



e-conversion



Seminarankündigung

**Donnerstag, 17. Oktober 2019
13:00 Uhr**

WSI, Seminarraum S 101

“Van der Waals epitaxy of transition metal dichalcogenides by MBE Application to the study of the valley Nernst effect in WSe₂”

In this presentation, I will first review our recent results on the MBE growth of transition metal dichalcogenides on various substrates over large areas and explain the mechanisms underlying the van der Waals epitaxy regime. Using this growth technique, we could study the interplay between thermoelectricity and the valley degree of freedom in monolayers of WSe₂. For this purpose, high quality WSe₂ mono and multilayers were grown on epitaxial graphene on SiC. Using millimeter-sized samples, we were able to apply well-defined temperature gradients and demonstrate the very strong Seebeck response of this material. In a second step, we used the ferromagnetic resonance-spin pumping technique to (i) apply the temperature gradient by off centering the sample in the radio frequency (RF) cavity and (ii) address a single valley using the spin pumping through spin-valley coupling. The combination of a temperature gradient and the valley polarization lead to the valley Nernst effect in WSe₂ that we could detect electrically in the RF cavity. The Nernst coefficient we measured is in very good agreement with the predicted value. This effect could be exploited to generate large transverse valley currents for valleytronics applications.

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