

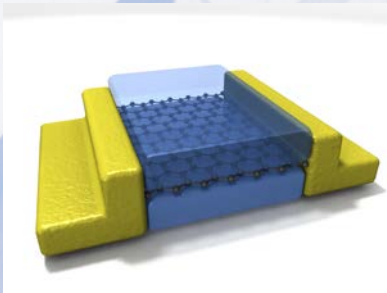
EINLADUNG ZUM  
**WIENER PHYSIKALISCHEN KOLLOQUIUM**

**Putting things on top of other things:  
Fabrication and applications of van der Waals  
heterostructures**

**James Hone**

*Columbia University*

*Dept. of Mechanical Engineering*



Two-dimensional materials such as graphene can achieve spectacular performance but are highly sensitive to disorder from the environment. We have developed techniques to controllably ‘stack’ graphene on insulating hexagonal boron nitride, which dramatically reduces disorder and increases performance. In addition, these heterostructures can display novel behavior due to the presence of ‘superlattice’ potentials arising from the graphene-BN stacking. In recent work, we have extended these techniques to create fully encapsulated devices whose performance approaches the ideal behavior of sgraphene. These techniques can be used to create heterostructures of other 2D materials such as MoS<sub>2</sub> and WSe<sub>2</sub>. I will describe our studies of basic science and applications of these devices.

*About James Hone*

James Hone is currently Professor of Mechanical Engineering at Columbia University. He received his PhD in experimental condensed matter physics from UC Berkeley in 1998, and did postdoctoral work at the University of Pennsylvania and Caltech, where he was a Millikan Fellow. He joined the Columbia faculty in 2003.

His current research interests include synthesis, characterization, manipulation, and applications graphene, and other 2D materials; nanomechanical devices; and nano-biology.

**Montag, 17. März 2014, 17:30 Uhr**  
(ab 17:00 Uhr Kaffee)

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