

Exploring advanced Raman microscopy as a tool to localize and quantify metabolites in neural tissue

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The complex interplay of neurons and glia is vital for the functioning of the nervous system. In the brain, energy metabolism plays a major role in this relationship and in the recent years, metabolic supply of axons has emerged as a major function of glial cells. Currently it is unclear whether the Schwann cells of the peripheral nervous system play a similar role, which is of special importance in view of metabolic alterations in hereditary diseases. Thus, a versatile method is needed to identify small molecules like sugars in nerve tissue with sub-cellular resolution, but up to now there is no such technique available. Microscopic measurement of Raman scattering allows for label-free identification and quantification of a variety of molecules. Here, with the help of experts in Raman scattering, life scientists change their course towards establishing surface-enhanced Raman spectroscopy as a powerful method for sub-cellular analysis of small molecules in nervous tissue.

Projektbeteiligte

Prof. Dr. Michael Sereda

Universitätsmedizin Göttingen
Georg August Universität
Klinik für Neurologie
Göttingen

Dr. Hainer Wackerbarth

Institut für Nanophotonik
Göttingen e.V.
Photonische Sensor Technologie
Göttingen

Dr. David Ewers

Universitätsmedizin Göttingen
Georg August Universität
Klinik für Neurologie
Göttingen

