

## Liquid crystals based on « Donor-Acceptor-Donor » triads for photovoltaic conversion

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We report on “donor-acceptor-donor” triads made of an oligothiophene derivative (electron donor) connected to a central perylene bis-imide (electron acceptor). Both extremities of these elongated triads are substituted by a siloxane chain. The presence of these oligosiloxanes is used to prevent the crystallization of the molecules and stabilize the formation of a smectic phase (SmA type) in more than 200°C temperature range, including room-temperature. In this mesophase, a superposition of the donor and acceptor moieties should occur and lead to the formation of a self-organized film as shown below. As observed by Time-of Flight (ToF) technique, the mesophase shows both a hole and electron charge transport. Such nano-structured films made of hole and electron conducting channels are of high interest for the preparation of photovoltaic cells.

In this communication will be presented the molecular organization in the mesophase, as well as the results of the electrochemical, optical, and charge transport properties.

