

Electronic Supplementary Information

Reaction Induced Morphology Changes of Tetracene and Pentacene Surfaces.

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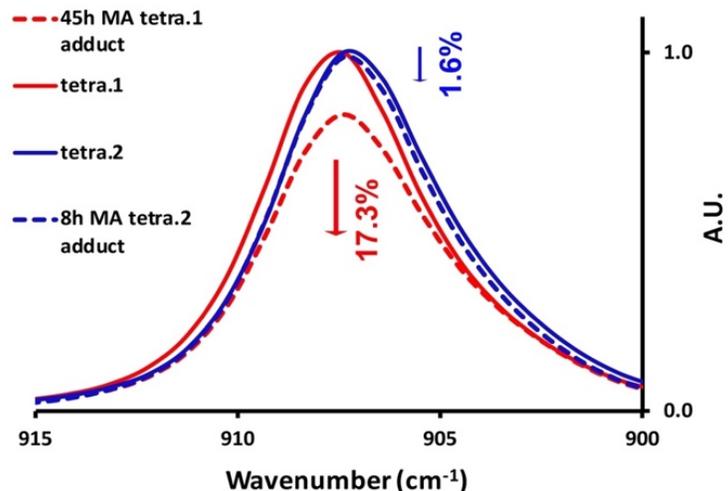


Fig. S1. PM-IRRAS spectra of tetracene films reacted with maleic anhydride for time intervals. The colored lines denote the following: 8 h reaction (blue dashed) and pristine tetracene (blue solid), 45 h reaction (red dashed) and pristine tetracene (red solid). The intensity (y-axis) is a normalized such that the pristine samples have an absorbance of 1.

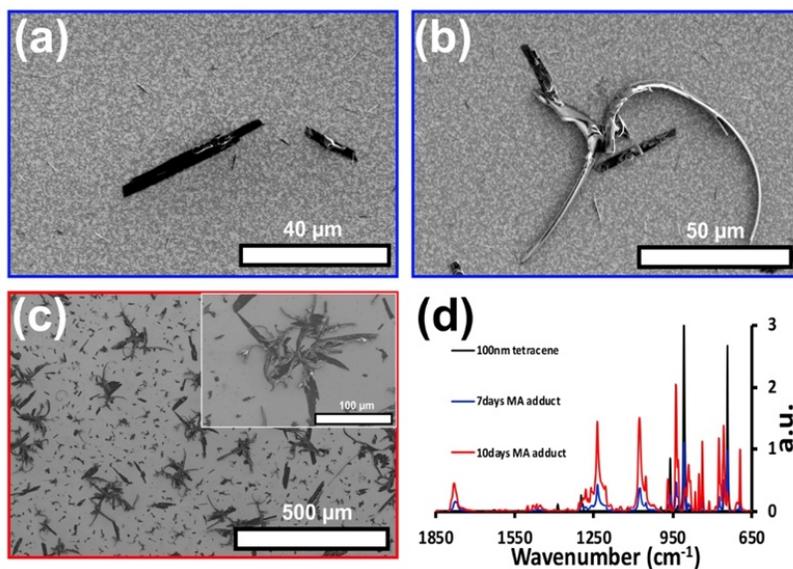


Fig. S2. SEM images 100 nm tetracene thin films reacted with maleic anhydride for extended periods of time. (a-b) 40 °C, 7 d; (c) 40 °C, 10 d; the inset is higher magnification of the same surface. (d) Corresponding PM-IRRAS spectra. The colors denote the following: 100 nm pure tetracene thin film (black), 40 °C, 7 d reaction with maleic anhydride (blue), 40 °C, 10 d reaction with maleic anhydride adduct (red).

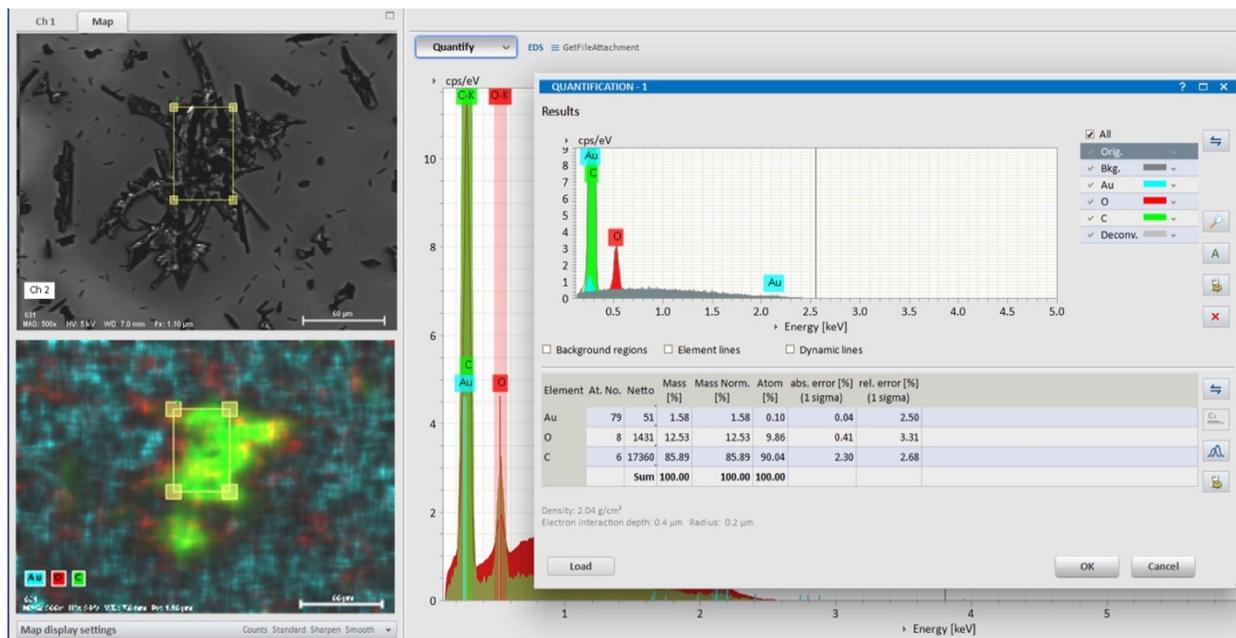


Fig. S3. EDX spectra, elemental map, and atomic composition. Sample is a tetracene film that has been completely reacted with maleic anhydride adduct imaged at 5 keV electron energy. Oxygen percentage is 9.9%, close to the 12% predicted for $C_{22}H_{14}O_3$.

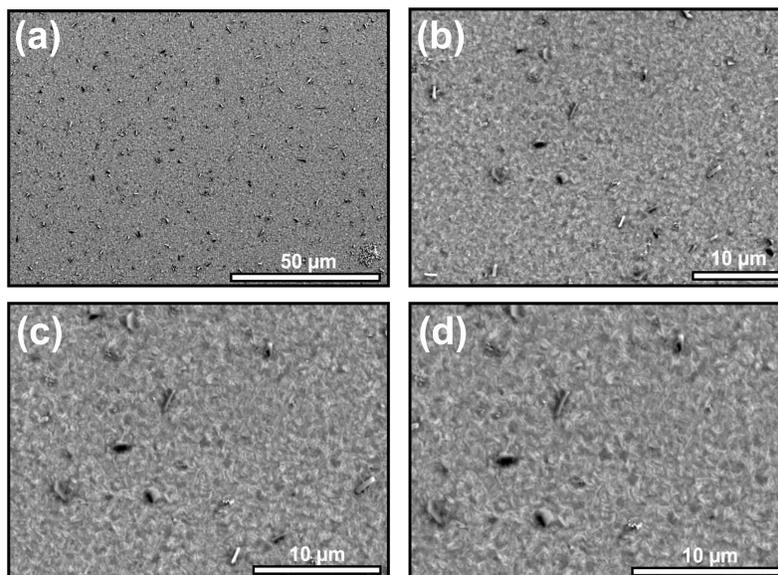


Fig. S4. (a-d) Different magnification SEM images of a 100 nm tetracene thin film reacted with maleic anhydride at 50 °C for 2.5 h. SEM image was taken at 5 keV electron energy.

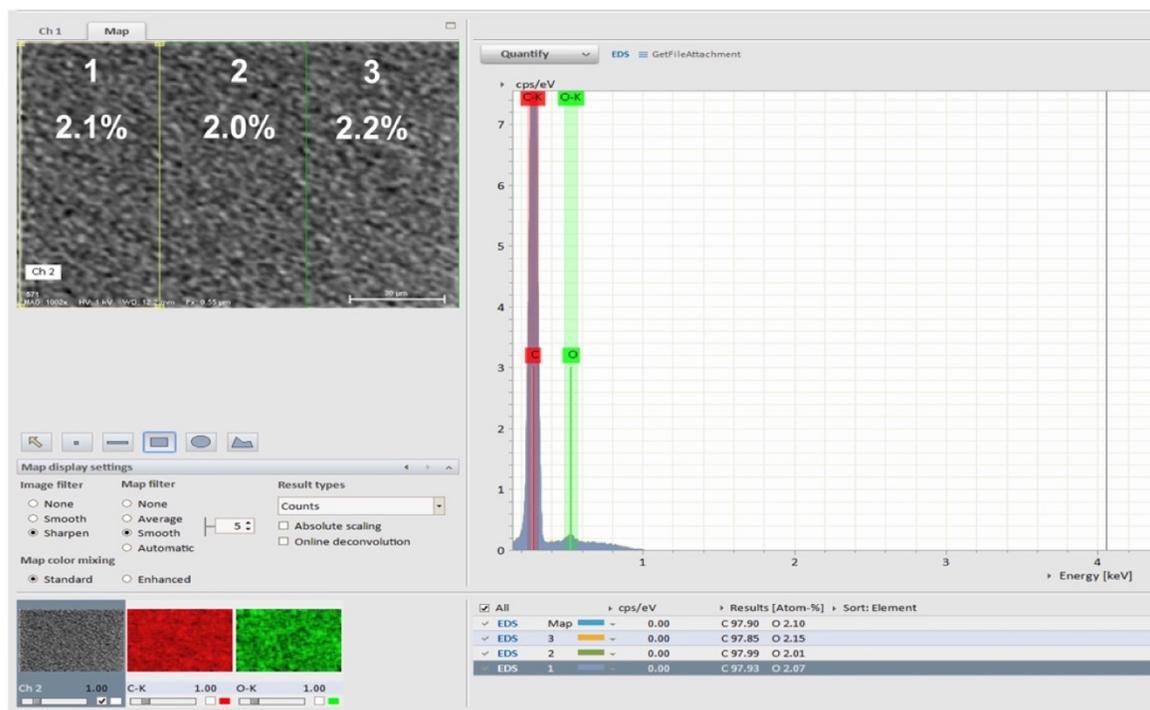
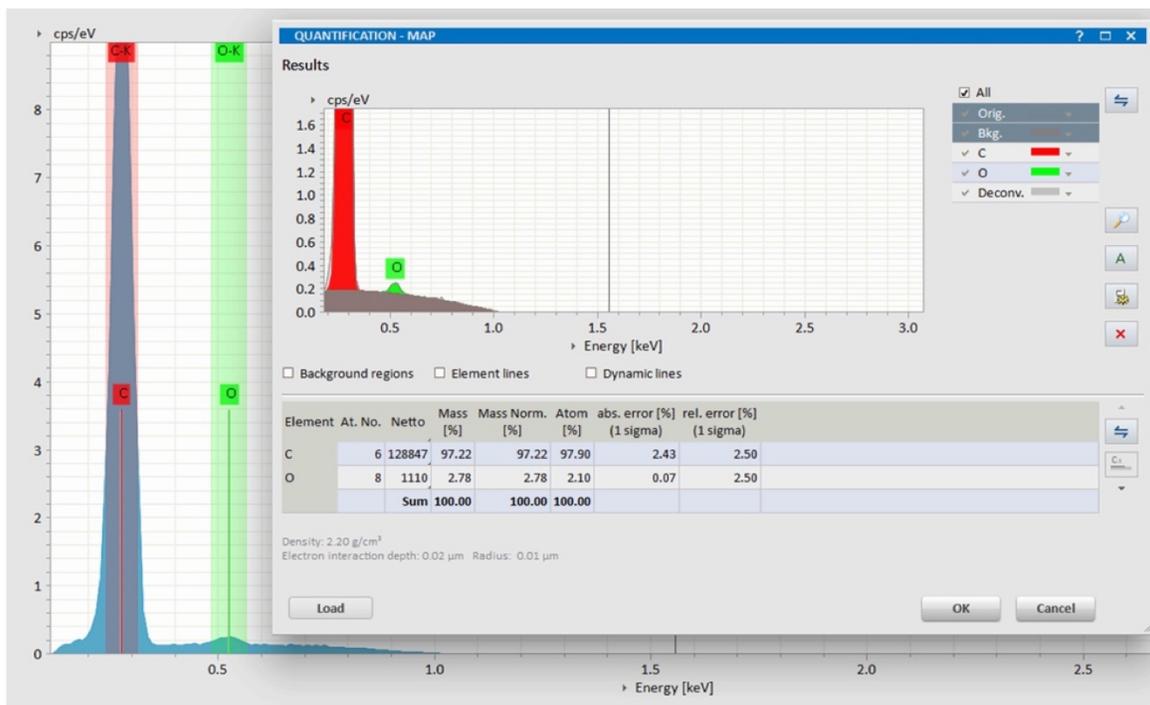


Fig. S5. EDX quantification spectra for the entire surface (top) and subdivided sections (bottom) along with oxygen percentage in each region. The sample is a 100 nm tetracene thin film reacted for 8 h maleic anhydride and imaged at 1 keV electron energy.

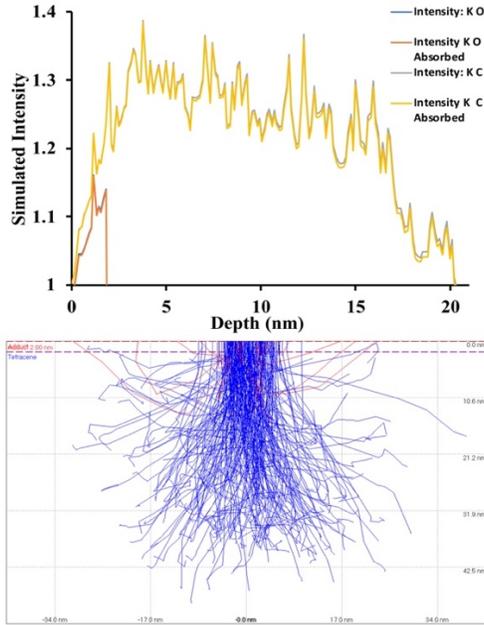


Fig. S6. Monte Carlo simulation model of X-ray penetration into a sample comprised of 2 nm of $C_{22}O_3$ on top of 98 nm carbon. Top is emitted X-rays, while the bottom shows the electron trajectories in the sample.

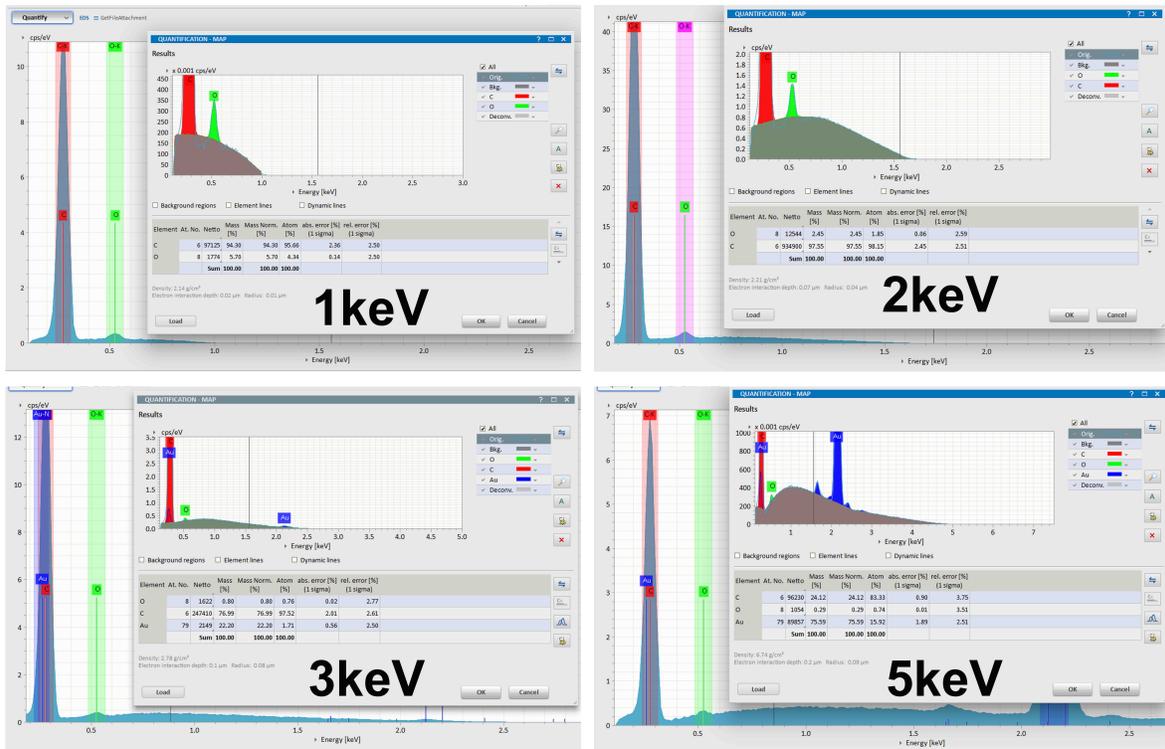


Fig. S7. EDX spectra and percentage oxygen of 100 nm tetracene thin films that have been reacted with maleic anhydride for 36 h imaged at 1-5 keV electron energy.

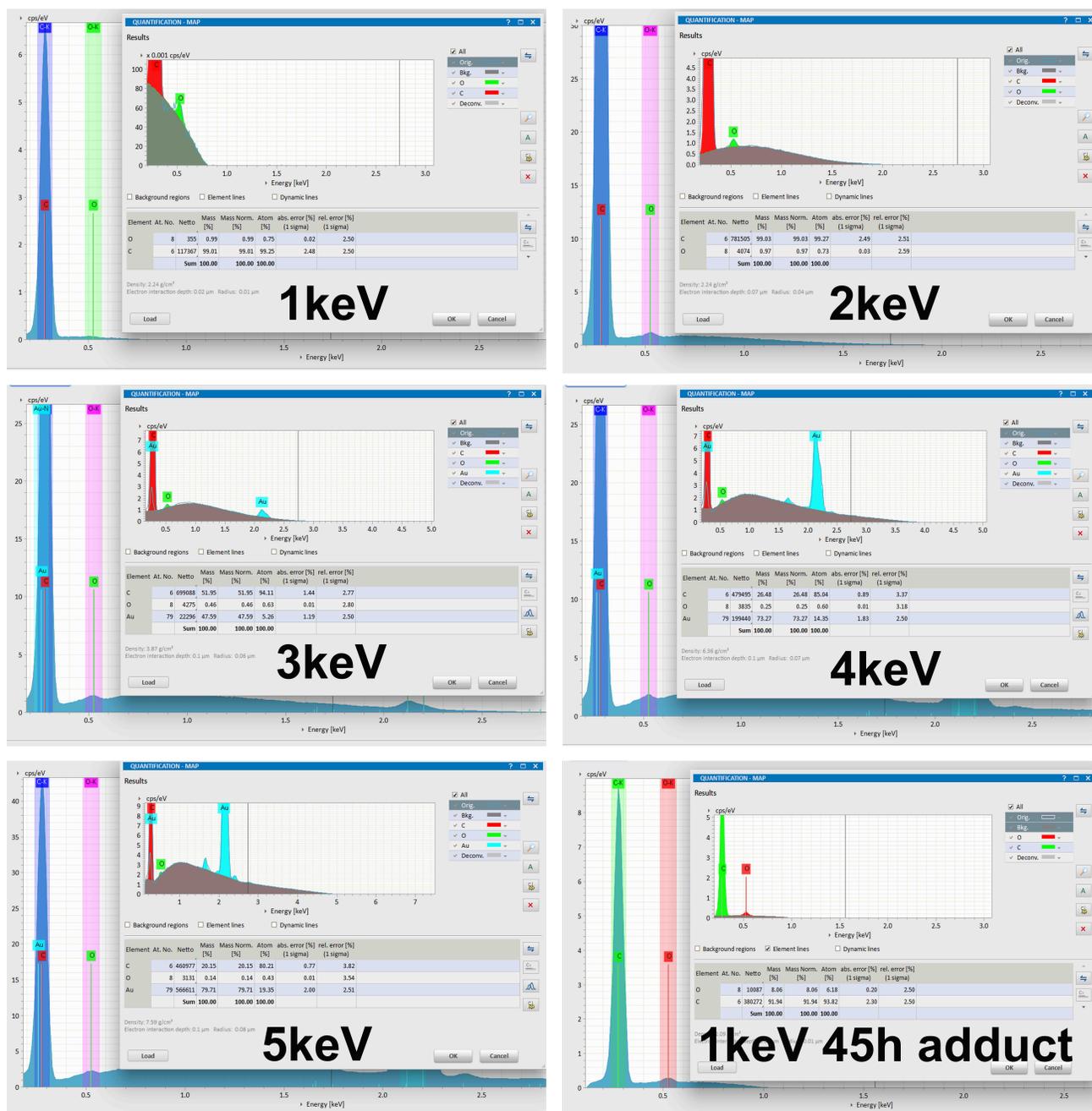


Fig. S8. EDX spectra and percentage oxygen of 100 nm tetracene thin films imaged at 1-5 keV electron energy. Bottom right image is EDX spectra and percentage oxygen of 100 nm tetracene thin film that has been reacted with maleic anhydride for 45 h imaged at 1 keV electron energy.

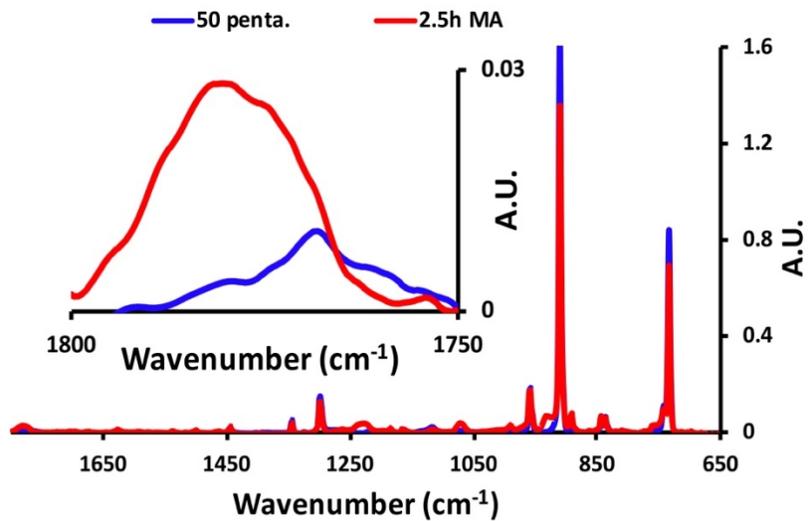


Fig. S9. PM-IRRAS spectra of a 50 nm pentacene thin film reacted with maleic anhydride. The colors denote the following: unreacted 50 nm pentacene (blue), 50 °C, 2.5 h reaction (red).