Mapping force-fields with NC-AFM

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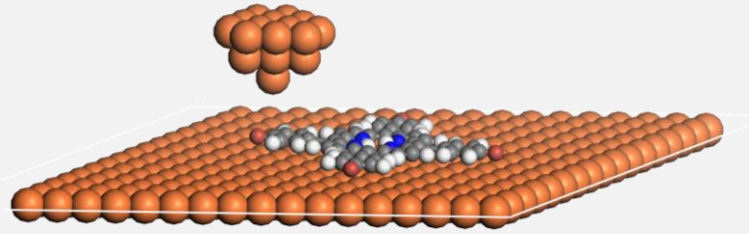
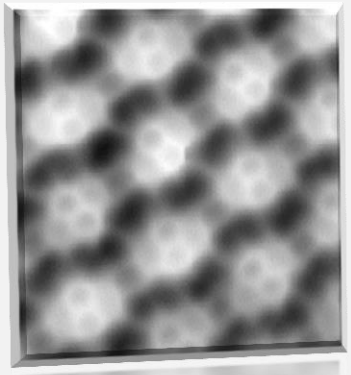
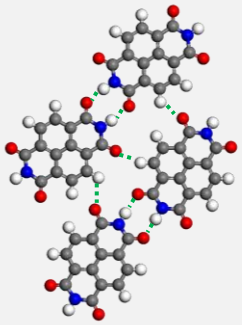
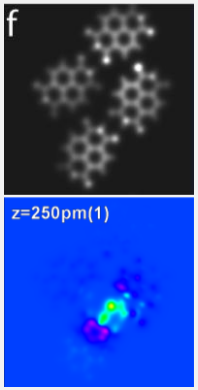
Non-contact atomic force microscopy.

- Experimental measurement of interatomic forces and energy potentials with atomic resolution.
- Possible to functionalise the tip with a single molecule.







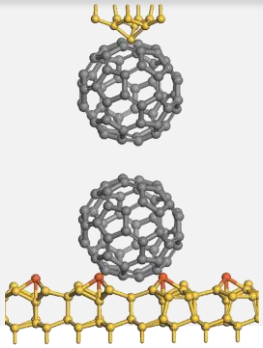


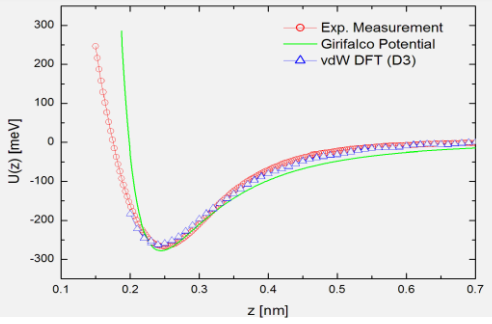
Observation of hydrogen bonding with NC-AFM

- Non-contact atomic force microscopy reveals inter- and intra-molecular resolution of molecules.
- Dominated by tip-sample repulsive force interactions.
- vdW-DFT used to calculate force spectra and electronic structure to explain contrast formation.

Measuring C_{60} pair potentials.

- Calculate molecule-molecule interactions with vdW-DFT.
- Compare directly with experimental data.
- Precisely determine orientation of a tip-adsorbed C_{60}





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Sweetman, A., Jarvis, S., *et al*, **submitted**
Chiutu, C. *et al*, Phys. Rev. Lett., **108**, 268302 (2012).