Non-linear Optical Material Characterization using a Double-Pump Probe with Picosecond Laser Interaction

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ABSTRACT:

During the period 17 March – 21 March 2003, I collaborated with Andy Mott to measure differential transmission of the well-known reverse saturable materials, C^{60} and Silicon 2,3-naphthalocyanine (SiNc). Reverse saturable Non-linear Optical Materials have the potential to provide protection, on a fast time scale, for the Army's wide range of optical systems, to include eye protection. During my week-long visit with the Non-linear Optics cell at the Army Research Laboratory in Adelphi, we measured the differential transmission of SiNc, C^{60}, and TPP-Zinc with photo sensors made by two different companies, EOT and New Focus. In doing so we identified some experimental problems and limitations as well as potential solutions to our experimental apparatus at the United States Military Academy's Photonics Research Center. This collaboration hopes to provide a complete study of both well-known and untested reverse saturable materials.

KEY WORDS: Differential transmission of reverse saturable materials on a fast time scale

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