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Supporting Information

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Efficient Energy Transfer in Mixed Columnar Stacks of Hydrogen-Bonded Oligo(*p*-phenylene vinylene)s in Solution

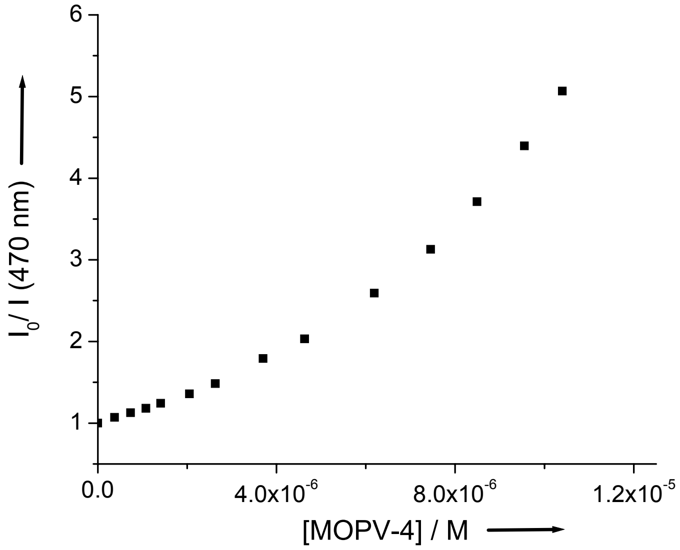
Freek J. M. Hoeben, Laura M. Herz, Clément Daniel, Pascal Jonkheijm, Albertus P. H. J. Schenning, Carlos Silva, Stefan C. J. Meskers, David Beljonne, Richard T. Phillips, Richard H. Friend & E. W. Meijer

Methods

The general procedure for the mixing experiments was the following. In a volumetric flask of 50 mL, a 1.9×10^{-5} M dodecane solution of **MOPV3** was prepared (solution A). In a second volumetric flask of 10 mL, a sufficient amount of **MOPV4** was weighed, in order to prepare a dodecane solution with an identical molarity. This second flask was then filled to 10 mL with solution A. In this way, a solution was obtained with a 1:1 molar ratio of **MOPV3** and **MOPV4**, both at a concentration of 1.9×10^{-5} M (Solution B). This procedure ensured that the concentration of **MOPV3** was the same in both solutions. A known volume (2.5 mL, 47.8 nmol **MOPV3**) of solution A was put into a fluorescence cuvet and in small steps, using a μL syringe, solution B was added to the cuvet. To ensure effective mixing between the two oligomers, the cuvet was heated to 80 °C in a waterbath for five minutes. The total loss of a CD signal confirmed that indeed only molecularly dissolved species remained after the heating period. The cuvet was placed in the cuvet holder of the fluorescence apparatus, which was linked to a thermostat. Upon cooling, columnar structures were allowed to reform, and the changes in the fluorescence of the sample were monitored. At the point where the spectrum exhibited no more changes in time, equilibrium was assumed and a fluorescence spectrum was recorded. Excitation of the sample occurred at λ = 412 nm, *i.e.* the absorption maximum of **MOPV3**. A UV/vis spectrum was also recorded at the corresponding temperatures.

The photoluminescence decay within the first 600 ps after excitation was measured using the up-conversion technique providing a time-resolution of 350fs. Blends of **MOPV3** and **MOPV4** in dodecane solution (1.85×10^{-4} M) were held in a Spectrosil cuvette mounted in a temperature-controlled holder. The frequency-doubled output from a mode-locked Ti:Sapphire laser was used to excite the sample with 200-fs pulses at an energy of 3.06 eV and an excitation intensity of 0.7 mW. Photoluminescence emerging at right angle to the exciting beam was collected using a pair of off-axis parabolic mirrors, and up-converted in a β-barium-borate crystal using the fundamental laser beam at 1.53 eV as a gate. Sum-frequency photons were dispersed in a monochromator, and detected by a cooled photomultiplier tube using photon counting techniques. All data shown were taken for co-linear polarization of the exciting and the detected light. To measure decay dynamics within the time-range of up to 40ns after excitation with a resolution of ~70 ps, time-correlated single photon counting (TCSPC) was implemented. The blend solutions were excited with a pulsed (20 MHz, 70 ps full width at half maximum) diode laser at a wavelength of 407 nm (PicoQuant LDH 400) and the luminescence detected with a microchannel plate photomultiplier (Hamamatsu) coupled to a monochromator and TCSPC electronics (Lifespec-ps and VTC900 PC card, Edinburgh Instruments).

Quenching behaviour at 80 °C (0 – 35 mol% **MOPV-4**)



Quenching behaviour at 10 °C (0 – 35 mol% **MOPV-4**)