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标题: Based on THz Spectroscopy Detection Method for the Concentration of 1,3-Dinitrobenzene Volatile Gas
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摘要: For the unexpected situations occur that 1,3-dinitrobenzene volatile gas leaks in industrial production process, designed the differential characteristics absorption detection system for 1,3-dinitrobenzene volatile gas based on THz spectrum technique. The method can detect the concentration of trace 1,3-dinitrobenzene toxic gases through the THz characteristic wavelengths differential absorption method. System dealt with THz characteristics wavelengths of the two chambers, which provide difference dates, a group is standard air, and the other group tested the sample gas. Four main absorption bands of 1,3-dinitrobenzene is at 0.635, 0.912, 1.095 and 1.435 THz nearby in detection results, and according to the ratio of absorption coefficient in the corresponding absorption band it calculated the accurate amplitude from the corresponding wavelengths, at last the gas concentration was inversed. After the two traditional methods (chromatography and infrared absorption method) of experimental analysis and THz absorption detection method of the simulation study shows, precision of the detection capabilities of chromatography is high and error is small. But the chromatography separation time varies with the material, long cycle, slow; chromatography can not achieve real-time detection speed to realize real-time detection. Infrared absorption of environmental humidity is high, subject to drying. At the same time, THz absorption of environmental humidity is low; THz absorption method also has important characteristics of real time, strong anti-jamming, especially the water vapor, so it is more suitable for practical application.
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