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Title:Terahertz absorption spectra of fatty acids and their analogues
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Abstract: Absorption spectra in the terahertz (THz) region between 10 and 400 cm-1 were measured for fatty acids and their analogues at room temperature. Saturated fatty acids such as palmitic and stearic acids had some sharp peaks, while unsaturated fatty acids such as oleic, linoleic and linolenic acids had two distinct peaks at 247 and 328 cm-1. These peaks apparently derived from the carboxylic group because oleyl alcohol had no distinct peak. The THz absorption spectra of fatty acids may be affected by the crystalline as well as the chemical structure. The THz absorption spectra of oleic acid esters depended on ester types, although all oleic acid esters had some peaks due to the ester group. THz absorbance of fatty acids positively correlated with concentration. Based on these results, THz spectrometry may be a good analytical method for the non-destructive qualitative and quantitative evaluation of fatty acids and their analogues.
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