## Abstract Submitted for the SHOCK07 Meeting of The American Physical Society

Study of the laser-induced decomposition of HNO3/ 2-Nitropropane mixture at static high pressures VIVIANE BOUYER, PHILIPPE HÉBERT, MICHEL DOUCET, CEA/DAM — HNO3 / 2-Nitropropane is a well known energetic material on which Raman spectroscopy measurements at static high pressure in a diamond anvil cell (DAC) have already been conducted at CEA/LE RIPAULT in order to examine the evolution of the mixture as a function of composition and pressure [1]. The purpose of the work presented here was to study the laser-induced decomposition of these energetic materials at static high pressures by measuring the combustion front propagation rate in the DAC. First of all, the feasibility of the experimental device was checked with a well known homogeneous explosive, nitromethane. Our results were consistent with those of Rice and Foltz [2]. Then, we investigated the initiation of NA / 2NP mixture as a function of nitric acid proportion, for a given pressure. We chose the mixture for which both the combustion propagation rate and detonation velocity are maximum and we examined the evolution of the front propagation velocity as a function of pressure and energy deposit. [1] Hebert, P., Regache, I., and Lalanne, P., "High-Pressure Raman Spectroscopy study of HNO3 / 2-Nitropropane Mixtures. Influence of the Composition." Proceedings of the 42nd European High-Pressure Research Group Meeting, Lausanne, Suisse, 2004 [2] Rice, S.F., et al., Combustion and Flame 87 (1991) 109-122.

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