

Symposium Quantum Optics on the Nanoscale: From Fundamental Physics to Quantum Technologies (SYQO)

jointly organized by
 the Semiconductor Physics Division (HL),
 the Thin Films Division (DS),
 the Surface Science Division (O), and
 the Low Temperature Physics Division (TT)

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Presently technologies that rely on quantum functionality are based on macroscopic elements such as optical fibers and bulk nonlinear optical materials. Thus the prospect of miniaturization is rather limited. However, the advancement and widespread use of quantum technologies will rely on the development of suitable nanoscale devices making quantum optics on the nanoscale an important field of research.

Quantum phenomena in nanoscale systems lead to new scales of quantum complexity. Topical key issues in this field and at least partially addressed in this symposium comprise among others i) manipulation, detection, and storage of quantum states of light at the nanoscale, ii) nonlinearities and ultrafast processes in nanostructured media, iii) nanoscale quantum coherences and coherent transport, as well as iv) quantum cooperative effects and correlations in nanoscale optical fields. The topics combine state-of-the-art research from rather diverse areas such as semiconductor physics, plasmonics, low temperatures, or surface physics.

Overview of Invited Talks and Sessions

(Lecture room HSZ 02)

Invited Talks

SYQO 1.1	Thu	9:30–10:00	HSZ 02	Quantum dot based quantum technologies — ●PASCALE SENELLART
SYQO 1.2	Thu	10:00–10:30	HSZ 02	Controlled strong coupling of a single quantum dot to a plasmonic nanoresonator at room temperature — HEIKO GROSS, JOACHIM M. HAMM, TOMMASO TUFARELLI, ORTWIN HESS, ●BERT HECHT
SYQO 1.3	Thu	10:30–11:00	HSZ 02	High efficiency and directional emission from a nanoscale light source in a planar optical antenna — ●MARIO AGIO
SYQO 1.4	Thu	11:30–12:00	HSZ 02	Tailoring quantum states by measurement — ●JÖRG WRACHTRUP
SYQO 1.5	Thu	12:00–12:30	HSZ 02	Quantum optics and quantum control at the nanoscale with surface plasmon polaritons — ●STÉPHANE GUÉRIN

Sessions

SYQO 1.1–1.5	Thu	9:30–12:30	HSZ 02	Quantum Optics on the Nanoscale: From Fundamental Physics to Quantum Technologies
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