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Diffraction patterns and nonlinear optical properties of Henna oil Qusay M. A. Hassan¹ H. A. Sultan¹, H. Bakr¹, D. H. Hashim¹, C. A. Emshary¹ ¹Department of Physics, College of Education for Pure Sciences, University of Basrah,Basrah, Iraq

Abstract

The diffraction ring pattern and Z-scan techniques are used to estimate both the nonlinear refractive index, n_2 , and nonlinear absorption coefficient, β , of Henna oil using low power continuous wave (CW) visible laser beam. The values of n2 and β are obtained of 1.72 x 10⁻⁷ cm²/W and 1.21x10⁻³ cm/W respectively.

Keywords: Self-phase modulation, Diffraction ring pattern, Z-scan technique.