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Open-Minded

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Plasmonic hybrid systems in external light fields: can we achieve sub-nanometer lateral resolution using near-field techniques?

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What is the ultimate spatial resolution that can be achieved with near-field methods? In current experiments, for example based on tip-amplified Raman scattering (TERS), there is increasing evidence for an extremely high spatial resolution on the nanometer or even sub-nanometer scale. In this talk, I will present some of these experiments of our collaboration partner, Prof. Volker Deckert from Jena, as well as the first results of our calculations.

For the theoretical description of such plasmonic hybrid systems in external light fields, it is necessary to describe both the electromagnetic interaction and the more chemical effects equally. Our calculations show pronounced changes of the Raman spectrum under non-resonant and resonant conditions and support the possibility of sub-nanometer spatial resolution.

[1] K. Fiederling, M. Abasifard, M. Richter, V. Deckert, S. Gräfe, S. Kupfer, “A Full Quantum Mechanical Approach Assessing the Chemical and Electromagnetic Effect in TERS”, Nanoscale **12**, 6346 (2020).
[2] F. Latorre, S. Kupfer, T. Bocklitz, D. Kinzel, S. Trautmann, S. Gräfe, V. Deckert, “Spatial resolution of tip-enhanced Raman spectroscopy – DFT assessment of the chemical effect”, Nanoscale **8**, 10229 (2016).

Für diese Zeit steht eine Kinderbetreuung nach vorheriger Anmeldung zur Verfügung.

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