Supplementary Material (ESI) for Chemical Communications

Electronic Supplementary Information

Amylose-wrapped luminescent conjugated polymers

Michael J. Frampton, Timothy D. W. Claridge, Gianluca Latini, Sergio Brovelli, Franco Cacialli* and Harry L. Anderson*

Department of Chemistry, Chemistry Research Laboratory, University
12 Mansfield Road, Oxford, OX1 3TA (UK)
harry.anderson@chem.ox.ac.uk
and
Department of Physics and Astronomy and London Centre for Nanotechnology,
University College London, Gower Street, London, WC1E 6BT (UK).
f.cacialli@ucl.ac.uk

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1. Details of NMR assignments

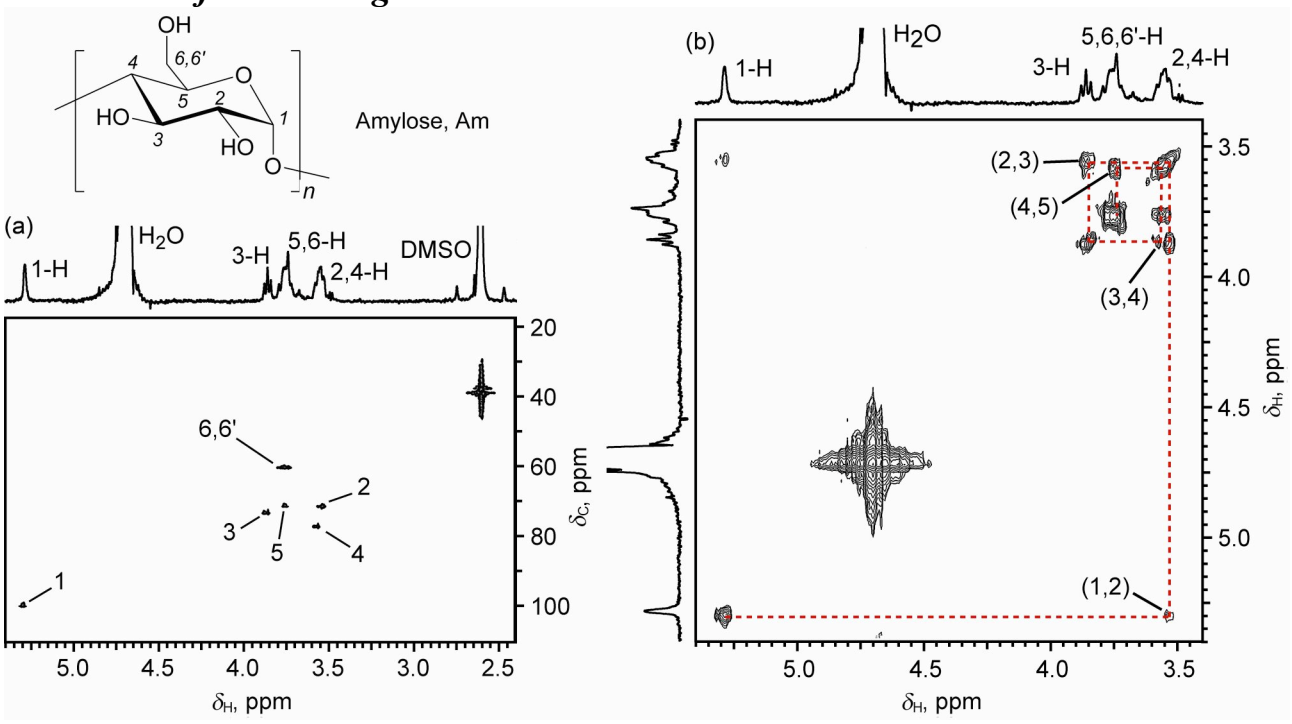

Figure 1 (a) ^{1}H-^{13}C HSQC and (b) ^{1}H-^{1}H COSY NMR spectra of amylose (MW = 15,000; TCI Europe) in 1:4 DMSO/water showing assignments for the amylose C-H protons (500 MHz, 298 K).

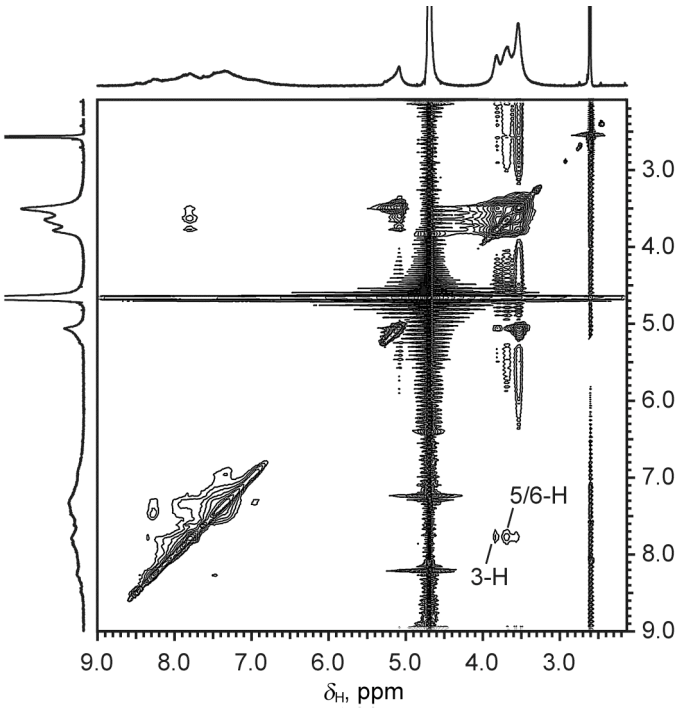

Figure 2 [1]H NOESY NMR spectrum of a 1:1 PDV⊂Am complex in 1:4 DMSO/water solution (500 MHz, 289 K).

2. *UV-visible and luminescence titrations*

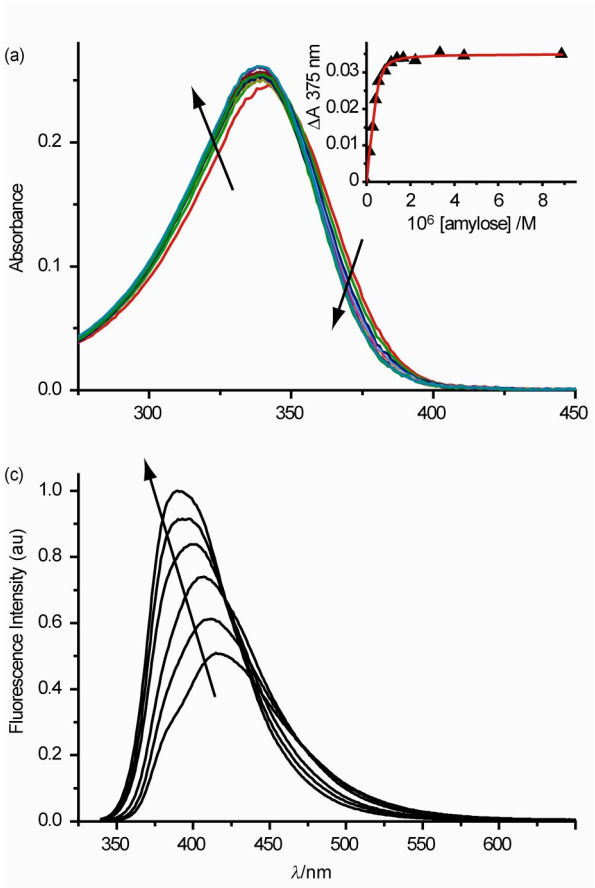

Figure 3 (a) Effect of increasing amylose concentration on the UV-visible spectrum of PPP in 20 % DMSO aqueous solution. The inset shows the data fitted to a simple 1:1 binding isotherm with $K = 2.4 (\pm 0.6) \times 10^7$ M^{-1} and [PPP] = 5.4×10^{-7} M. (b) Effect of increasing amylose concentration on the fluorescence spectrum of PPP in 10 % DMSO aqueous solution (λ_{ex} = 330 nm).

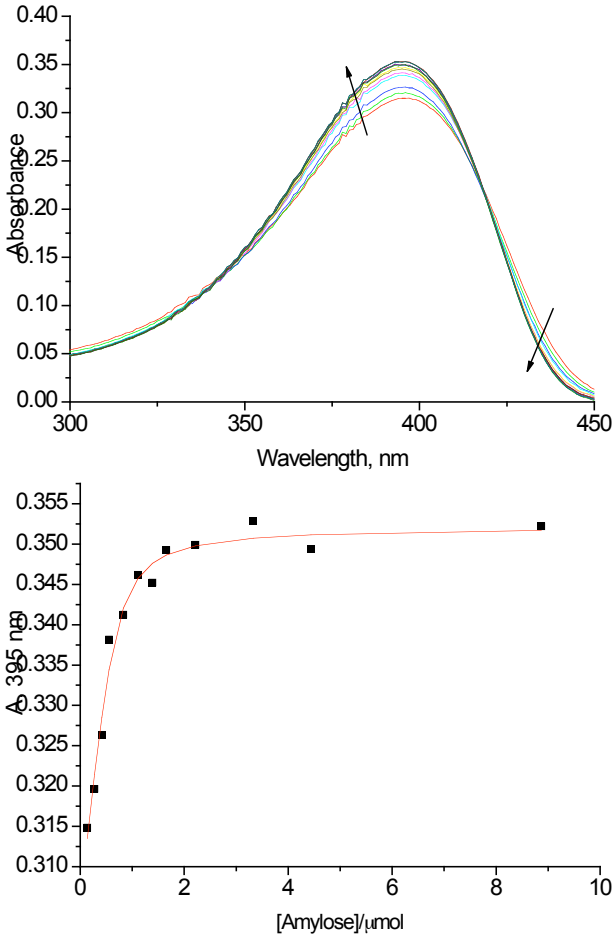

Figure 4 Effect of increasing amylose concentration on the UV-visible spectrum of PDV⊂*β*-CD in 20 % DMSO aqueous solution. The inset shows the data fitted to a simple 1:1 binding isotherm with K = 1.2 (± 0.7) x 10^7 M^{-1} and [PDV⊂*β*-CD] = 6.6 × 10^{-7} M.

3. *Thin-film photoluminescence data*

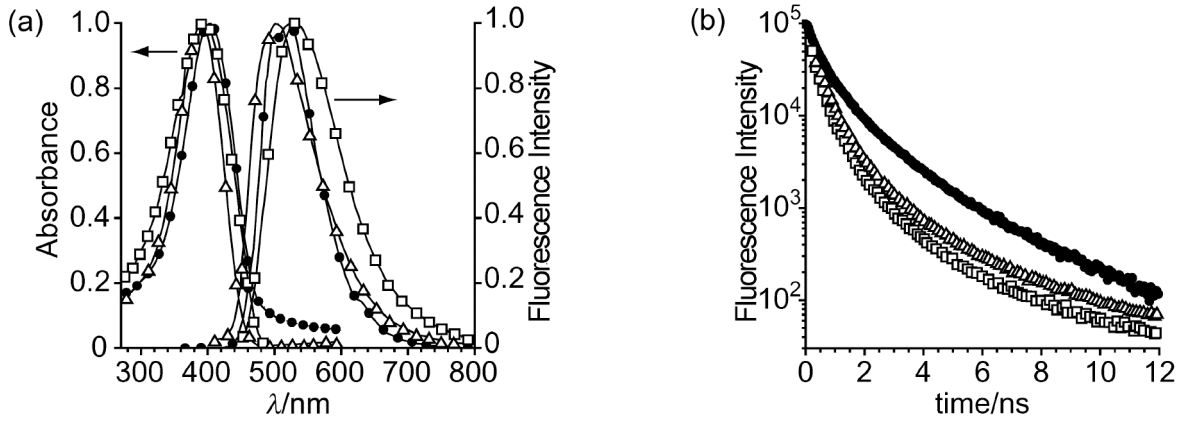

Figure 5 (a) Normalised thin-film UV-visible absorption and photoluminescence spectra (b) photoluminescence time decay of PDV (□), PDV⊂Am (●) and PDV⊂*β*-CD (△).

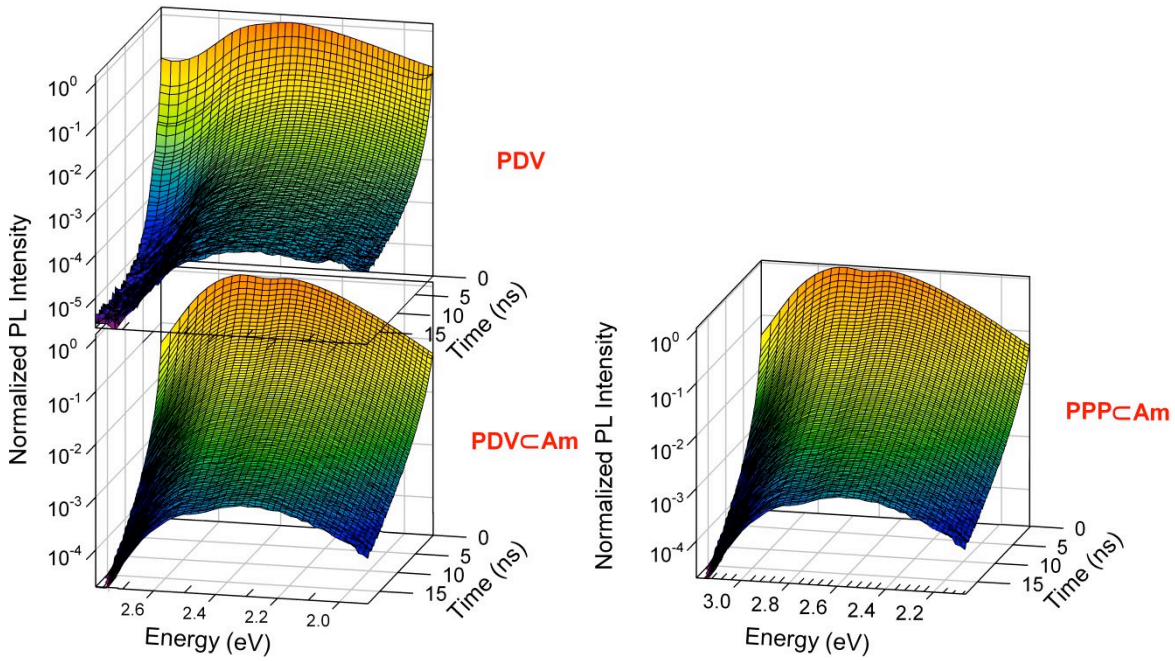

Figure 6 Time-resolved luminescence spectra for PDV, PDV⊂Am and PPP⊂Am.

4. Preparation of complexes for thin-film characterisation

PDV⊂Am: A solution of amylose (120 mg, MW = 15,000, TCI Europe) in DMSO (3 cm^3) was added to a solution of PDV (60 mg) in DMSO (3 cm^3). The solution was stirred for 5 min, then diluted with water (36 cm^3). The solution was dialysed against pure water (12,000 MWCO cellulose seamless membrane) to remove DMSO, replacing the water three times at daily intervals. The solution was concentrated to a concentration of 15 mg cm^{-3} by stirring under vacuum at 50 °C and filtered through a 0.45 μm nylon filter.

PPP⊂Am: A solution of amylose (120 mg, MW = 15,000, TCI Europe) in DMSO was added to a solution of PPP (60 mg) in water/DMSO 1:2 (9 cm^3). The solution was stirred for 10 min then diluted with water (100 cm^3). The solution was dialysed against pure water (12,000 MWCO cellulose seamless membrane) to remove DMSO, replacing the water three times at daily intervals. The solution was concentrated to a concentration of 15 mg cm^{-3} by stirring under vacuum at 50 °C and filtered through a 0.45 μm nylon filter.