SFB1242

SFB 1242 Nichtgleichgewichtsdynamik kondensierter Materie in der Zeitdomäne

UNIVERSITÄT DUISBURG ESSEN

Open-Minded

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Photophysics of single chromophores and clusters with scanning probe microscopy

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Recent developments in tip-enhanced optical spectroscopies open the pathways to study the fascinating photophysics of individual molecules and molecular clusters with subnanometer spatial resolution. Using plasmonic nanocavities – formed between a sharp metallic tip and a surface in a scanning probe microscope – we can locally excite and detect optical response of molecules such as electroluminescence, photoluminescence and Raman scattering. This enables access to temporary charge states, vibronic structures, entangled excitonic states and excited-state dynamics of quantum emitters such as phthalocyanine and perylene-based chromophores. I will show an overview of the methodology and discuss the results, implications and limitations of the approach.

[1] ACS Nano 2021, **15**, 4, 7694–7699.
[2] ACS Nano 2022, **16**, 1, 1082–1088.
[3] ACS Nano 2024, **18**, 20, 13164–13170.
[5] Nature Comm. 2022, **13**, 6008.
[4] Nano Lett. 2024, **24**, 5, 1629–1634.
[5] arXiv:2502.09347.

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

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