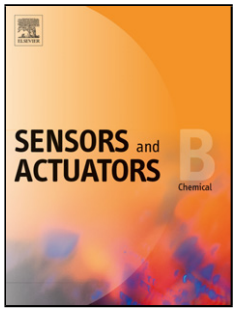

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Investigation of solid carbon blacks using pulsed photoacoustic and double resonant Raman spectroscopy for the identification of trinitrotoluene

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Highlights :

- A new study of carbon blacks, graphite and TNT using Picoseconds laser based time resolved pulsed Photoacoustic spectroscopy.
- First demonstration of Graphite as a sensor of TNT explosive.
- Demonstration of Optical phonon momentum transfer mechanism from Graphite to TNT for the first time.
- New Raman spectra of graphite and graphite mixed in TNT .

Abstract

We report the time resolved pulsed photoacoustic (PA) spectra of different types of solid carbon blacks obtained from wood charcoal; graphite powder and diesel soot using 532 nm wavelength pulses of duration 30 ps at a repetition rate of 10 Hz. The result of the PA spectra allows us to evaluate the potential use of graphite powder for the identification of trinitrotoluene (TNT) explosive for the first time. Though, TNT has no absorption band at 532 nm (due to higher band gap i.e. 2.7 eV), but its mixture in graphite matrix might reduce

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