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Nichtgleichgewichtsdynamik kondensierter
Materie in der Zeitdomäne

UNIVERSITÄT
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ESSEN

Open-Minded

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Single-molecule optics with atomic precision

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Light-matter interaction is essential for mechanisms such as luminescence, photosynthesis, and energy harvesting, defining the emission characteristics of molecular systems and governing the conversion of energy between photons and electrons. While these processes are intensively studied and employed, little is known about their dependence on atomic-scale properties since reaching such precision in optics is extremely demanding. This challenge is nowadays overcome thanks to the combination of optical spectroscopy approaches with scanning probe microscopy, which profit from the extreme field enhancement provided by the tip that enables atomic-scale optics [1]. In my talk, I will discuss how this approach can be applied to probe optical properties of individual phthalocyanine [2-3] and chlorophyll molecules.

[1] 1. A. Rosławska, K. Kaiser, S. Canola, S. Jiang, F. Scheurer, J. Aizpurua, T. Neuman, G. Schull, *Rev. Mod. Phys.* **98**, 025007, 2026.

[2] T. G. L. Brito, D. Arribas, S. Canola, K. Kuhnke, T. Neuman, A. Rosławska, *arXiv:2608.16826*, 2026.

[3] A. Rosławska, K. Kaiser, M. Romeo, E. Devaux, F. Scheurer, S. Berciaud, T. Neuman, G. Schull, *Nat. Nanotechnol.* **19**, 738-743, 2024.

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

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