Advanced research in coherent nonlinear optics and multi-photon processes takes place in this laboratory. Two laser systems, which generate coherent tunable radiation, provide the means for the investigation of a variety of optical phenomena in atomic vapors. One system consists of a continuous wave, frequency-doubled Nd:YAG laser that is used to pump a highly-stabilized tunable dye laser or Ti:Sapphire laser. This system is capable of producing up to a watt of radiation over a wide range of wavelengths in the visible or near infra-red region of the spectrum. The narrow bandwidth of this radiation makes possible the resolution of very fine details of the interaction. The second laser system consists of a Nd:YAG laser that is used to pump various pulsed tunable dye lasers. This system generates tunable coherent radiation covering the entire visible and near infrared range of wavelengths, with peak powers of about 2 MW in a pulse of ~10 nsec duration. Other lasers include a diode-laser pumped Nd:YAG laser, and other HeNe and semiconductor lasers.

In addition to the usual optical components and accessories, optical power meters, polarizing elements, Bragg and Pockels cells are also available for optical experimentation. Wave meters allow the precise calibration of the wavelength of the c.w. or pulsed laser radiation, and an optical spectrum analyzer determines its mode structure and degree of stability. A quarter meter spectrometer is also available for wavelength measurements.

For more information contact Prof. Daniel S. Elliott.

Tel: (765) 494-3442

E-mail: ***elliottd@purdue.edu***