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**Raman spectroscopy study of laser-shocked TATB-based explosives** PHILIPPE HEBERT, VIVIANE BOUYER, JOEL RIDEAU, MICHEL DOUCET, LOUIS-PIERRE TERZULLI, CEA, DAM, Le RIPAULT, F-37260 Monts, France — We have developed a single-pulse Raman spectroscopy experiment dedicated to the study of laser-shocked explosives. The shocks were generated using the laser-driven flyer technique. The nanosecond pulse of a Nd:YAG laser ($\lambda$ = 1064 nm) was focused on a BK7 substrate coated with an ablation and an aluminium (Al) layer. The Al layer was used as the flyer. Our set-up can provide flyer velocities in the range 1500 to 3000 m/s with 15 $\mu$m thick Al foils which yields to maximum peak pressure of about 20 GPa on TATB samples. Single-shot Raman spectroscopy of shocked samples was performed using the second harmonic of a nanosecond Nd:YAG laser ($\lambda$ = 532 nm) focused on the back side of the samples through a glass window. In order to estimate the pressure of the probed sample, measurements of the particle velocity at the explosive-window interface were performed at the same time using the Photon Doppler Velocimetry system developed at CEA. Hydrodynamic simulations were also carried out. The first results obtained with this set-up on pressed samples of TATB based explosives are presented in this paper.

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