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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: analysical chemistry; thermo-baric explosive; transient high temperature; multi-wavelength temperature-measuring
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为庆祝中国材料研究学会成立20周年、展示我国材料界近年来取得的科研成果、促进我国材料相关领域的科技交流和合作,中国材料研究学会将于2011年5月17-20日在北京举办"2011北京材料周",主题为"新材料创造美好生活"。活动内容包括学会成立20周年纪念庆典、2011年中国材料研讨会、中国新材料成果展览、新材料/新工艺/新设备博览会及材料科普展示等活动。

"2011中国材料研讨会"于2011年5月17-20日在北京奥林匹克公园的国家会议中心举行,共设22个分会场,将邀请4-5位国内、外知名材料科学家作大会特邀报告。会议论文涉及太阳能光伏、光热转换材料及其技术,储能材料和燃料电池,热电材料与应用,绿色建筑材料,生态环境材料,光催化材料及在能源与环境中的应用,电子材料,多铁性材料,磁性材料,半导体照明材料等多个方面。

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