
S E M I N A R
on
Semiconductor Physics and Nanotechnology

Mo, 24.11.2025, 11:15 Uhr,

**Seminar in
person in the Physics lecture hall or via Zoom**

“In situ X-Ray analysis of thin-film deposition: Bridging microsecond experiments, analysis with(generative) AI, and FAIR Data”

Assoz. Prof. Dr. Stefan Kowarik

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This talk highlights how in situ X-ray techniques for thin-film deposition—capturing structural evolution on sub-ms timescales—are being transformed through AI and FAIR data principles. AI accelerates the analysis of large XRR and GIWAXS datasets collected during spin-coating or vapor-phase growth, enabling rapid extraction of structural parameters and even unit-cell information from single images. Deep reinforcement learning further speeds up experiments by guiding adaptive, self-optimizing X-ray measurements.

Together, real-time X-ray methods, generative AI models, and FAIR data infrastructures create efficient, reproducible, and increasingly autonomous workflows, paving the way for self-driving X-ray instrumentation and accelerated materials discovery.

Zoom – Link:

<https://zoom.us/j/96375934537?pwd=RTIKTWWhSdzRHU211YTY1bGFxTUtpZz09>

[Meeting-ID: 963 7593 4537](#)

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