Abstract Submitted
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Identification of intrinsic and extrinsic transitions in pentacene single crystals by optical methods (*) RUI HE, X. CHI, Columbia Univ, ARON PINCZUK, Columbia Univ, Bell Labs, D.V. LANG, Columbia Univ, A.P. RAMIREZ, Columbia Univ, Bell Labs — Pentacene single crystals with different purity levels are studied by using photoluminescence and resonant Raman scattering. Two luminescence bands are identified as intrinsic optical emissions by recombination of free excitons and self- trapped excitons. The luminescence bands observed below 1.6eV are attributed to the extrinsic optical emissions. Raman scattering from the pentacene crystals exhibits resonance enhancements with the two intrinsic bands. Temperature dependence of the luminescence from the pentacene crystals reveals that optical emission from the self-trapped excitons are sensitive to the sample qualities between 50 and 100K, and its intensity can be quenched by extrinsic traps.

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