



Mission pour les initiatives
transverses et interdisciplinaires
(MITI)

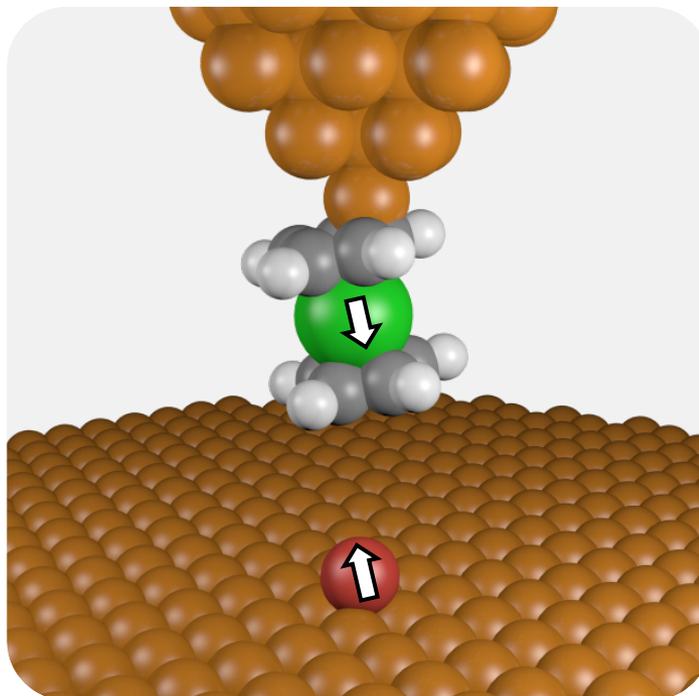


Journée thématique

Fonctionnalisation de sonde et analyses de données

Toulouse, 29 novembre 2023

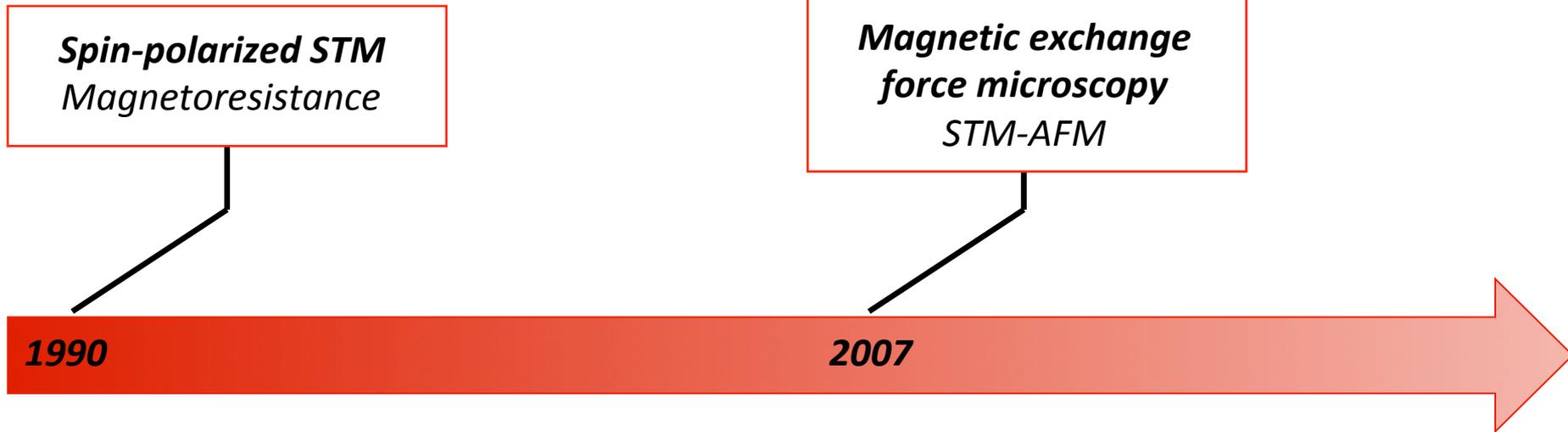
- ❖ STM @ 4 K, UHV
- ❖ Magnetism
- ❖ Atomic resolution

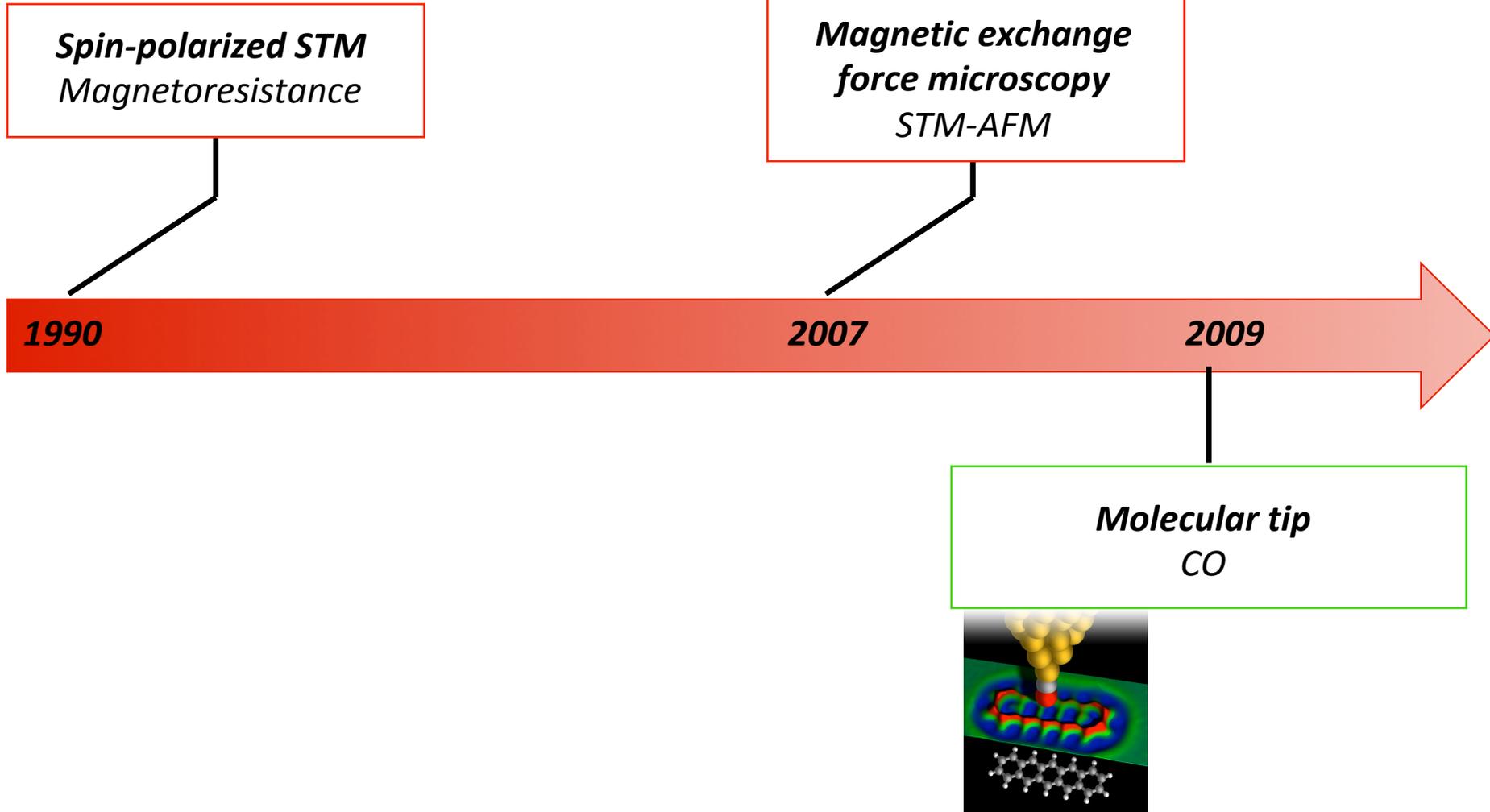


Laurent Limot

Institut de Physique et Chimie des Matériaux de Strasbourg (IPCMS)

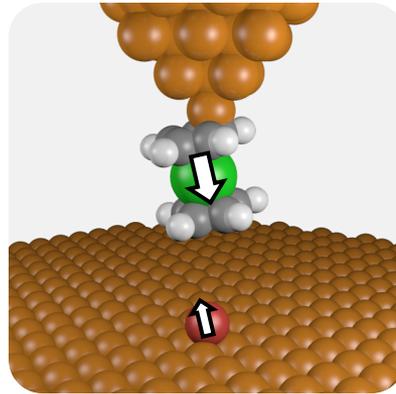






Magnetic molecule

Science **366**, 623 (2019)



Spin-polarized STM
Magnetoresistance

Magnetic exchange force microscopy
STM-AFM

1990

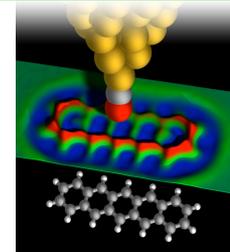
2004

2007

2009

Spin excitations
Electrical read-out

Molecular tip
CO

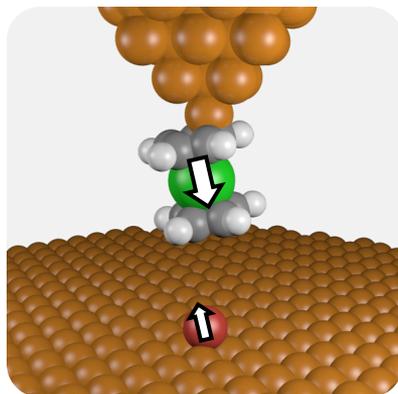


Contexte

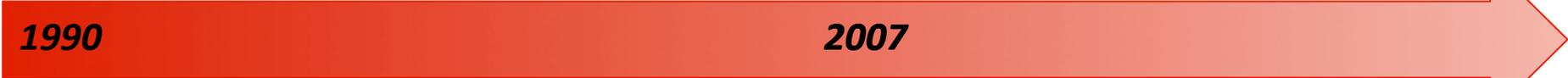
Magnetic molecule

Science **366**, 623 (2019)

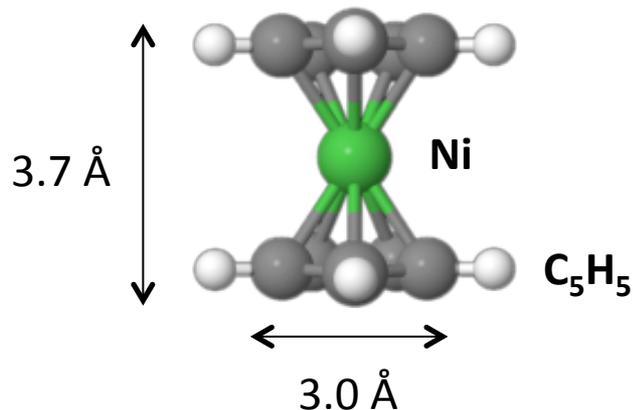
*Spin-polarized STM
Magnetoresistance*

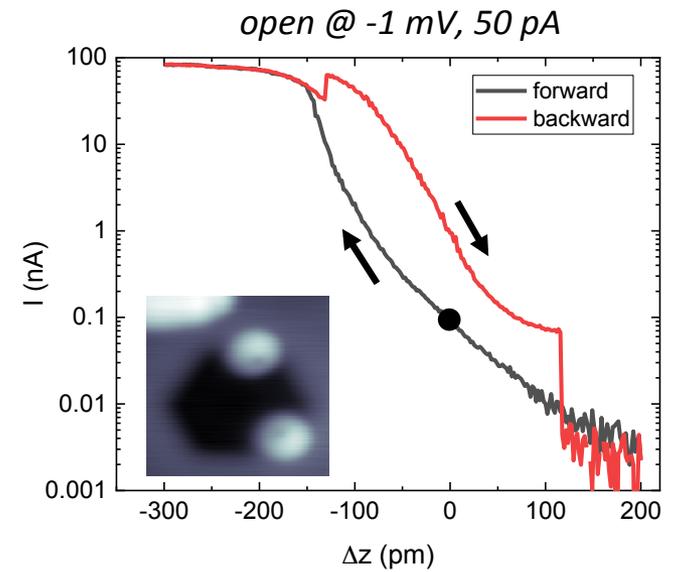
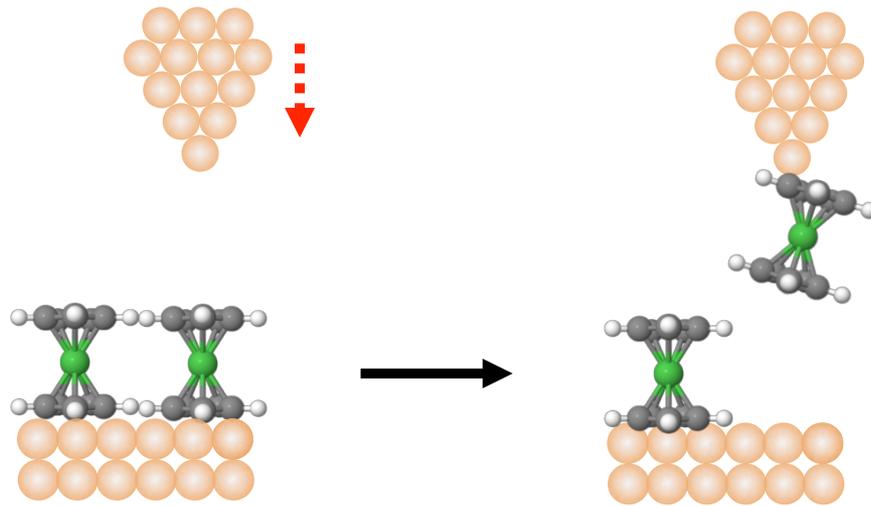
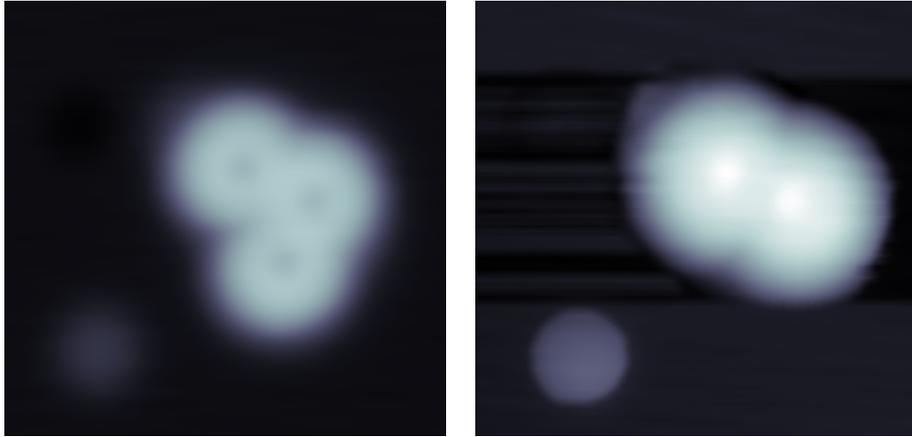


*Magnetic exchange
force microscopy
STM-AFM*

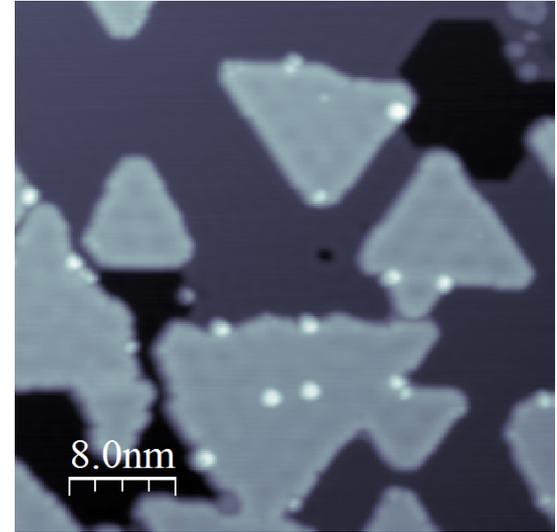
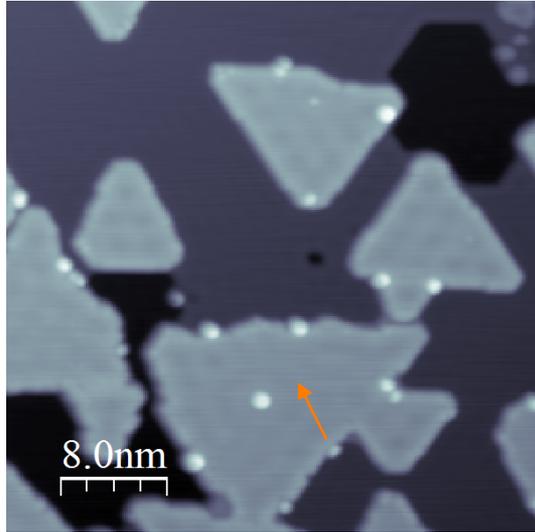
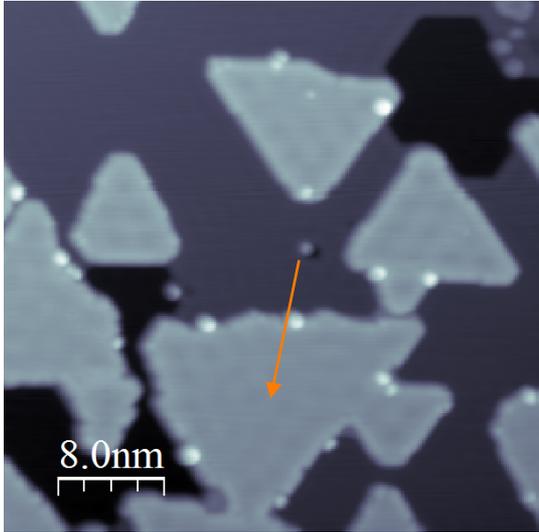


Nickelocene (Spin = 1)

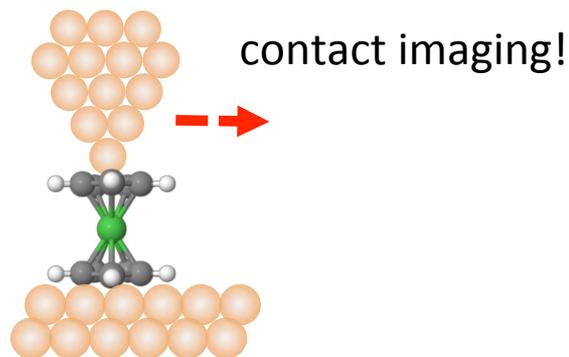
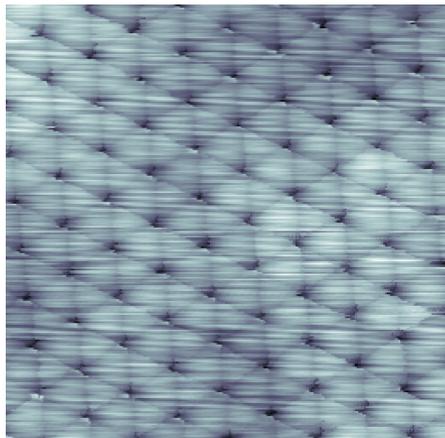




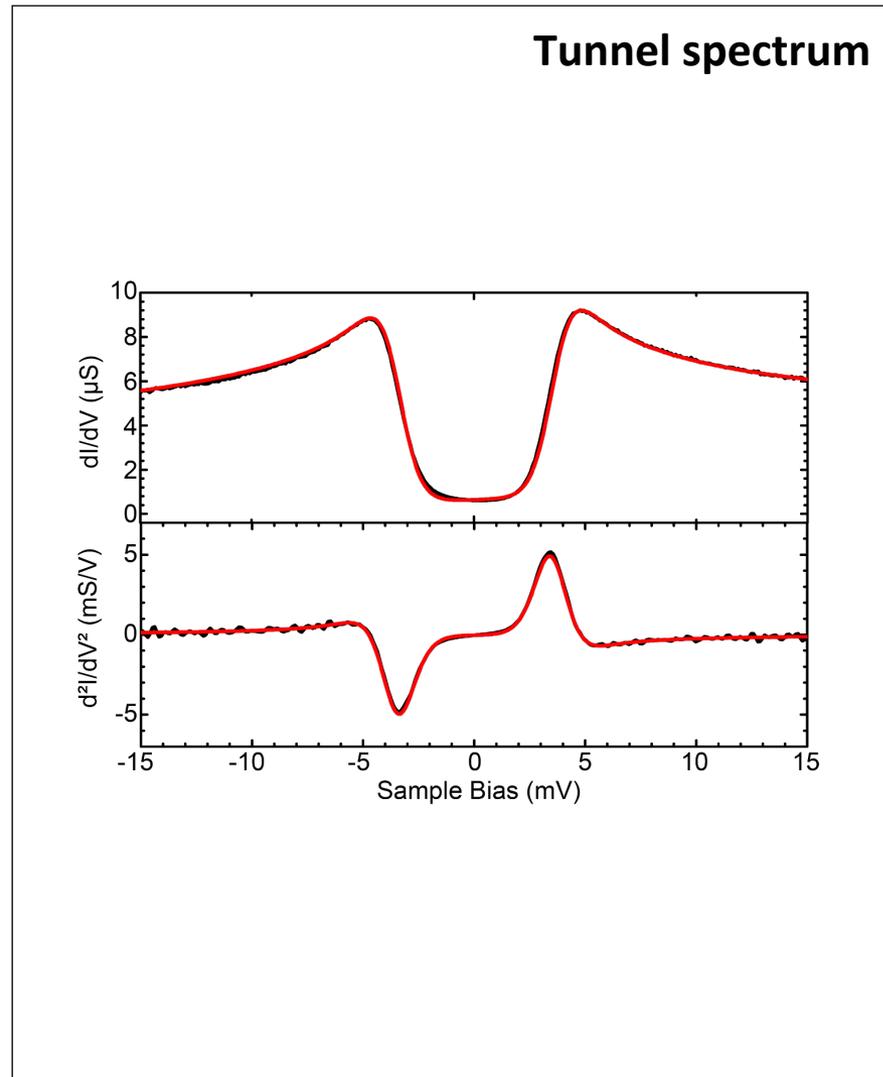
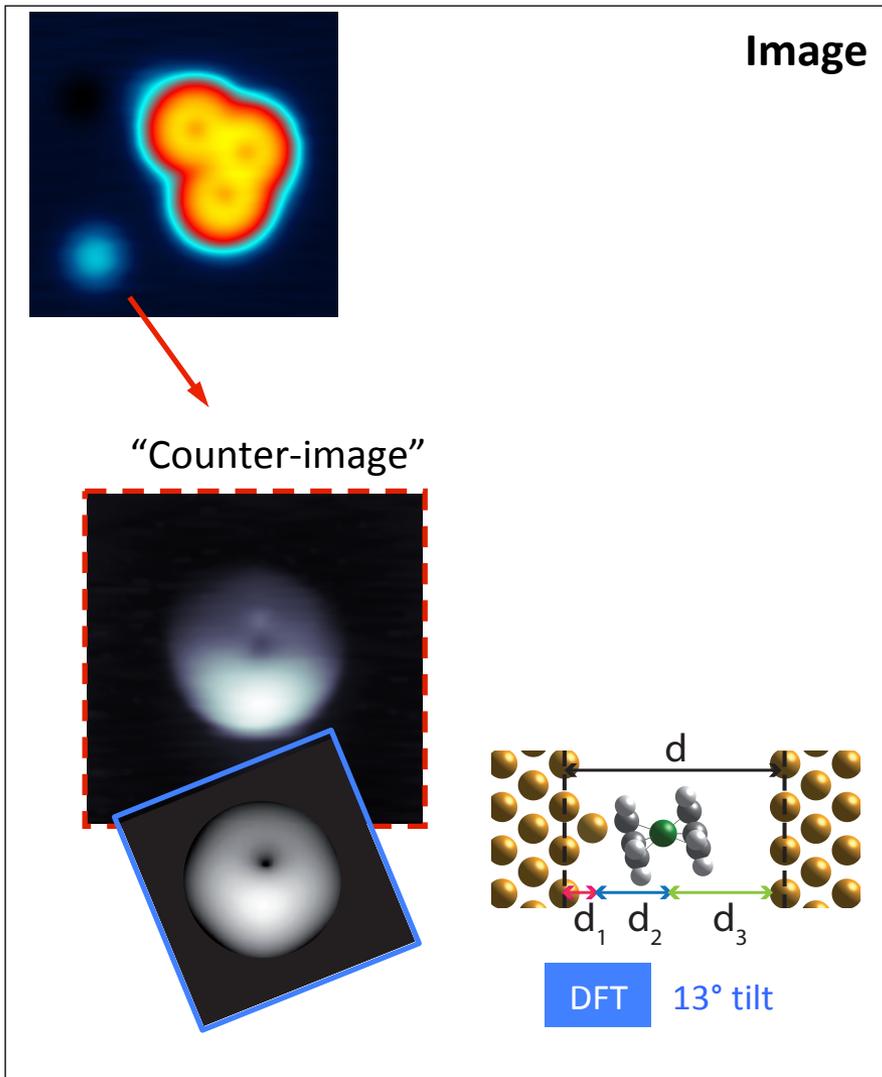
❖ **Versatile**



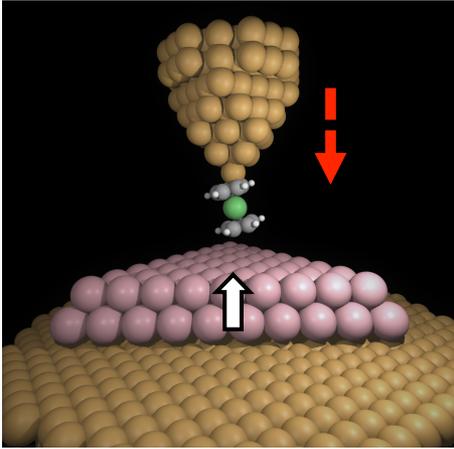
❖ **Robust**



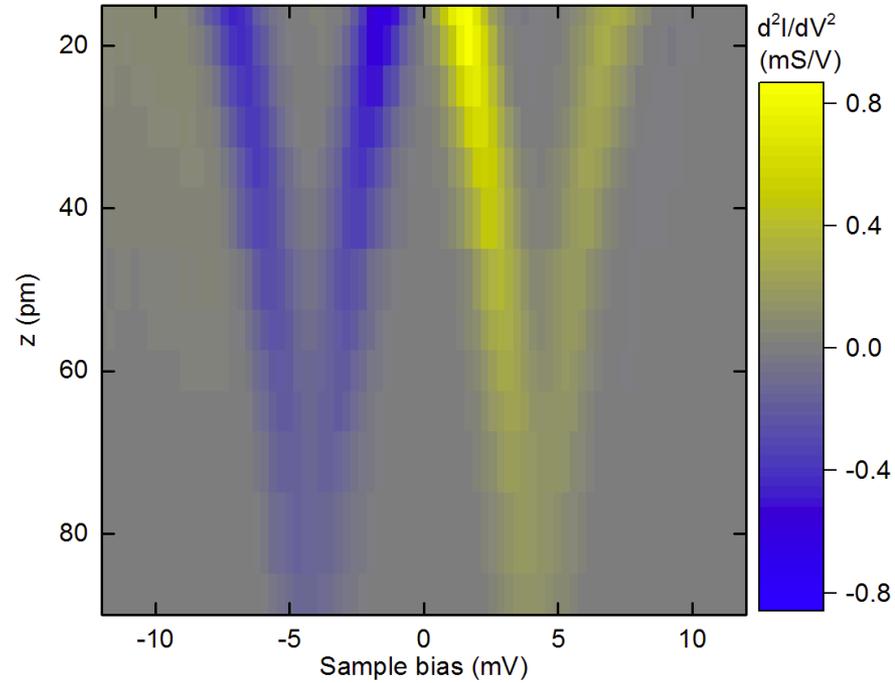
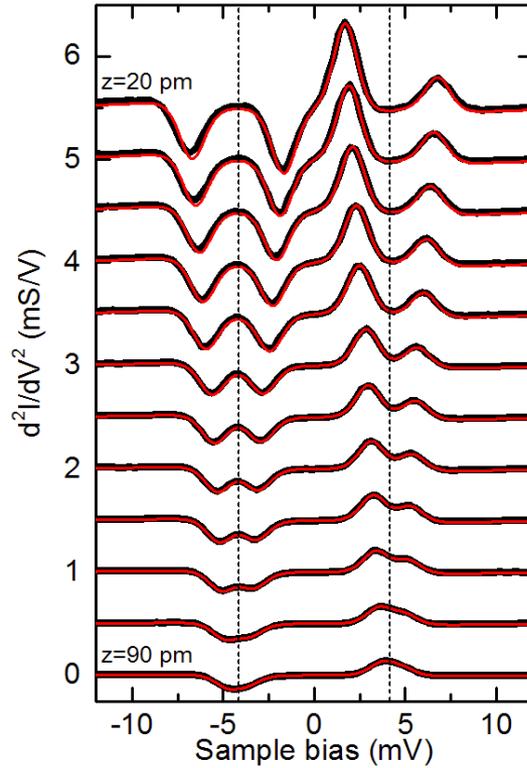
❖ Well characterized

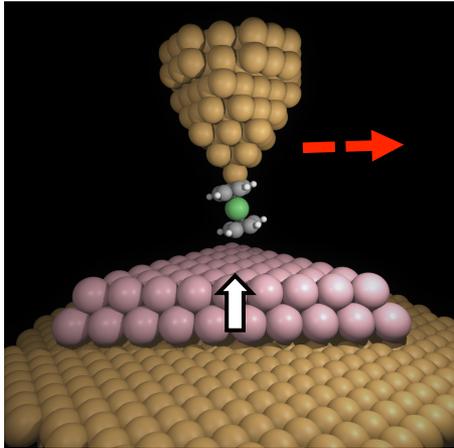


Surface spin orientation

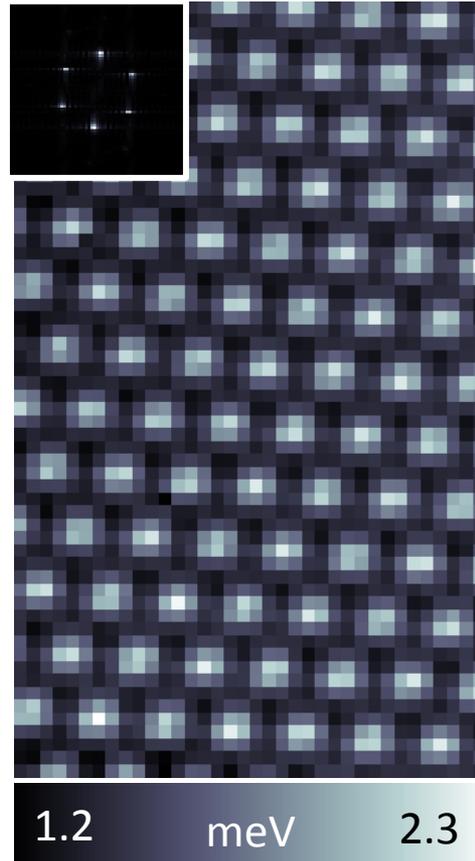


1 Å from surface

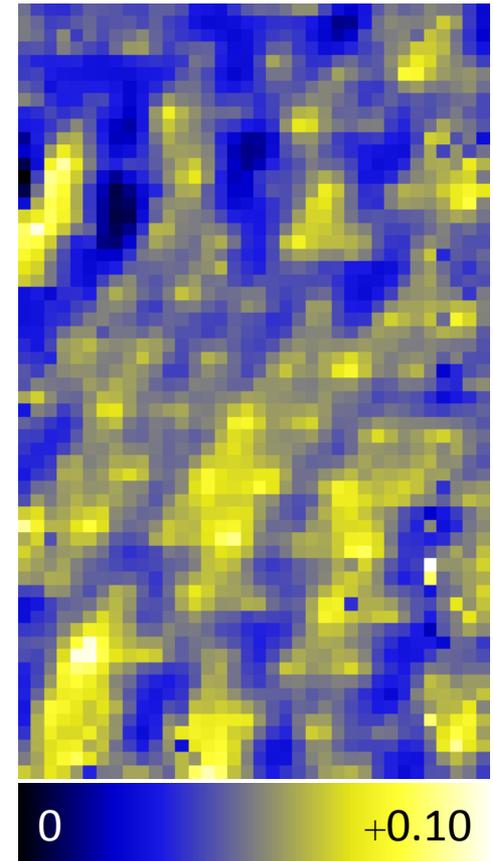




1 Å from surface



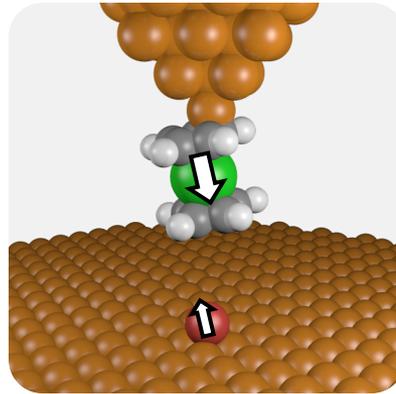
Exchange energy map



Spin polarization

Magnetic molecule

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Spin-polarized STM
Magnetoresistance

Magnetic exchange force-microscopy
~~STM-AFM~~

1990

2007

Nickelocene (Spin = 1)

