260.
标题: Extracting THz Absorption Coefficient Spectrum Based on Accurate Determination of Sample Thickness
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摘要: Extracting absorption spectrum in THz band is one of the important aspects in THz applications. Sample's absorption coefficient has a complex nonlinear relationship with its thickness. However, as it is not convenient to measure the thickness directly, absorption spectrum is usually determined incorrectly. Based on the method proposed by Duvillaret which was used to precisely determine the thickness of LiNbO3, the approach to measuring the absorption coefficient spectra of glutamine and histidine in frequency range from 0. 3 to 2. 6 THz(1 THz=10(12) Hz) was improved in this paper. In order to validate the correctness of this absorption spectrum, we designed a series of experiments to compare the linearity of absorption coefficient belonging to one kind amino acid in different concentrations. The results indicate that as agreed by Lambert-Beer's Law, absorption coefficient spectrum of amino acid from the improved algorithm performs better linearity with its concentration than that from the common algorithm, which can be the basis of quantitative analysis in further researches.
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