Thin layers of semiconducting transition metal dichalcogenides by STM

Post doc positions will be available in 2016 at NEEL (Grenoble,France) in the UHV-STM team:

Postdoc#1 (24 months, starting Aprile 2016) : The subject is the investigation by means of scanning tunneling microscopy (STM) and spectroscopy (STS) of thin layers (from one monolayer to few layers) of semiconducting transition metal dichalcogenides (WSe2, MoS2, ...). The first objective is to characterize by STM imaging the atomic structure of the samples, focusing on the identification of the most abundant defects. However, the main part of the work will consist in analysing the electronic structure of the samples by means of STS and of spectroscopic imaging. The presence of in-gap defect induced states, the variations of the valence and conduction band edges close to boundaries and the determination of the location of the band extrema in k space as a function of thickness/substrate are some of the points of interest in this field. The samples will be prepared in collaborating groups (within either the Graphene Flagship or the ANR J2D project) by exfoliation or growth and the experiments will be performed using 2 home made UHV STM, including a cryogenic one. A strong background in solid state physics is necessary. Knowledge in surface science techniques is needed, experience with STM/STS measurements will be appreciated.

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