

235. Title: Chemical components determination via terahertz spectroscopic statistical analysis using microgenetic algorithm

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Abstract: In public security related applications, many suspicious samples may be a mixture of various chemical components that makes the usual spectral analysis difficult. In this paper, a terahertz spectroscopic statistical analysis method using a microgenetic algorithm (Micro-GA) has been proposed. Various chemical components in the mixture can be identified and the concentration of each component can be estimated based on the known spectral data of the pure chemical components. Five chemical mixtures have been tested using Micro-GA. The simulation results have shown agreement with other analytical methods. It is suggested that Micro-GA has potential applications for terahertz spectral identifications of chemical mixtures.