

PhD Symposium - Solid-state Quantum Emitters Coupled to Optical Microcavities (SYPD)

organised by Working Group young DPG (AKjDPG)

supported by all divisions of the section AMOP

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Solid-state emitters have gained interest as a platform for scalable quantum technologies. However, the solid-state environment imposes new challenges to experiments. Compared to emitters trapped in vacuum, the solid-state environment causes spectral diffusion, decoherence and unfavorable branching ratios. These problems can be solved by resonantly enhancing the interaction of light with a selected transition of the quantum emitter. In particular cavities in which the light is concentrated within a small volume (microcavities) are well suited for this purpose. Applications range from the exploration of otherwise weak transitions to the construction of bright coherent single photon sources. Some experiments even reach the regime of strong coupling, in which a photon emitted by the quantum system is stored in the cavity long enough to be reabsorbed by the quantum emitter. The aim of this symposium is to provide an overview over different cavity architectures and quantum emitters as well as concrete use-cases and upcoming applications.

Overview of Invited Talks and Sessions

(Lecture hall AKjDPG-H17)

Invited Talks

SYPD 1.1	Mon	16:30–17:00	AKjDPG-H17	Fiber-based microcavities for efficient spin-photon interfaces — ●DAVID HUNGER
SYPD 1.2	Mon	17:00–17:30	AKjDPG-H17	A fast and bright source of coherent single-photons using a quantum dot in an open microcavity — ●RICHARD J. WARBURTON
SYPD 1.3	Mon	17:30–18:00	AKjDPG-H17	New host materials for individually addressed rare-earth ions — ●SEBASTIAN HORVATH, SALIM OURARI, LUKASZ DUSANOWSKI, CHRISTOPHER PHENICIE, ISAIAH GRAY, PAUL STEVENSON, NATHALIE DE LEON, JEFF THOMPSON
SYPD 1.4	Mon	18:00–18:30	AKjDPG-H17	A multi-node quantum network of remote solid-state qubits — ●RONALD HANSON

Sessions

SYPD 1.1–1.4	Mon	16:30–18:30	AKjDPG-H17	Solid-state quantum emitters coupled to optical microcavities
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