

## RTG 2861 “Planar Carbon Lattices” Joint On-site Meeting in Erlangen, June 26-27, 2025

FAU Erlangen-Nürnberg, Südgelände, Seminar room 13301.00.111 (Chemikum Organische Chemie), Nikolaus-Fiebiger-Str. 10 (Access: Erwin-Rommel-Straße 35, Ground floor)

<https://maps.app.goo.gl/xyfBxThiXmvCEBpd6>

### Meeting program

**Thursday, 26.06.2025, Seminar room 13301.00.111 (Chemikum Organische Chemie)**

**13:30 - 14:30** *Joint lunch and welcome coffee*

**14:30 - 15:30** Guest talk: **Prof. Regina Hoffmann-Vogel**, Uni Potsdam

Talk title: “**Local work function on graphene nanoribbons**”

**15:30 - 16:30** Career options in academia (1 h)

**16:30 - 17:00** *Coffee break*

**17:00 - 18:00** A career option in industry: Alumni talk by Dr. Malte Kohring (1 h)

**19:30** - Joint dinner at Altstädter Schießhaus (An den Kellern 30, 91054 Erlangen,  
<https://maps.app.goo.gl/T5RNN7HjjsM5aFbs9>, <https://www.altstaedter-schiesshaus.de/>)

**Friday, 27.06.2025, Seminar room 13301.00.111 (Chemikum Organische Chemie)**

**09:30 - 10:00** Talk: Dr. Wenhui Niu, TUD, prospective new PI (30 min)

**10:00 - 11:00** Discussion ongoing RTG activities (1 h)

**11:00 - 11:30** *Coffee break*

**11:30 - 12:30** Discussion ongoing RTG activities (1 h)

**12:30 - 13:30** *Joint lunch and departure*

**RTG-PCL guest talk | June 26, 2025 | 14:30 | Seminar room 13301.00.111  
(Chemikum Organische Chemie, FAU) and online**

## **Local work function on graphene nanoribbons**

**Regina Hoffmann-Vogel**

Universität Potsdam, Institut für Physik und Astronomie,  
Karl-Liebknecht-Str. 24/25, D-14476 Potsdam

Graphene nanoribbons show special electronic properties due to the local confinement of their charge carriers in one dimension. Additionally, atomic-scale structural details have been resolved using cantilever AFM with a graphene nanoribbon attached to the tip. We have studied the force as a function of tip-sample distance. The forces are dominated by electrostatic forces. The tip exposes a graphene nanoribbon end to the sample and can be adequately described using a point-charge model. The graphene nanoribbon is well-described using a line-charge model. The nanoribbon shows peculiar edges and is oriented in a well-defined way with respect to the surface. Manipulation of graphene nanoribbons is influenced by this orientation in agreement with calculations.

In addition, we have studied electrostatics of graphene nanoribbons on Au(111) by the Kelvin method. Kelvin probe force microscopy (KPFM) allows to measure the local contact potential difference (LCPD) and can be dependent on the local charge distribution. It provides evidence for structural, electronic and chemical variations at surfaces. The LCPD data shows charge transfer between the graphene nanoribbons and the gold substrate. Our results are corroborated with density functional theory calculations and help to understand the role of electron transfer in GNR/metal contacts for future GNR-based electronic devices.

### **Biographical sketch**

R. Hoffmann-Vogel studied Physics in Karlsruhe and Grenoble and received her PhD from the University of Basle, Switzerland in 2001. Her thesis was entitled "Magnetic and interatomic forces measured by low temperature scanning force microscopy". She then moved to McGill University, Montreal, Canada for a postdoc before she came back to Karlsruhe, where she later headed an ERC starting grant young investigator group on Nanocontacts. She studied quantum transport in the atomic limit on metallic contacts fabricated by electromigration methods. She then moved to Konstanz supported by a Heisenberg fellowship before being appointed as a professor at University of Potsdam in 2019.