

01-02: Recent advances in vibrational spectroscopic imaging studies of medicinal plants

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Plant cells, tissues and organs are composed of various biomolecules arranged as structurally diverse units, which represent heterogeneity at microscopic levels. Molecular knowledge about those constituents with their localization in such complexity is very crucial for both basic and applied plant sciences. In this context, infrared imaging techniques have advantages over conventional methods to investigate heterogeneous plant structures in providing quantitative and qualitative analyses with spatial distribution of the components. Thus, particularly, with the use of proper analytical approaches and sampling methods, these technologies offer significant information for the studies on plant classification, physiology, ecology, genetics, pathology and other related disciplines. This presentation aims to present a general perspective about near-infrared and mid-infrared imaging/micro-spectroscopy in plant research. It is addressed to compare potentialities of these methodologies with their advantages and limitations. With regard to the organization of the presentation, the first section will introduce the respective underlying principles followed by instrumentation, sampling techniques, sample preparations, measurement, and an overview of spectral pre-processing and multivariate analysis. The last section will review selected applications in the literature

References

- [1] TÜRKER-KAYA, S. and C.W. HUCK, 2017: A review of mid-infrared and near-infrared imaging: principles, concepts and applications in plant tissue analysis. *Molecules*, **22**, 168.