



# Ultrafast third-order optical nonlinearity in SnS<sub>2</sub> layered compound for photonic applications

Adrian Petris, Petronela S. Gheorghe, Valentin I. Vlad, Emil Rusu, Veaceslav V. Ursaki, Ion M. Tiginyanu

<https://doi.org/10.1016/j.optmat.2017.12.023>

## Abstract

The ultrafast nonlinear optical response of SnS<sub>2</sub> layered compound, excited by high-repetition-rate ultrashort (fs) pulses at 1550 nm wavelength, is investigated for the first time by optical third harmonic generation. In this nonlinear process, only the ultrafast nonlinear optical effect of pure electronic origin is involved, in spite of the thermo-optic effect that arises due to the temperature rise induced in the sample by high-repetition-rate laser pulses. From the experimental dependence of the third harmonic intensity on fundamental harmonic intensity, the third-order nonlinear optical susceptibility and the corresponding nonlinear refractive index of SnS<sub>2</sub> are determined.