Electronic Supplementary Material (ESI) for RSC Advances.

Synthesis and Spectral Characterization of Photoswitchable Oligo(p-phenylenevinylene)s -Spiropyran Dyad

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Content:

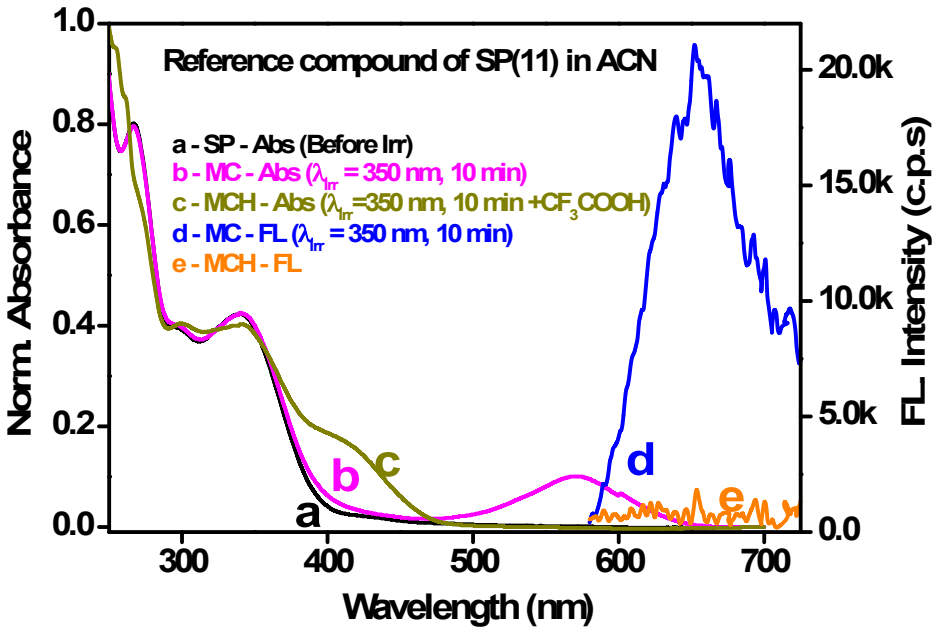

Figure 1S. (a) Black colour curve, absorption spectra of **SP(11)** in ACN, (b) magenta colour curve, absorption spectra of **SP(11)** after Uv irradiation (λ_{Irr} =350nm) for 10 minutes, effectively shows the absorption spectra of MC form of **SP(11)** in ACN, (c) dark yellow colour curve, absorption spectra of **SP(11)** after Uv irradiation (λ_{Irr} =350nm) for 10 minutes followed by addition of CF_3COOH, effectively shows the absorption spectra of **MCH** form of **SP(11)** in ACN, (e) blue colour curve, fluorescence emission spectra of **SP(11)** after Uv irradiation (λ_{Irr} =350nm) for 10 minutes in ACN, effectively shows the emission spectra of **MC** form of **SP(11)** in ACN, Emission spectra was collected on excitation at 580 nm., **(f) Orange colour** curve, fluorescence spectra of **SP(11)** after Uv irradiation (λ_{Irr} =350nm) for 10 minutes followed by addition of CF_3COOH, effectively shows the fluorescence spectra of **MCH** form(if any) of **SP(11)** in ACN, Emission spectra was collected on excitation at 580 nm.

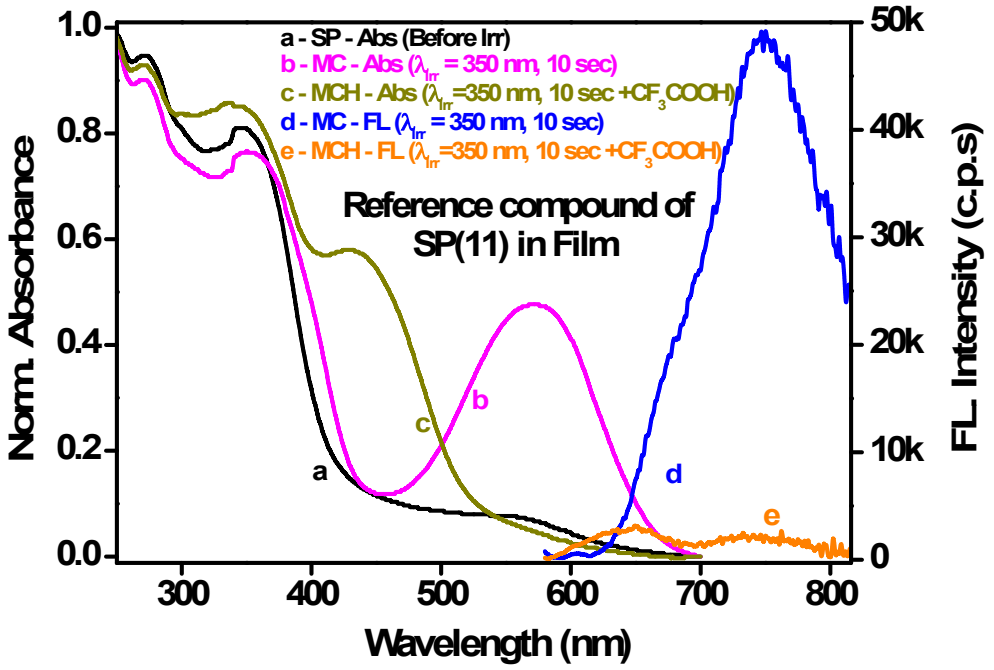

Figure 2S. (a) Black colour curve, absorption spectra of **SP(11)** in cast film, (b) magenta colour curve, absorption spectra of **SP(11)** after Uv irradiation (λ_{Irr} =350nm) for 10 seconds, effectively shows the absorption spectra of MC form of **SP(11)** film, (c) dark yellow colour curve, absorption spectra of **SP(11)** after Uv irradiation (λ_{Irr} =350nm) for 10 seconds followed by addition of CF_3COOH, effectively shows the absorption spectra of **MCH** form of **SP(11)** film, (e) blue colour curve, fluorescence emission spectra of **SP(11)** after Uv irradiation (λ_{Irr} =350nm) for 10 seconds in film, effectively shows the emission spectra of **MC** form of **SP(11)** film, Emission spectra was collected on excitation at 580 nm., (f) Orange colour curve, fluorescence spectra of SP(11) after Uv irradiation (λ_{Irr} =350nm) for 10 seconds followed by exposure to CF_3COOH vapour, effectively shows the fluorescence spectra of MCH form(if any) of SP(11) film, Emission spectra was collected on excitation at 580 nm. Film was prepared from DCM solution of (~ 2-5 mM) SP(11). A few drops of as prepared DCM solution was placed over clean quartz surface and allowed to dry at ambient condition before use the film for spectroscopic studies.

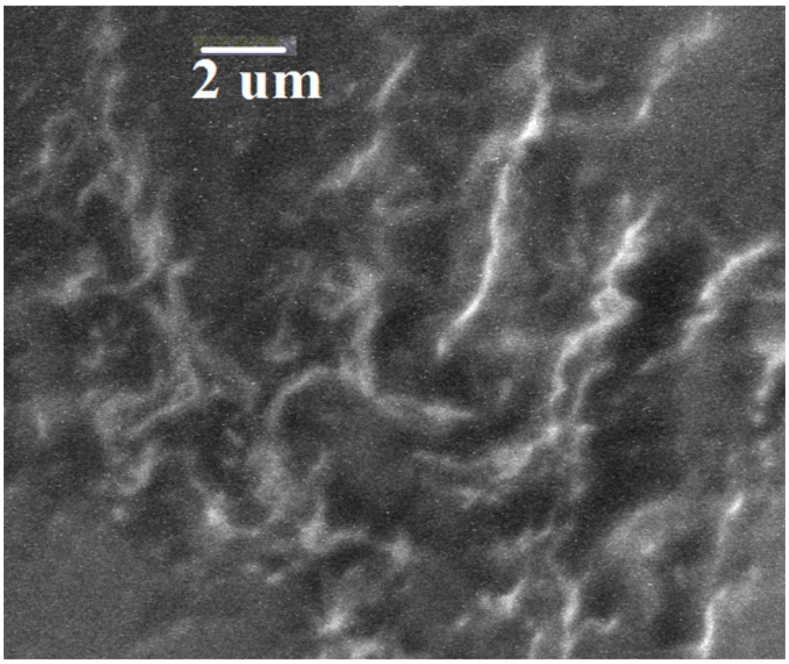

Figure 3S. SEM image of **SP-OPV-SP (10).**

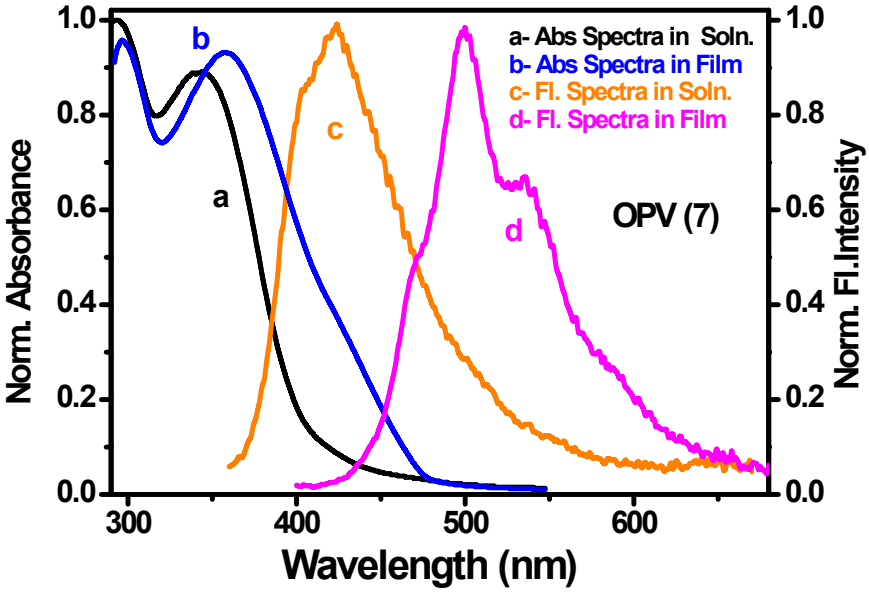

Figure 4S. (a) Black colour curve, absorption spectra of OPV(7) in ACN, (b) blue colour curve, absorption spectra of OPV(7) in cast film, (c) Orange colour curve, fluorescence spectra of OPV (7) in ACN λ_{EX}=350 nm, (d) megenta colour curve, fluorescence spectra of OPV (7) in cast film λ_{EX}=375 nm.

Film was prepared from DCM solution of (~ 1-3 mM) **OPV(7).** A few drops of as prepared DCM solution was placed over clean quartz surface and allowed to dry at ambient condition before use the film for spectroscopic studies.

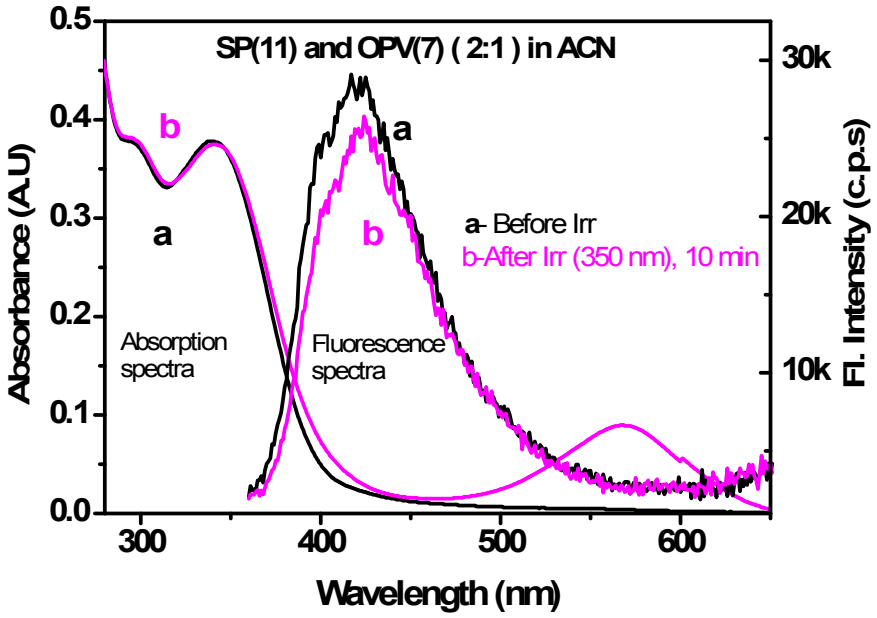

Figure 5S. (a) Black colour curves, absorption and emission spectra of 2:1 SP(11) and OPV(7) mixture in ACN , λ_{Ex}=350 nm. (b) Meganta colour curves absorption and emission spectra of 2:1 SP(11) and OPV(7) mixture in ACN after 330 nm irradiation for 10 minutes , λ_{Ex}=350 nm.

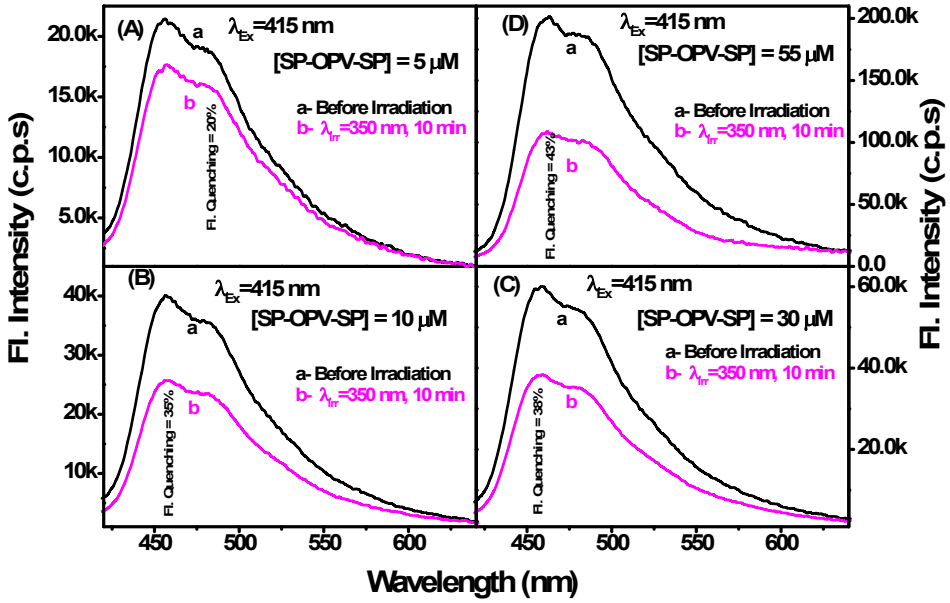

Figure 6S. Concentration dependent fluorescence quenching efficiency of **SP-OPV-SP (10)** after 350 nm Irradiation for 10 minutes. (A) 5, (B) 10 , (C)30 and (D) 55 μ M concentration of **SP-OPV-SP (10)** respectively. Photostationary state between SP-OPV-SP (10) and MC-OPV-MC is found to be independent of concentration for 10-55 μ M concentration range.

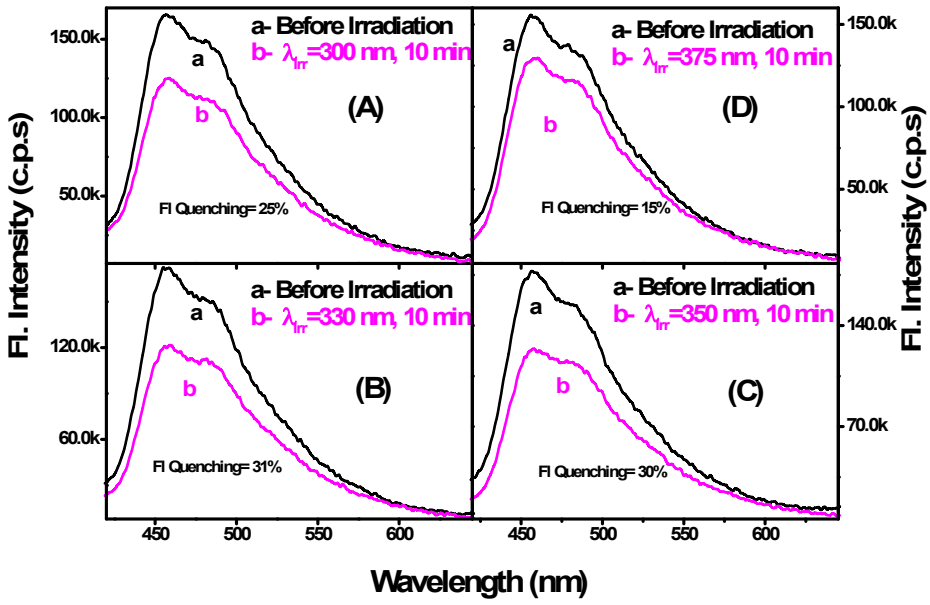

Figure 7S. Irradiation wavelength dependent fluorescence quenching efficiency of SP-OPV-SP(11)(~10 μM) in ACN solution. Irradiation wavelength (A)300, (B)330, (C) 350 and (D) 375 nm respectively. Fluorescence spectra were collected on 415 nm excitation where SP has very weak absorbance. Irradiation above 350 nm yield less fluorescence quenching ie. less conversion efficiency from SP-OPV-SP to MC-OPV-MC. It is obvious, as SP have very weak absorbance above 350 nm.

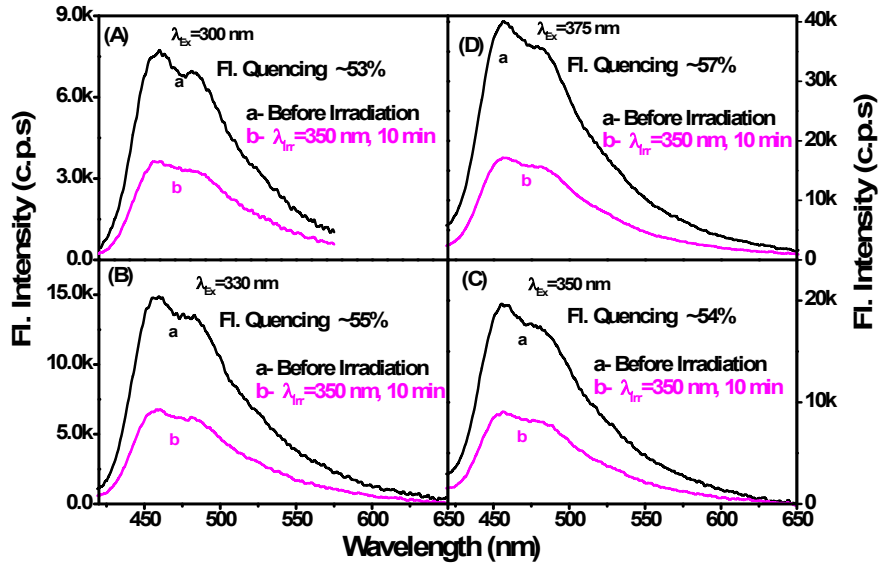

Figure 8S. Excitation wavelength dependent fluorescence quenching efficiency of SP-OPV-SP(11)(~30 μM) in ACN solution. Excitation wavelength (A)300, (B)330, (C) 350 and (D) 375 nm respectively. UV Irradiation was for 10 minutes with wavelength 350 'Fluorescence quenching ie. conversion efficiency from SP-OPV-SP to MC-OPV-MC was found to be independent of excitation wavelength.

NMR Spectra of SP-OPV-SP (10):

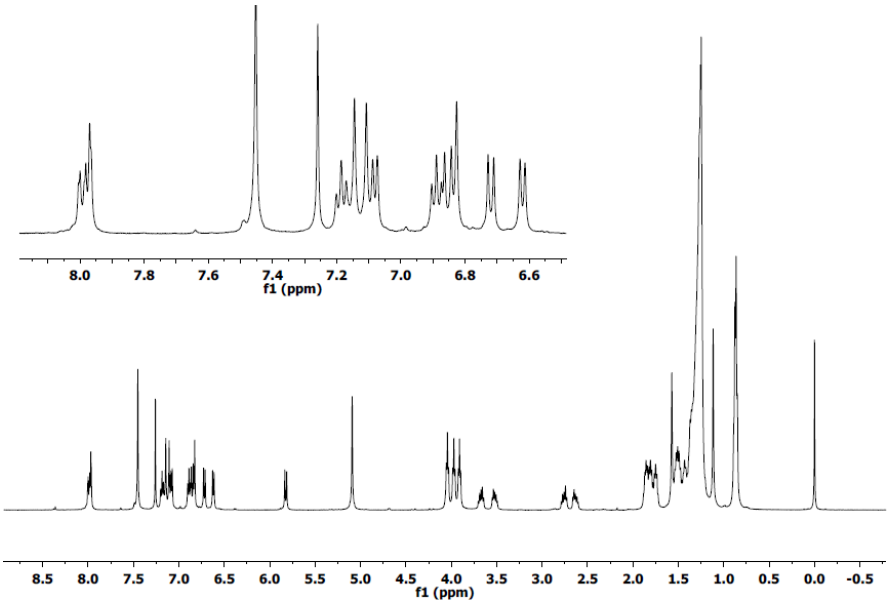

Figure 9S. ^{1}H NMR spectrum of **SP-OPV-SP (10)** in $CDCl_3$.

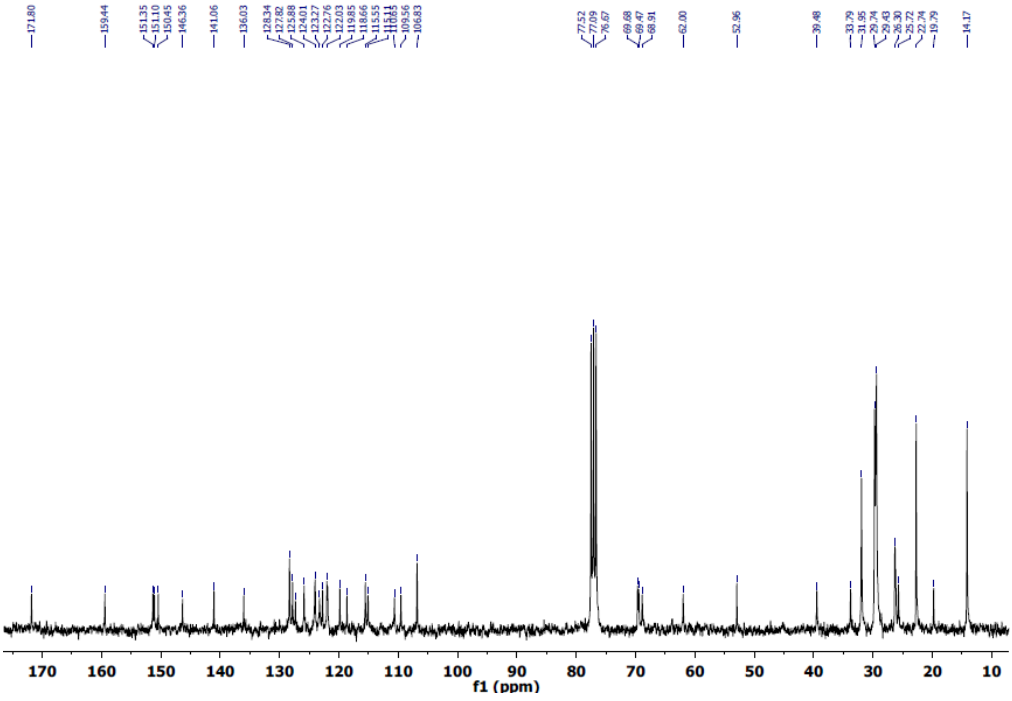

Figure 10S. ^{13}C NMR spectrum of **SP-OPV-SP (10)** in $CDCl_3$.