

SUPPLEMENTARY INFORMATION

Optical Properties and Red to Near Infrared Piezo-Responsive Fluorescence of a Tetraphenylethene-Perylenebisimide-Tetraphenylethene Triad

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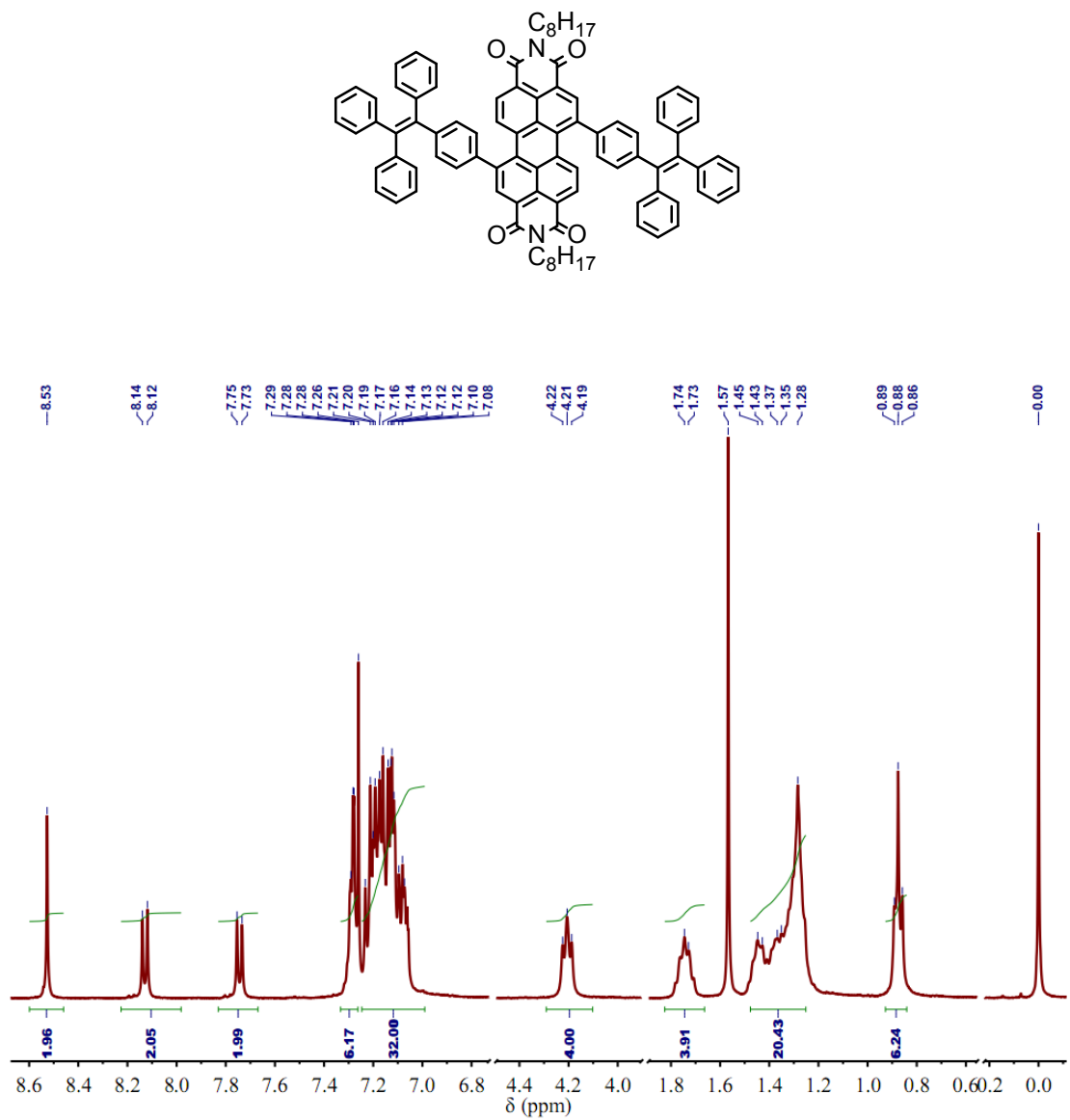
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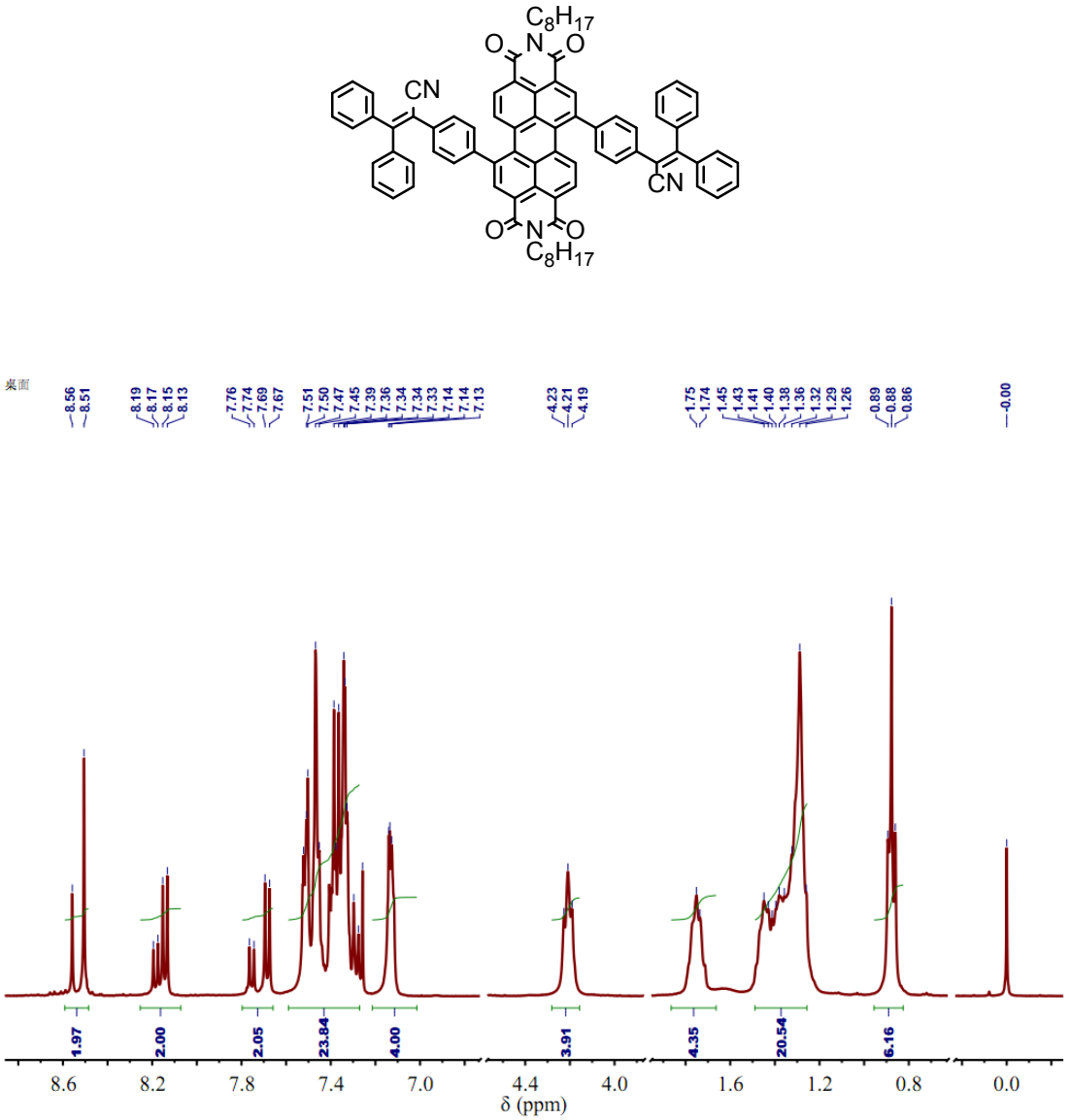
1. GENERAL INFORMATION AND INSTRUMENTATION.

Chemicals, reagents and solvents were purchased from Puyang Huicheng Chemical Co. Ltd, Alladin Chemicals, Energy Chemical and Sinopharm Chemical Reagent Co.,Ltd. and used without further purification, unless otherwise stated. Toluene were dried and purified using sodium-benzophenone system followed by distillation. $\text{Pd}(\text{PPh}_3)_4$,¹ (1,6)-1,7-dibromo-*N,N'*-bis(*n*-octyl)perylene-3,4:9,10-tetracarboxylic diimide,² 4-(1,2,2-triphenylvinyl)phenyl boronic acid³ and 2-(4-pinacolatoboronphenyl)-3,3-diphenylacrylonitrile⁴ were synthesised according to the previous literature. ¹H-NMR spectra were recorded using a 400M Bruker AV400 in CDCl_3 and an internal standard of tetramethylsilane was used. Mass spectra were recorded using an Agilent 1100 LC/MSD Trap (APCI) and high resolution mass spectrometry (HRMS) recorded using Bruker ultrafleXtreme MALDI-TOF/TOF. Purification of intermediates and final products was accomplished mainly by gravity column chromatography, using silica gel (200-300 mesh). The purity of all final compounds was checked by elemental analysis (Elementar Vario Micro-cube). The UV-VIS spectra were recorded using a Shimadzu UV-vis-NIR Spectrophotometer (UV-3600). Photoluminescence (PL) spectra were recorded using Edinburgh instruments (FLSP920 spectrometers). The photographs shown in Fig. 2 and Fig. 12 were performed using an ultraviolet transmission platform (UVP Transilluminator) at 365 nm irradiation. Molecular modelling was carried by density functional theory (DFT) and the B3LYP/6-31G(d) basis set. Low temperature PL measurements were carried out using Oxford Instruments (Optistat DN2). Fluorescence microscopy was performed using a CFM-400Z/JVC camera (TK-C1031EC). X-ray diffraction conducted using a PANalytical B.V. (X' Pert PRO). Scanning electron microscopy (SEM) performed using Quanta 200 SEM. Differential scanning calorimetry (DSC) analysis carried out using PerkinElmer Instruments (Diamond DSC). Simultaneous TGA/DSC measurements performed using a simultaneous thermal analyzer

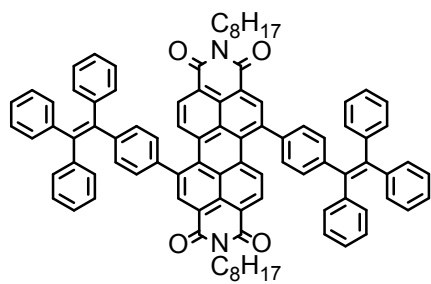
NETZSCH STA 449 F3 Jupiter. Elemental Analysis performed with Elementar (Vario Micro-cube). Fabrication and measurements of single organic MFETs were conducted according to the following: the solution dispersed organic microwires were dropped on Si wafer with a 500 nm thick SiO₂ layer that serves as a back gate. Cr/Au (10 nm/100 nm) double-layer electrodes were deposited on the two ends of the microwire by photolithography, electron beam deposition, and lift-off process. The electrical transport characteristics of single organic MFETs were measured at room temperature using a Keithley 4200 semiconductor characterisation system on a probe station.

2. ¹H NMR SPECTRA

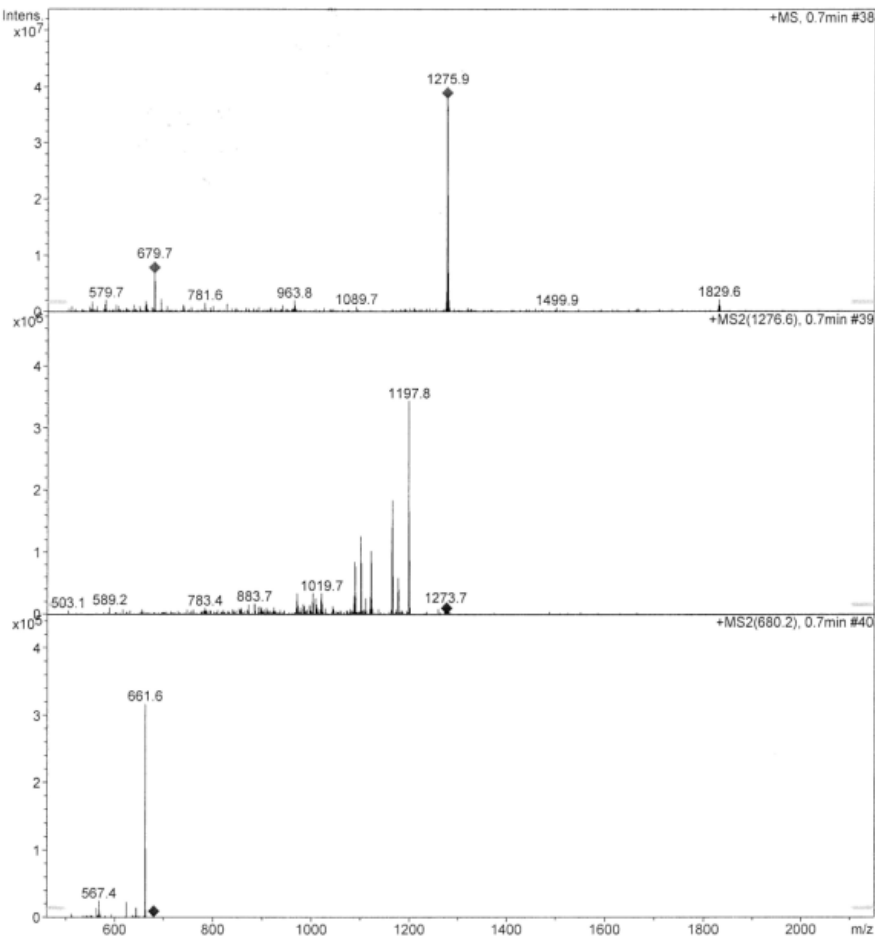


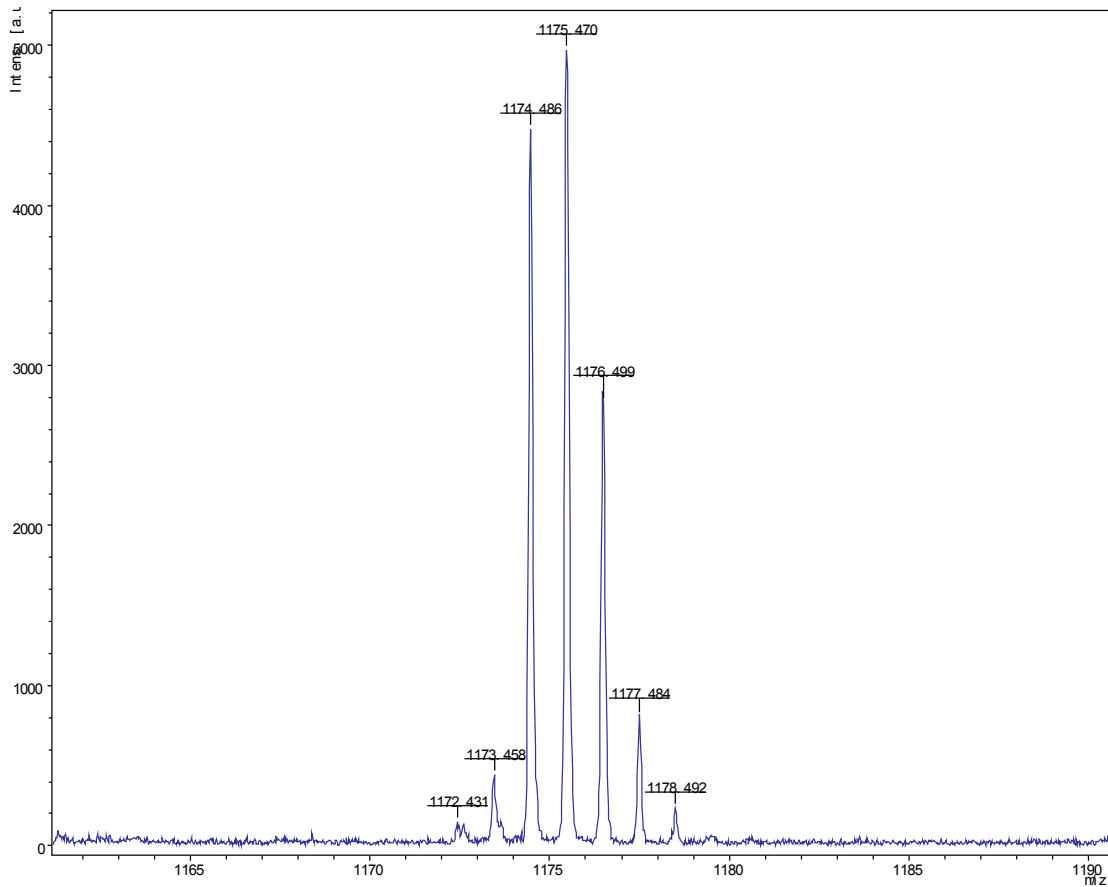
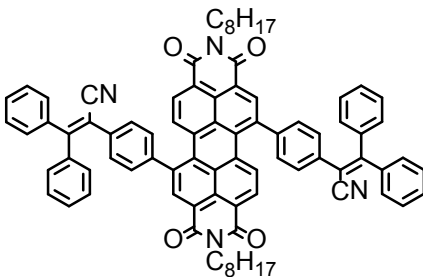


3. MASS SPECTRA



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