

Abstract Submitted
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Reversible photodegradation of Amplified Spontaneous Emission of Disperse Orange 11 dye doped in PMMA Polymer¹ SHIVA K. RAMINI, ELISEO DELEON, BENJAMIN ANDERSON, MARK G. KUZYK, Department of Physics and Astronomy, Washington State University, Pullman, Wa, 99164-2814 — We use amplified spontaneous emission (ASE) and linear absorption spectroscopy to study the mechanisms of reversible photodegradation of 1-amino-2-methylantraquinone (disperse orange11-DO11) in solid poly(methyl methacrylate). Chemical and physical damage of the dye doped polymer recovers to its initial state after few hours. Linear absorption measurements as a function of decay of the ASE intensity reveals that there is a damaged state that is populated as the sample damages. Linear absorption measurements at elevated temperatures confirms the presence of a damaged state, but its character is not identical to the damaged population induced by high-intensity light. A preliminary energy level diagram is determined, from measurements which agrees with independent data and theory. In this presentation I will discuss temperature dependent measurements which support our theory and qualitative explanations of the mechanisms.

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