

Abstract Submitted
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Study of nonlinear effects in coumarin-30 using two-photon fluorescence and the Z-scan technique¹ MILAN POUDEL, JINHAI CHEN, ALEXANDRE KOLOMENSKI, HANS SCHUESSLER, Texas A&M University, SI-BOR TEAM — The nonlinear propagation dynamics of 45 fs laser pulses in methanol solution has been studied with the two-photon fluorescence and the Z-scan technique. The competing nonlinear processes include self-focusing, self-phase modulation, filamentation, intensity clamping and the two-photon absorption [1]. A systematic study has been performed of these nonlinear effects at different the laser powers. The simultaneous measurements of two-photon fluorescence and the transmission, displaying also continuum generation, were performed, to better understand the interplay between these effects [2]. In addition, the influence of a linear chirp of the laser pulse on the nonlinear propagation dynamics was investigated.

[1] H. Schroeder, S. L. Chin, *Opt. Communications*, 11, 1695-1703 (2002)

[2] M. C. Fischer, H. C. Liu, I. R. Piletic, and W. S. Warren, *Opt. Express*, 16, 4192-4205 (2008)

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Milan Poudel
Texas A&M University

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