ANALYSIS OF MORPHOLOGIC EFFECTS OF POLYMERIC SEMICONDUCTING MATERIALS BY RAMAN SPECTROSCOPY

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The organic electronics research field has greatly advanced in the last decades, already rendering materials able to compete with their inorganic counterparts.[1-3] However, the final blossoming of this field is expected to come with the complete understanding and control of the charge transport parameters in organic materials.

In polymeric semiconductors, tuning the film morphology and crystallinity has been found to be crucial for efficient charge transport in devices. In this sense, planar backbones with locked conformations induced by intramolecular interactions are good candidates for high performing polymers. Thus, being able to elucidate both ordered and disordered phases in semiconducting films has been proven to be of great interest. Raman spectroscopy is a rapid, noninvasive technique able to gather information on molecular and supramolecular levels, thus being really useful for this purpose.[4-7]

In this communication, optical spectroscopies and, in particular Raman spectroscopy, are used to analyze the impact of the gradual fluorination on the electronic properties of donor-acceptor polymers, demonstrating that the final performance is highly dependent on the building blocks in with the fluorine atoms are introduced. [8]

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