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S E M I N A R
aus
Halbleiterphysik und Nanotechnologie

Di, 6.11.2018, 11.00 Uhr, Hörsaal für Physik

"Physical and chemical engineering of novel two-dimensional materials"

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Chemical synthesis of atomically thin two-dimensional (2D) materials is essential for development of large-scale applications arising from their intriguing electronic properties or mechanical strength. For example, while linear bands in semimetallic graphene lead to record mobility, mono- and few-layer transition metal dichalcogenides (TMDs) attract increasing attention due to their semiconducting and optoelectronic properties and corresponding advantages over graphene. Moreover, properties of 2D materials are extremely depending on their nanoscale quality and defects, and interaction with the surrounding. After introducing the field of 2D materials research, I will present several examples of our research focused to synthesis of 2D materials (epitaxial growth [1], chemical vapor deposition [2]) and controlled chemical (doping [3,4]) and physical (strain [5,6]) engineering of their properties.

[1] I. Pletikosić, et al., Phys. Rev. Lett. 102 (2009) 056808; M. Kralj, et al., Phys. Rev. B 84 (2011) 075427

[2] I. Delač Marion, et al., Nanotechnology 29 (2018) 305703; D. Čapeta, et al., in preapration

[3] M. Petrović, et al., Nat. Commun. 4 (2013) 2772

[4] N. Saigal, et al., Appl. Phys. Lett. 112 (2018) 121902

[5] I. Šrut Rakić, et al., Carbon 96 (2016) 243–249 & Carbon 110 (2016) 267–277

[6] I. Niehus, et al., 2D Materials 5 (2018) 031003