3-pyrrolidil-4-cyanothiophene, and 3,4-ethylenedioxythiophene (EDOT) units are used with benzothiadiazole as building blocks for the development of three new conjugated donor-acceptor-donor (DAD) derivatives. The DAD molecules have the central acceptor part, which is formed by combining electron-withdrawing cyano groups and the benzothiadiazole moiety, in common. Theoretical calculations and UV/Vis and electrochemical data reveal the key role of the end-capped donor to tune the electronic properties of the derivatives. A study of the electropolymerization process of the three derivatives shows the strong influence of the donor parts on both the reactivity of the precursors and the electronic properties of the resulting polymers. Derivatives end-capped with pyrrolidinocyano thiophene or EDOT units lead to films of polymers presenting low band gaps of around 0.9-1.4 eV. Upon oxidation, the two polymers present different behavior. In the presence of the pyrrolidinocyano thiophene moieties, oxidation leads to a blueshift of the absorption bands, whereas with EDOT units a classical redshift, giving high absorption in the near-IR region, is observed for the oxidized states.</p>
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- [2] <http://okina.univ-angers.fr/publications?f%5Bauthor%5D=3242>
- [3] <http://okina.univ-angers.fr/magali.allain/publications>
- [4] <http://okina.univ-angers.fr/f.gohier/publications>
- [5] <http://okina.univ-angers.fr/pierre.frere/publications>
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