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Nonlinear Optical Properties of Tungsten Disulfide Atomic Layer¹ TIKARAM NEUPANE, BAGHER TABIBI, FELIX SEO, Hampton University, HAMPTON UNIVERSITY TEAM — The third nonlinearity of tungsten disulfide atomic layers in liquid solution was characterized using the open and closed Z-scan techniques. The excitation was a pulsed laser with a temporal width of $\tilde{}$ 6 ns, a repetition rate of 10 Hz, and a spatial profile of Gaussian beam. The open Z-scan displayed the reduction of transmittance as the sample moved to focal point, which indicates the reversed saturable absorption or the positive nonlinearity of tungsten disulfide atomic layer in liquid solution. The closed Z-scan exhibited the peak-valley nonlinear transmittance as a function of sample position through the focal point, which indicated the negative nonlinearity of tungsten disulfide atomic layer in liquid solution. The position through the focal point, which indicated the negative nonlinearity of tungsten disulfide atomic layer in liquid solution. The position through the focal point, which indicated the negative nonlinearity of tungsten disulfide atomic layer in liquid solution. The position through the focal point, which indicated the negative nonlinearity of tungsten disulfide atomic layer in liquid solution. The normalized transmittance at the valley of closed Z-scan was decreased as the peak intensity was increased due to the negative nonlinear refraction.

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