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Raman scattering studies of organic semiconducting charge-transfer compounds LAURIE MCNEIL, University of North Carolina at Chapel Hill, CHRISTIAN KLOC, Nanyang Technological University (Singapore) — Organic semiconductors offer the possibility of devices with greater mechanical flexibility and lower production costs compared to existing materials. Reports of carrier mobilities in monomolecular organic semiconductors in the 10-50 cm^2/V-s range and success in fabricating electronic devices from organic materials has increased the interest in their properties for electronic applications. However, the range of properties displayed by the monomolecular crystals is rather narrow. Charge-transfer compounds composed of two different organic molecules in which one acts as a donor and the other as an acceptor may represent the next generation of organic semiconductors. Control of their properties by modification of the molecules or changes in stoichiometry and crystalline structure makes them particularly attractive for a wide range of applications provided that the relationship between the structure and constituents of the compounds and their physical properties can be elucidated. Raman scattering studies of single crystals of two representative charge-transfer compounds, perylene-TCNQ and anthracene-TCNQ, will be presented. Theoretical calculations suggest that these materials have the potential for ambipolar charge transport, and so intermolecular interactions in these compounds are of particular interest.

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