

non-linear optical techniques

Collective name applied to techniques related to non-linear optical effects.

Note 1: Some of these spectroscopies are four-wave mixing, hole burning, photon echoes, time-resolved coherent anti-Stokes Raman (CARS), transient grating and stimulated pumping. These techniques differ in the nature of the pulse sequence, the geometry and the choice of a spatial direction (phase matching), as well as the mode of detection.

Note 2: Low order non-linear techniques, such as three-wave mixing, are related to the second order polarization. For a random isotropic medium with inversion symmetry, the second-order polarization vanishes and then the lowest order optical non-linear techniques, as well as the higher order non-linear techniques are related to the third-order polarization and the corresponding “hyper-susceptibility”.

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