

Abstract Submitted
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Study of nonlinear optical effects in dye solutions using the Z-scan technique and two-photon fluorescence¹ MILAN POUDEL, ALEXANDRE KOLOMENSKI, JINHAI CHEN, HANS SCHUESSLER, Department of Physics, Texas A&M University, College Station, TX-77840 — A systematic study of the power and intensity dependences of the two-photon fluorescence of methanol solutions of DCM dye under action of 50 femtosecond laser pulses was performed using the Z-scan technique. Various competing nonlinear processes, including self-focusing, ionization, de-focusing, self-phase modulation, continuum generation and the saturation effect were studied. Filamentation and intensity clamping were visible to the eye, when observing the two-photon fluorescence. The simultaneous measurements of two-photon fluorescence and transmission, or white light continuum generation were performed to better understand the interplay of these phenomena. The effect of a linear chirp on the two-photon fluorescence signal during a Z-scan was also investigated. The results for the DCM dye were compared to those obtained previously for Coumarin-30 dye solutions.

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