

# Advanced Lab / Master Thesis

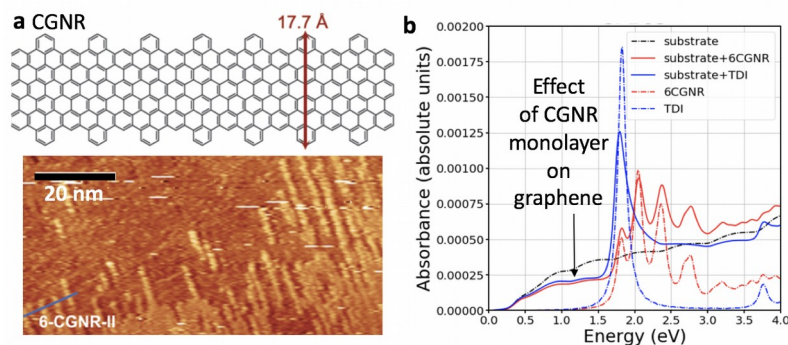
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## Photodoping of graphene and diamond C(100) by graphene nanoribbons

Keywords: AFM, STM, **TD-DFTB**, Raman, Device, Photophysics

**Update: Online Advanced Lab & remote supervision option available**

Doping graphene results in a dramatic change of its photophysical properties for advanced photomodulators, photovoltaics and transistor logic (*Science* 320 206-9, **2009**). We have shown how graphene nanoribbons can be studied on diamond C(100) substrates (*J. Am. Chem. Soc.*, 140, 25, 7803-7809, **2018**) collaborating with Prof Sanchez and Prof Frauenheim (**Bremen**) to demonstrate how “cove” graphene nanoribbons (CGNRs) tune the IR-UV-Vis optical spectrum of graphene and diamond (**Figure 1**). Here, you will study the effect of chemical doping on graphene via Raman and IR-UV-Vis spectroscopy in collaboration with Prof Narita and Prof Müllen (**Mainz**).



**Figure 1. a** STM data of “cove” graphene nanoribbon (CGNR) on diamond H-C(100) and **b** Simulated absorbance spectrum of CGNR on graphene

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