

Electronic Supplementary Information

Photochromic organic solar cells based on diarylethenes

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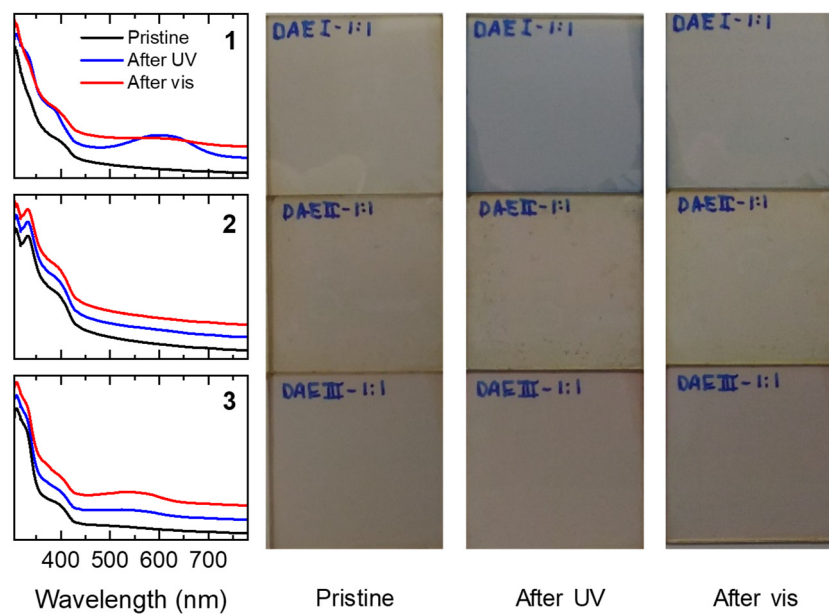


Fig. S1. UV-vis absorption spectra and photographs of ternary blends of 1-3, PC₆₁BM, and poly-TPD. The ratio DAE/poly-TPD/PC₆₁BM weight ratio was 5:1:4. The samples were consecutively measured as pristine samples, after UV illumination, and after illumination with visible light as detailed in the Experimental Section. The spectra UV-vis are offset vertically for clarity.

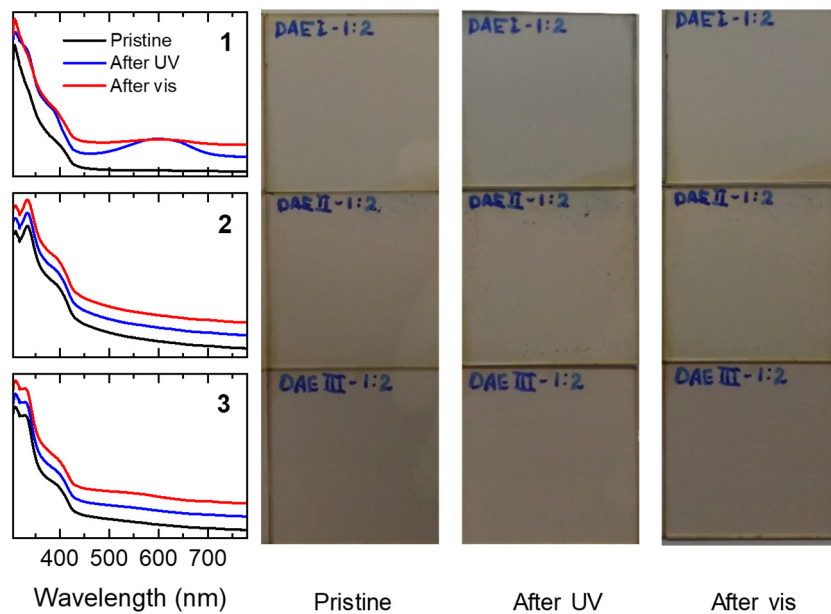
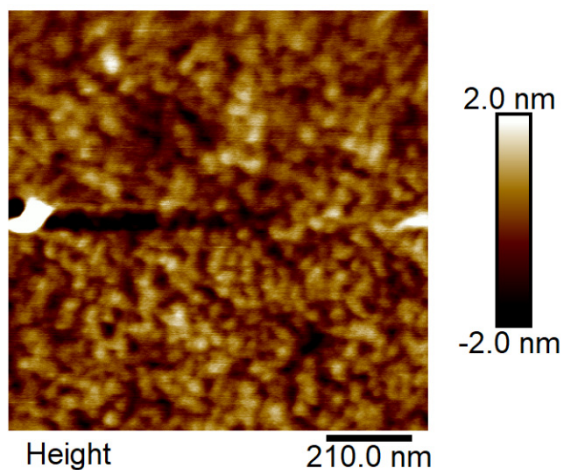
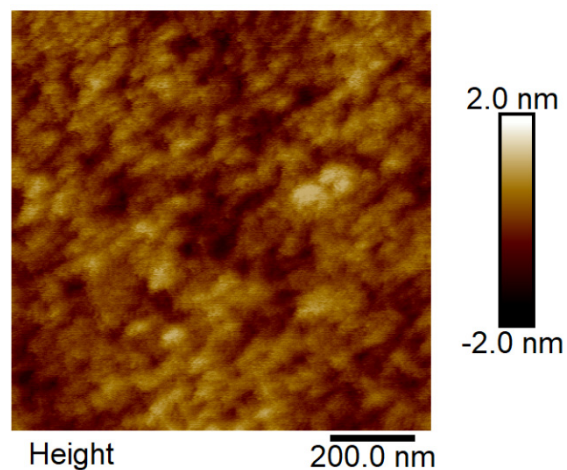


Fig. S2. UV-vis absorption spectra and photographs of ternary blends of **1-3**, PC₆₁BM, and poly-TPD. The ratio DAE/poly-TPD/PC₆₁BM weight ratio was 2.5:1:4. The samples were consecutively measured as pristine samples, after UV illumination, and after illumination with visible light as detailed in the Experimental Section. The spectra UV-vis are offset vertically for clarity.

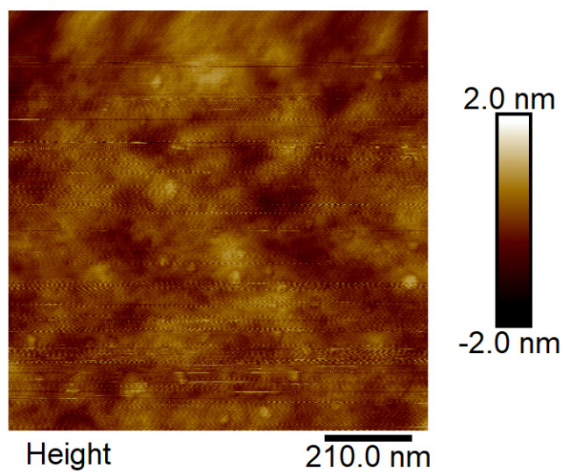
1 before UV illumination: $R_q = 0.70$ nm



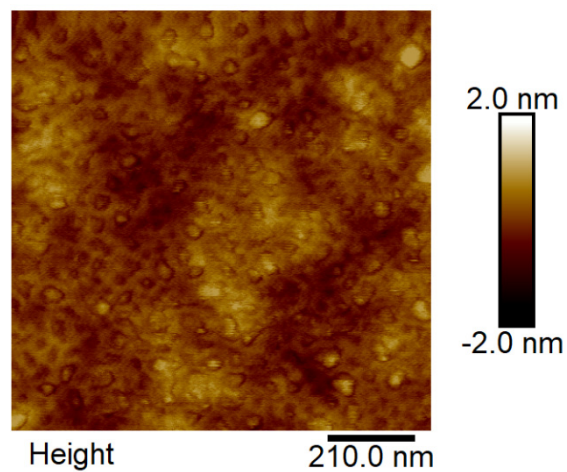
1 after UV illumination: $R_q = 0.37$ nm



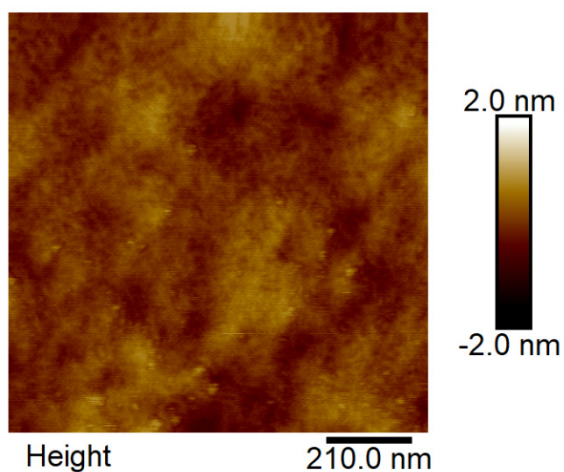
2 before UV illumination: $R_q = 0.31$ nm



2 after UV illumination: $R_q = 0.31$ nm



3 before UV illumination: $R_q = 0.26$ nm



3 after UV illumination: $R_q = 0.28$ nm

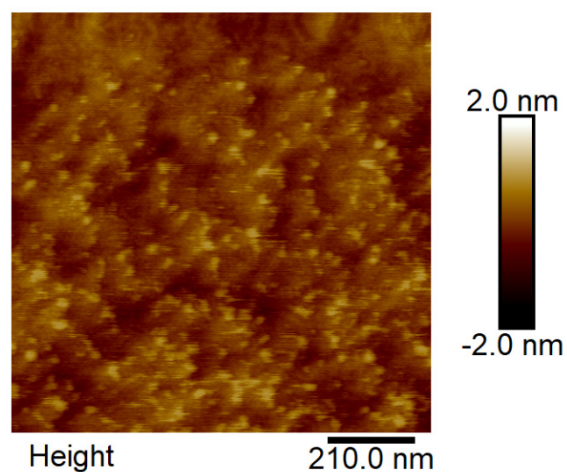


Fig. S3. AFM height images of DAE/poly-TPD/PC₆₁BM ternary blends recorded for dyes **1-3** before and after UV illumination. R_q represents the root-mean-square surface roughness.

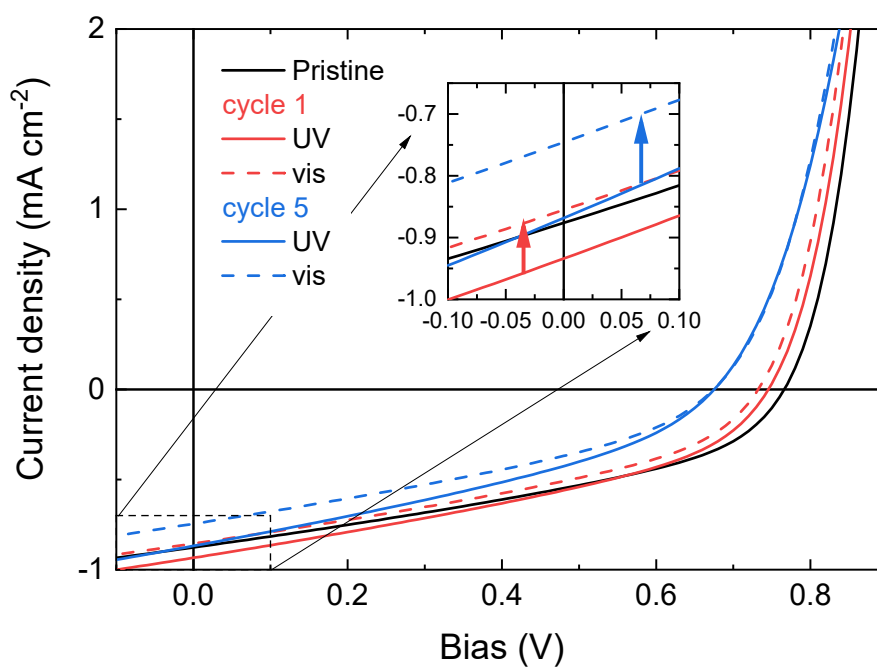


Fig. S4. Current density – voltage (J - V) characteristics of ternary **1**/poly-TPD/PC₆₁BM solar cells, exposed to alternating UV and visible light for periods of 30 min. The experiment shows the stability of switching the device between the open-ring isomer (**1a**) and closed-ring isomer (**1b**). UV illumination switches the cell to the colored ring-closed isomer **1b**, while illumination with visible light switches it back to the open-ring isomer **1a**. Results are shown for the 1st and 5th cycle. Figure 8 in the main text show the photovoltaic parameters obtained in each cycle.