Techniques for nonlinear optical characterization of materials: a review

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Résumé en anglais	Various techniques to characterize the nonlinear (NL) optical response of centro-symmetric materials are presented and evaluated with emphasis on the relationship between the macroscopic measurable quantities and the microscopic properties of photonic materials. NL refraction and NL absorption of the materials are the phenomena of major interest. The dependence of the NL refraction and NL absorption coefficients on the nature of the materials was studied as well as on the laser excitation characteristics of wavelength, intensity, spatial profile, pulse duration and pulses repetition rate. Selected experimental results are discussed and illustrated. The various techniques currently available were compared and their relative advantages and drawbacks were evaluated. Critical comparisons among established techniques provided elements to evaluate their accuracies and sensitivities with respect to novel methods that present improvements with respect to the conventional techniques.

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