

Abstract Submitted
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Construction and Characterization of a Nanosecond Nd:YAG Laser Pumped Distributed Feedback Dye Laser Generating Picosecond Pulses¹ TIMOTHY CLARK², CHRIS WECKERLY³, LASZLO UJJ⁴, Department of Physics, SSE, University of West Florida — We have constructed a Distributed Feedback Dye Laser (DFDL) using interferometric pumping. DFDL works according to the dynamic modulation of the gain medium creating short pulses. Shortening of the pulses, stability, and dynamic range of the DFDL were investigated. Pulses were measured with the help of a photodiode with a 30 picosecond response time. Traces were recorded with a Tektronics DSA73304D (33GHz) digital serial analyser. The gain medium contains an ethanol solution of Rhodamine 590 dye and DODCI saturable absorber. Increasing the concentration of DODCI saturable absorber resulted in significant pulse shortening (150 to 54 picoseconds). Single pulse generation was achieved when the power of the pump laser was adjusted 10 percent above the laser threshold. The central wavelength of the laser pulses was 587 nm. The mathematical modeling, optical layout of the DFDL, and the results of the temporal and spectral characterization of the laser are presented on the poster. The development of the DFDL will lead to an extensive investigation of short pulse dye lasers for educational purposes and for applications in nonlinear spectroscopy.

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