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

Mo, 01.12.2025, 11:15 Uhr,

Seminar in
person in the Physics lecture hall or via Zoom

“Tuning the Optical Response of 2D Materials through Strain Engineering”

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Two-dimensional (2D) materials represent a versatile platform for tailoring electronic and optical properties at the atomic scale. Their remarkable mechanical flexibility makes them ideal candidates for strain engineering, where external deformation serves as a precise and reversible tool for tuning structural, electronic, and optical properties. Such an approach enables the design of materials with adjustable characteristics suitable for a wide range of optoelectronic and photonic applications.

In this seminar, the influence of strain on the optical response of 2D materials and heterostructures will be discussed, with an emphasis on their potential as novel ultraviolet (UV) absorbers. The role of strain in modifying band structures and excitonic behavior will be outlined, together with examples of strain-induced tuning of the absorption edge and enhancement of light-matter interactions in van der Waals systems. Representative *ab initio* results obtained for group III monochalcogenides and their heterostructures with hexagonal boron nitride (hBN) will be presented, demonstrating the extent to which strain affects their electronic and optical spectra.

Finally, possible applications of strain-engineered 2D materials in flexible and wearable optoelectronics and UV photodetectors will be highlighted, illustrating the potential of this approach for the development of next-generation, lightweight, and energy-efficient devices.

Zoom – Link:

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

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

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