



Einladung zum Vortrag

Organic molecules for quantum technologies

von

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Ort: Christian-Doppler-Hörsaal
9. Boltzmannngasse 5 / Strudlhofgasse 4, 3. Stock

Abstract:

Organic molecules of polyaromatic hydrocarbons were the first system in the solid state to show single photon emission [1,2]. However they are still considered unconventional sources of non-classical light. I will try to unveil part of the mystery behind such quantum emitters and show how they could effectively contribute to integrated quantum photonic platforms.

I will report on fluorescence coupling from a single molecule to a planar optical antenna [3] and a single-mode dielectric waveguide [4], discuss the integration of single quantum emitters into hybrid dielectric-plasmonic devices [5] and the coupling with 2D materials [6]. I will present our recent results about the fabrication of single-molecule doped nanocrystals, preserving the optical properties of the bulk system, i.e. negligible blinking and spectral diffusion [7]. Eventually, I will report on ultrafast time-resolved transient spectroscopy on a single molecule [8].

References

- [1] W. E. Moerner and L. Kador, Phys. Rev. Lett. 62, 2535 (1989).
- [2] M. Orrit and J. Bernard, Phys. Rev. Lett. 65, 2716 (1990).
- [3] S. Checcucci et al., Light: Science and Applications 6, e16245 (2017)
- [4] P. Lombardi et al., ACS Phot., <https://doi.org/10.1021/acsp Photonics.7b00521> [5] G. Kewes et al., Sci. Rep. 6, 28877 (2016).
- [6] K. Schaedler et al., in preparation
- [7] S. Pazzagli et al., arXiv:1712.05178
- [8] M. Liebel et al., Nat. Phot. 12, 45-49 (2017)