



Isomeric carbazolocarbazoles: synthesis, characterization and comparative study in Organic Field Effect Transistors

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Auteur	Más-Montoya, Miriam [1], Ponce Ortiz, Rocío [2], Curiel, David [3], Espinosa, Arturo [4], Allain, Magali [5], Facchetti, Antonio [6], Marks, Tobin J [7]
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Résumé en anglais	<p>We report here the synthesis and characterization of a new family of isomeric carbazolocarbazole derivatives, namely carbazolo[1,2-a]carbazole, carbazolo[3,2-b]carbazole and carbazolo[4,3-c]carbazole. Thermal, optical, electrochemical, morphological and semiconducting properties have been studied to understand the influence of geometrical isomerism on the optoelectronic properties of these compounds. Different packing patterns have been observed by single crystal X-ray diffraction (XRD) which then correlate with the different morphologies of the evaporated thin films studied by XRD and Atomic Force Microscopy (AFM). The effect of N-substituents has also been evaluated for one of the isomers revealing a noticeable influence on the performance as organic semiconductors in Organic Field Effect Transistors (OFETs). A good p-channel field effect has been determined for N,N'-dioctylcarbazolo[4,3-c]carbazole with a mobility of $0.02 \text{ cm}^2 \text{ V}^{-1} \text{ s}^{-1}$ and Ion/Ioff ratio of 106 in air. These preliminary results demonstrate the promising properties of molecular carbazolocarbazole systems which should be further explored in the area of organic semiconducting materials.</p>
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