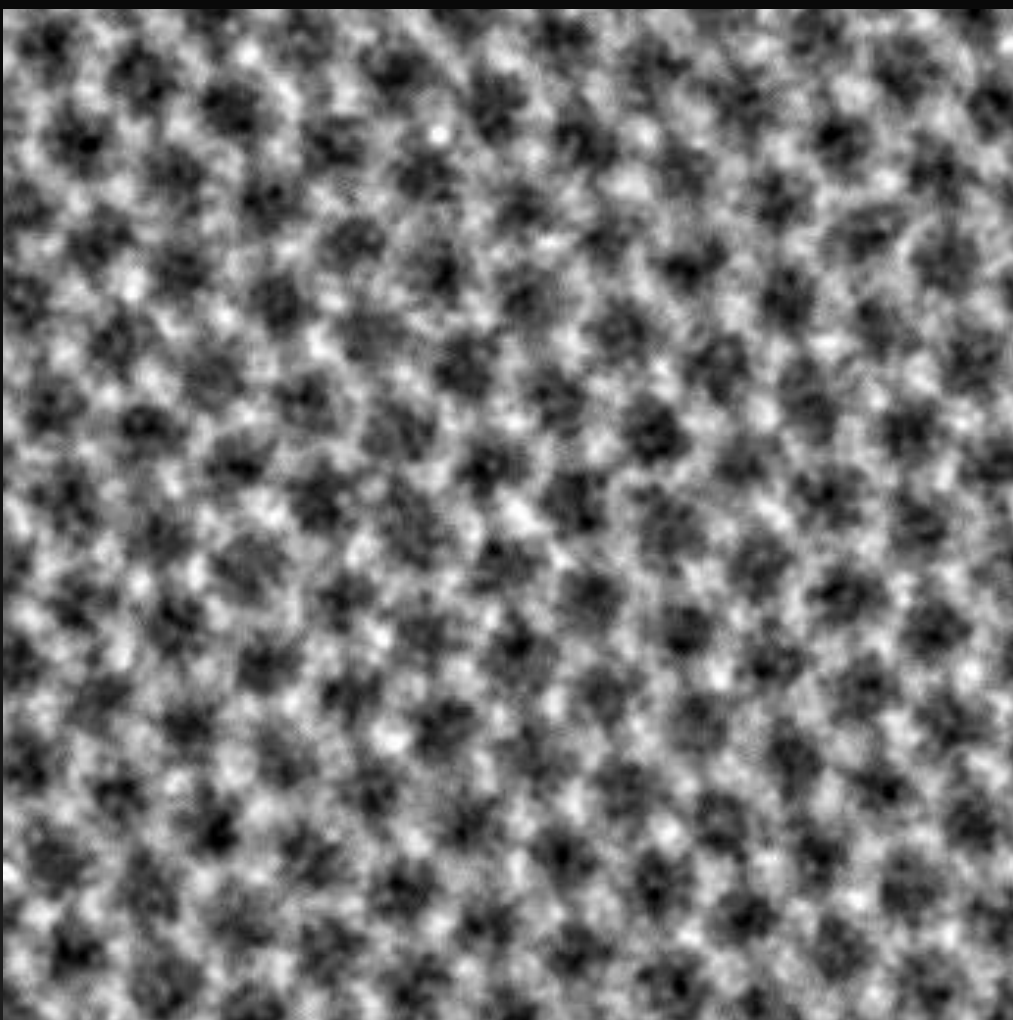
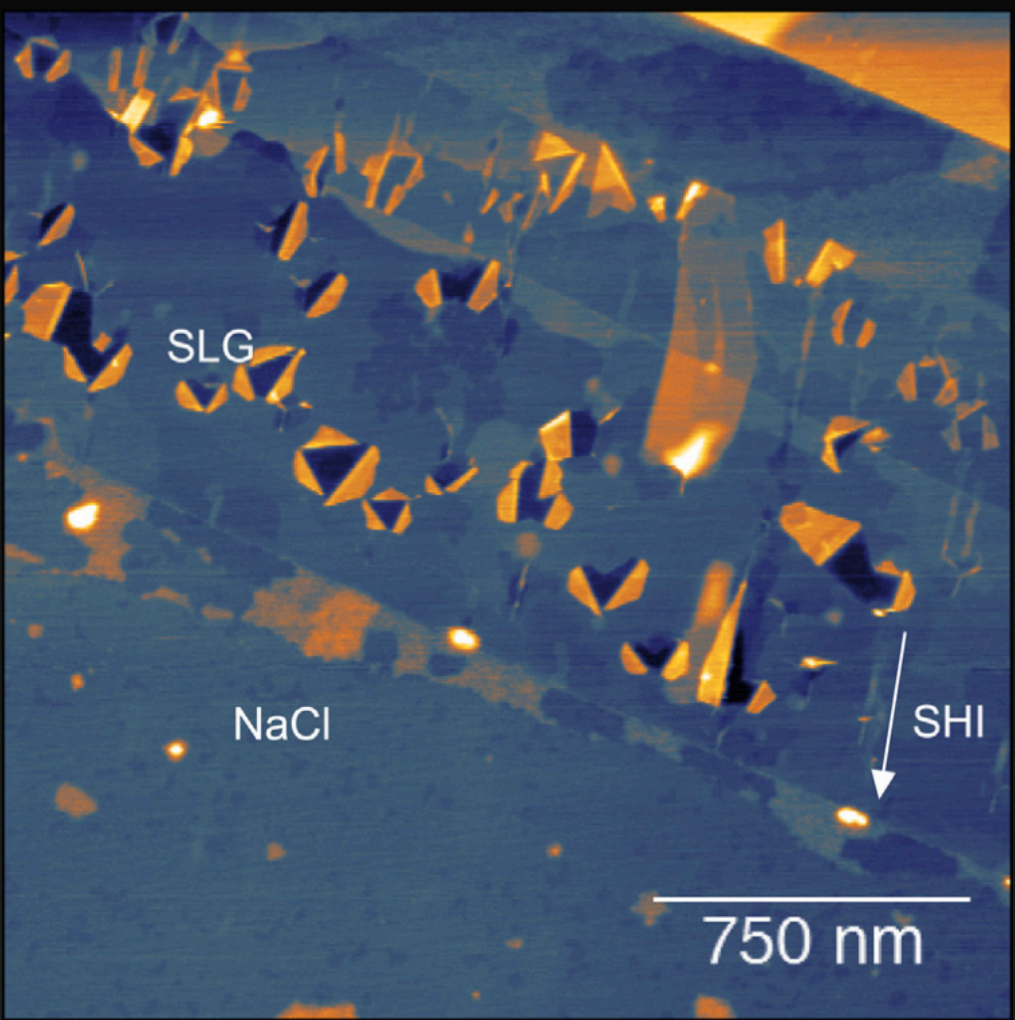


# Nanostructuring of graphene using HCIs



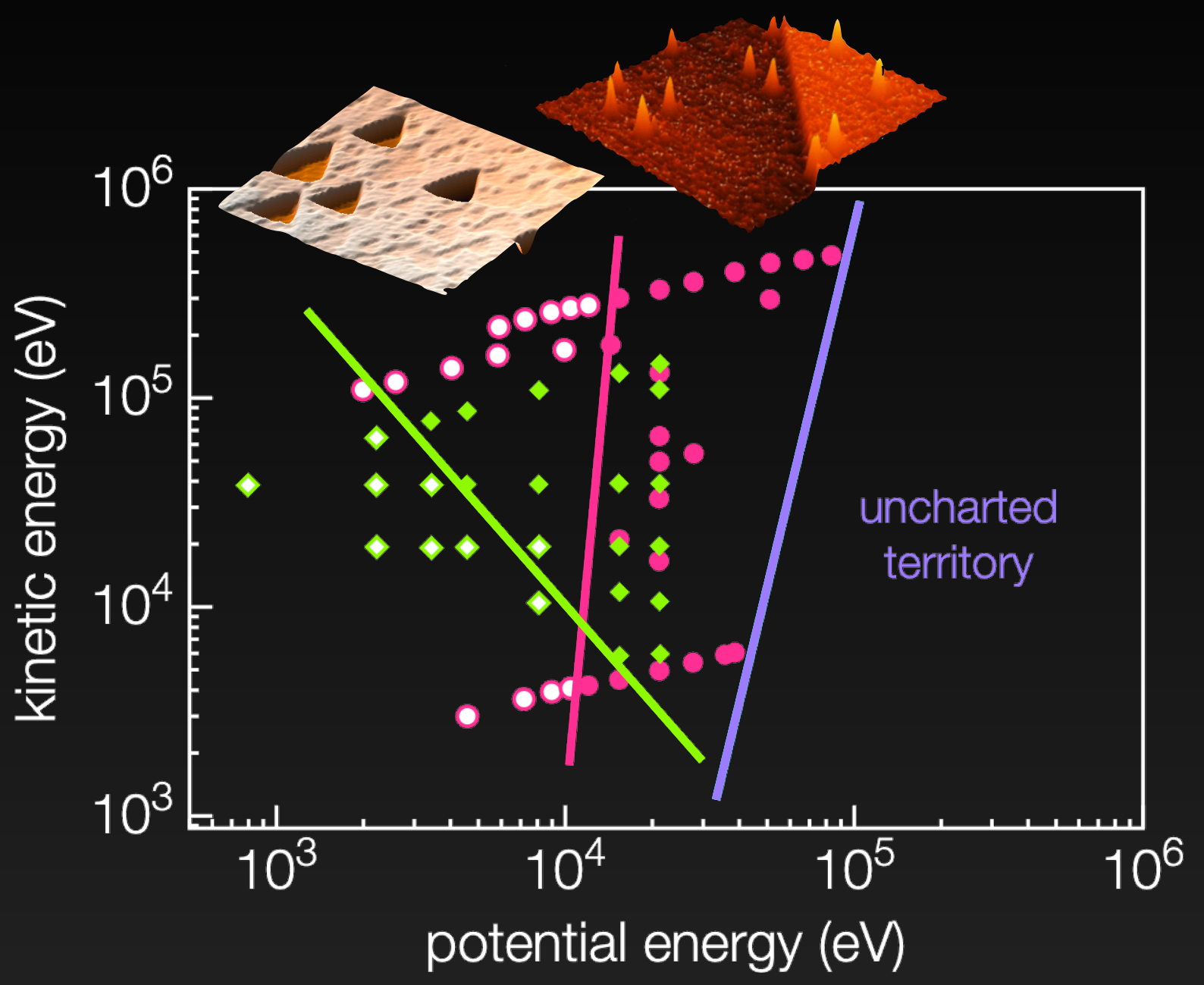
no highly charged ion induced nanostructures on single-layer graphene

E. Gruber *et al.*, *Nat. Commun.* **7**, 13948 (2016)



swift heavy ion induced foldings on single-layer graphene

O. Ochedowski *et al.*, *Nucl. Instrum. Methods Phys. Res. B* **314**, 18 (2013)



CaF<sub>2</sub> well investigated case → etch pits and hillocks

El-Said, A. S. *et al.* *Phys. Rev. Lett.* **109**, 117602 (2012)  
 El-Said, A. S. *et al.* *Phys. Rev. Lett.* **117**, 126101 (2016)

# Nanostructuring of graphene using HCIs

We apply for 1 week (21 shifts) of HITRAP beam time:

6keV/u  $U^{92+}$   $\rightarrow$  single-layer graphene

6keV/u  $U^{92+}$   $\rightarrow$   $CaF_2$

$\curvearrowright$  0.5 $v_0$ ,  $v_0$  ... Bohr velocity



$4 \times 10^8$  ions/cm<sup>2</sup> (3 days of irradiation each)  
+ beam alignment, sample transfer

$\longrightarrow$  samples will then be transferred in protected atmosphere to Vienna for AFM/(S)TEM analysis