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Diffraction patterns and nonlinear optical properties of Henna oil

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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 n_2 and β are obtained of $1.72 \times 10^{-13} \text{ cm}^2/\text{W}$ and $1.21 \times 10^{-9} \text{ cm}^2/\text{W}$ respectively.

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