

## non-linear optical techniques

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

Notes:

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.
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'.

**Source:**

PAC, 2007, 79, 293 (*Glossary of terms used in photochemistry, 3rd edition (IUPAC Recommendations 2006)*) on page 374