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Lock-in phase analysis of copper phthalocyanine photoabsorption spectrum

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Abstract

The modulated photoabsorption (PA) spectra in Q -band spectral region of copper phthalocyanine (CuPc) thin layer have been investigated using two-channel lock-in phase resolved technique. Combining measurements in-phase and out-phase we determined four different features, which are observed in PA spectra. A detailed analysis of the in-phase and out-phase multicomponent PA spectra and corresponding phase diagram enabled separation of particular components as well as determination of their phase delay angle and corresponding time constants. In the CuPc sample under study, the various components of PA spectrum show different phase shifts, which implies different mechanism giving rise to the photoinduced electric field modulation.



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