

Abstract Submitted
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Thermal Expansion and Molecular Motion in Rubrene and Tetracene¹ THEO SIEGRIST, CHRISTIAN KLOC, MAGNUS WIKBERG, Bell Laboratories, SIMON HAAS, ETH Zuerich — The closely related molecules rubrene (tetra-phenyl-tetracene) and tetracene are model systems for organic semiconductor materials. Very high carrier mobilities have been observed in rubrene crystals. Single crystals of rubrene and tetracene, produced by vapor phase growth at elevated temperatures, show clear differences in their quality. The thermal expansion/contraction coefficients for crystals of the two molecules have been measured using X-ray diffraction. The triclinic symmetry of tetracene crystals is reflected in the strongly anisotropic thermal expansion observed. In the case of rubrene, relatively small thermal expansion coefficients are found. Libration/translation values obtained using the rigid molecule model will be presented for both systems.

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