Optimization and diagnostic of nonlinear optical features of π-conjugated benzodifuran-based derivatives

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Résumé en anglais	The nonlinear optical parameters of benzodifuran-based derivatives obtained by a green approach are determined under picosecond laser irradiation. The guest–host polymeric films were prepared on the basis of benzodifuran derivatives incorporated into PMMA. The optical absorption spectra of benzodifuran-based compounds in films and solutions were analyzed and their SHG and THG measurements were performed by means of the Maker fringe technique in transmission scheme using the output beam of a mode-locked Nd:YAG/YVO4 laser generating at 1064 nm with 30 ps pulse duration. The compounds with asymmetrical structure and increased π-conjugated chains have shown the highest SHG response of the order of 10−13 m V−1. Z-scan measurements have been carried out at 532 nm and the values of nonlinear optical refractive indexes and absorption coefficients were defined and revealed negative nonlinear refraction and positive nonlinear absorption.
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