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Explosion Temperature of Thermobaric Explosive

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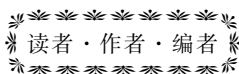
Abstract: A multi-wavelength temperature-measuring system based on the atomic emission spectroscopy was used to measure the transient high temperature during the explosion process of thermo-baric explosive (TBE). The time resolution of the measurement system could achieve μs scale. By measuring the explosion temperature of TBEs, the curves of temperature vs time were obtained. There are two temperature peaks corresponding to the oxygen-free reaction and oxygen reaction phases of TBE explosion process, respectively. Results show that the relative error of measured temperature is less than 2.6%, showing a good repeatability. Compared with the double line of atomic emission spectroscopy, the multi-wavelength temperature-measuring system can minimize the errors resulting from the selection of spectral lines.

Key words: analytical chemistry; thermo-baric explosive; transient high temperature; multi-wavelength temperature-measuring

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