

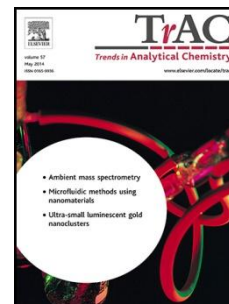
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Title: Raman spectroscopy as a sensitive probe of soft tissue composition – imaging of cross-sections of various organs vs. single spectra of tissue homogenates

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Raman spectroscopy as a sensitive probe of soft tissue composition – imaging of cross-sections of various organs vs. single spectra of tissue homogenates

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Keywords: Raman imaging, Raman microscopy, soft tissue, tissue homogenates

Highlights

- Results of Raman imaging of various organs (aorta, valves, blood, brain, liver, lungs, kidney)
- Single point measurements of respective tissue homogenates
- Raman imaging results are critically compared with single point measurements
- Spectroscopic markers for studied soft tissues are proposed
- Potential of Raman imaging vs. single spectra measurements for biological samples is discussed

Abstract

The review offers detail data on the chemical composition of various organs, *i.e.* aorta, aortic valves, blood, brain, liver, lungs and kidney, obtained by Raman spectroscopy using two approaches. Raman imaging of tissues' cross-sections and single point measurements of homogenates were performed and critically compared. When the first method provides detailed, spatially resolved information about the distribution of various tissue components (proteins, lipids, haemoglobin, vitamin A, DNA, etc.), the other one is fast and does not require advanced sample preparation and costly spectrometers with imaging option, but, in fact, is less sensitive for inhomogeneous samples. Based on both approaches, the specific spectral features for a given organ were selected and assigned in order to serve as spectroscopic markers of particular soft tissues. Overall, the review shows the high

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