

Measurement of Mass Extinction Coefficient of Particles Based on the Infrared Quantitative Analysis

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Abstract: The mass extinction coefficient of smoke particles is an intrinsic physical parameter to character shielding property. Infrared absorbency of aerosol particles is measured by Fourier transform infrared spectrometer in this article. On basis of quantitative analysis, a kind of method is proposed to rapidly and accurately measure the attenuation property of particles without smoke box in laboratory. Certain mass powder is dispersed in organic solvent, and then suspended solution is scanned by FTIR. According to spectrograms, the extinction coefficients of materials are calculated at infrared frequency. Obtained results are accorded with data measured by smoke box. Consequently, it is proved that above-mentioned experiment method is exactly and reliable. This testing technology can be used to quickly choose and identify shielding effects of new aerosol materials. To traditional test method, it is supplementary and auxiliary.

Key words: pyrotechnics; infrared quantitative analysis; smoke; measure; mass extinction coefficient

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