



Pyrazoline derivatives with a tailored third order nonlinear optical response

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Résumé en anglais

In the present work the third order nonlinear optical response of a series of pyrazoline derivatives has been experimentally investigated. All of the compounds have been prepared as doped poly(methyl methacrylate) thin polymeric films. For the needs of this study the third harmonic generation Maker fringes technique has been employed by using 30 ps laser pulse duration and 1064 nm excitation wavelength. A variety of push-pull groups of pyrazoline-based derivatives have been studied in order to relate the structural properties with the optical nonlinearity. More specifically, the molecules under investigation have in several cases different electro accepting groups, which are located in various positions of the molecular structure providing two pairs of structural isomers. The experimental results demonstrate a high dependence of the optical nonlinearity due to the functionalization with the different moieties on the pyrazoline derivatives. This fact promotes this class of materials as promising candidates for photonics and optoelectronics applications, where the control of the molecular structure as a means of tailoring the optical nonlinearities is crucial.

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