Symposium Progress and Challenges in Modelling Electron-Phonon Interaction in Solids (SYIS)

jointly organised by
the Semiconductor Physics Division (HL),
Crystalline Solids and their Microstructure Division (KFM), and
Surface Science Division (O)

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Electron-phonon interaction is crucial to predict and explain material behaviour under a variety of equilibrium and non-equilibrium conditions. Though recent developments in theoretical and computational methods have significantly advanced our capability, significant challenges still remain to be addressed. An accurate description of electron-phonon interactions in complex materials, including e.g., disordered perovskites, correlated oxides, superconductors, interfaces, and heterostructures, is often beyond the capability of existing methodologies. This symposium will bridge different communities working on electron-phonon interactions in solids and pinpoint common problems and open challenges in the field.

Overview of Invited Talks and Sessions

(Lecture hall H1)

Invited Talks

SYIS 1.1	Tue	9:30–10:00	H1	**Electron-phonon and exciton-phonon coupling in advanced materials** — •Claudia Draxl
SYIS 1.2	Tue	10:00–10:30	H1	**Exciton-phonon dynamics from first principles** — •Enrico Perfetto
SYIS 1.3	Tue	10:30–11:00	H1	**Polarons and exciton polarons from first principles** — •Feliciano Giustino
SYIS 1.4	Tue	11:15–11:45	H1	**Wannier-Function-Based First-principle Approach to Coupled Exciton-Phonon-Photon Dynamics in Two-Dimensional Semiconductors** — •Alexander Steinhoff
SYIS 1.5	Tue	11:45–12:15	H1	**Phonon influence on (cooperative) photon emission from quantum dots** — •Erik Gauger

Sessions

SYIS 1.1–1.5	Tue	9:30–12:15	H1	**Progress and Challenges in Modelling Electron-Phonon Interaction in Solids**