

Abstract Submitted
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Single molecule photoluminescence excitation spectroscopy of polyfluorene ENRICO DA COMO, JOHN LUPTON, University of Utah — Polyfluorene is a remarkable conjugated polymer with a uniquely rich polymorphism [1]. Because of this characteristic it can be considered as a model playground to understand structure-property relationships in conjugated polymers. Here, by low temperature single polymer chain photoluminescence excitation spectroscopy [2], we look at the spectral characteristics of the absorbing and emitting chromophores on a chain. These experiments are performed on both the β -phase and the glassy disordered structure, elucidating the role of chain polymorphism on conformational relaxation and energy transfer. Moreover, we compare results on multichromophoric polymers with short oligomers, where a single chromophore is responsible for the optical response. These experiments illuminate directly the emergence of chromophores in conjugated polymers through delocalization: how a pi-electron system evolves from a localized molecular (oligomeric) unit into a delocalized species.

[1] Da Como Nano Lett.

[2] Walter PRL 2009

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