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Tunable Interfaces on Tetracene and Pentacene Thin-Films via Monolayers

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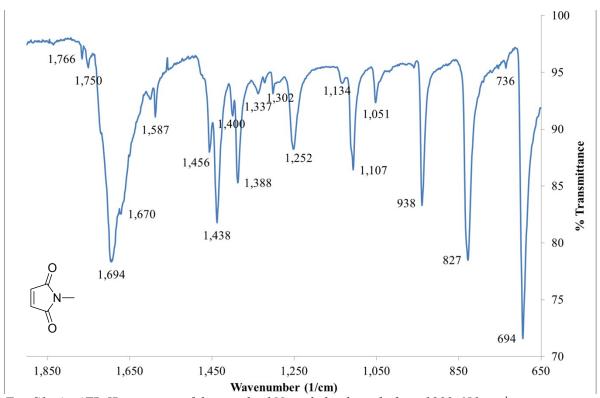


Fig. S1: An ATR-IR spectrum of the standard N-methylmaleimide from 1900-650 cm⁻¹.

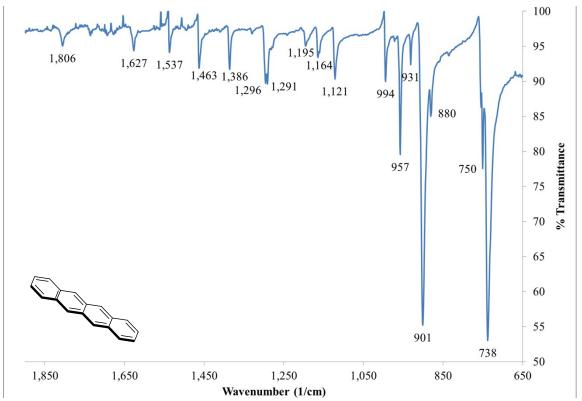


Fig. S2: An ATR-IR of standard tetracene from 1900-650 cm⁻¹.

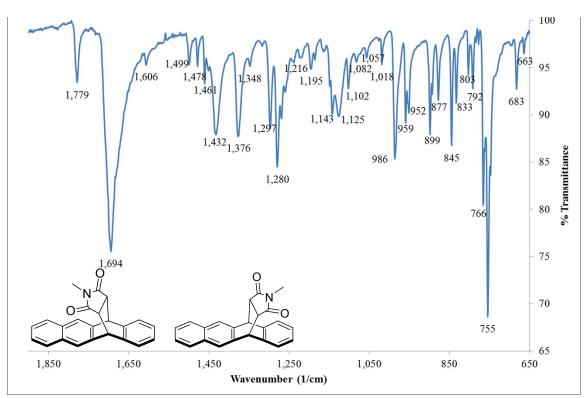


Fig. S3: An ATR-IR of the standard tetracene-N-methylmaleimide adduct from 1900-650 cm⁻¹.

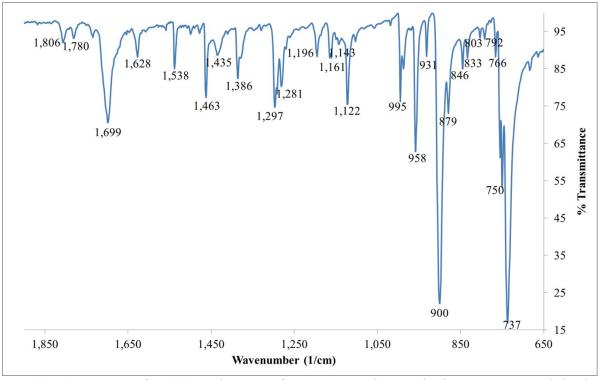


Fig. S4: An ATR-IR of a 10:1 mole ratio of tetracene to the standard tetracene-N-methylmaleimide adduct.

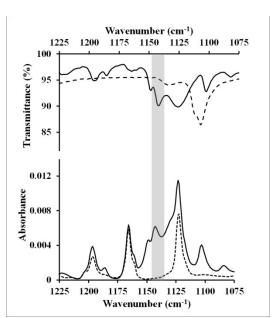


Fig. S5: A comparison of a PMIRRAS-IR spectrum of a film of tetracene that was exposed to N-methylmaleimide (below) with the standard powder adduct taken via ATR-IR (above). The ATR-IR spectrum shows that N-methylmaleimide (dashed line) has little absorption above 1100 cm⁻¹ allowing this region to be used for observing formation of the standard Diels- Alder adduct (solid line, above and below). The diagnostic peak at 1143 cm⁻¹ is observed in the reacted substrate (solid line, bottom), and is not present in the pristine thin film (dashed line).

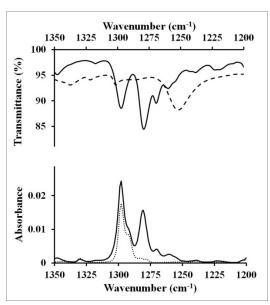


Fig. S6: A comparison of a PMIRRAS-IR spectrum of a film of tetracene that was exposed to N-methylmaleimide (below) with the standard powder adduct taken via ATR-IR (above). The PMIRRAS-IR spectrum shows tetracene (dotted line) and the Diels-Alder adduct film (solid line) and the appearance of a peak at 1280 cm⁻¹. The ATR-IR spectrum displays N-methylmaleimide (dashed line) and the standard Diels-Alder adduct (solid line). The peak at 1280 cm⁻¹ indicates formation of the Diels-Alder adduct.

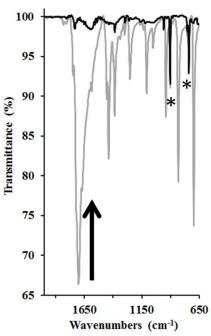


Fig. S7: Light gray line is a tetracene thin-film on a salt plate with N-methylmaleimide sublimed on top. After 5 min exposure to a gentle stream of nitrogen (black line) the N-methylmaleimide features (e.g. 1705 cm⁻¹, arrow) disappear, leaving only vibrations from the tetracene thin film (starred).

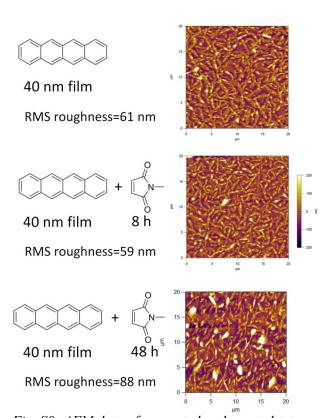


Fig. S8: AFM data of unreacted and reacted tetracene films. RMS data is for the scanned window.

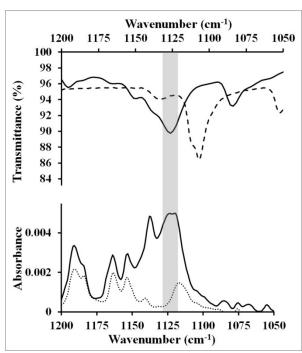


Fig. S9: A comparison of a PMIRRAS-IR spectrum of a film of pentacene that was exposed to N-methylmaleimide (below) with the standard powder adduct taken via ATR-IR (above). The PMIRRAS-IR spectrum shows tetracene (dotted line) and the Diels-Alder adduct film (solid line) and the appearance of a peak at 1126 cm⁻¹. The ATR-IR spectrum displays N-methylmaleimide (dashed line) and the standard Diels-Alder adduct (solid line). The diagnostic peak at 1126 cm⁻¹ indicates formation of the Diels-Alder adduct.

Contact Angle Data

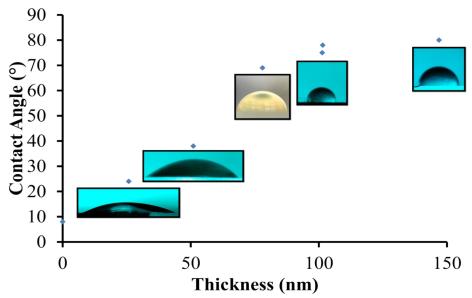


Fig. S10: A graph of contact angle (°) versus thickness (nm) of tetracene used to determine the baseline contact angle.

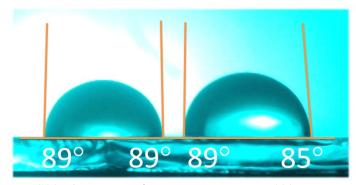


Fig. S11: Contact angle measurement on a 100 nm tetracene surface after exposure to water vapor for 48h.