

EKSPERIMENTALNA FIZIKA KONDENZIRANE SNOVI

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Raziskovalna področja eksperimentalne fizike kondenzirane snovi

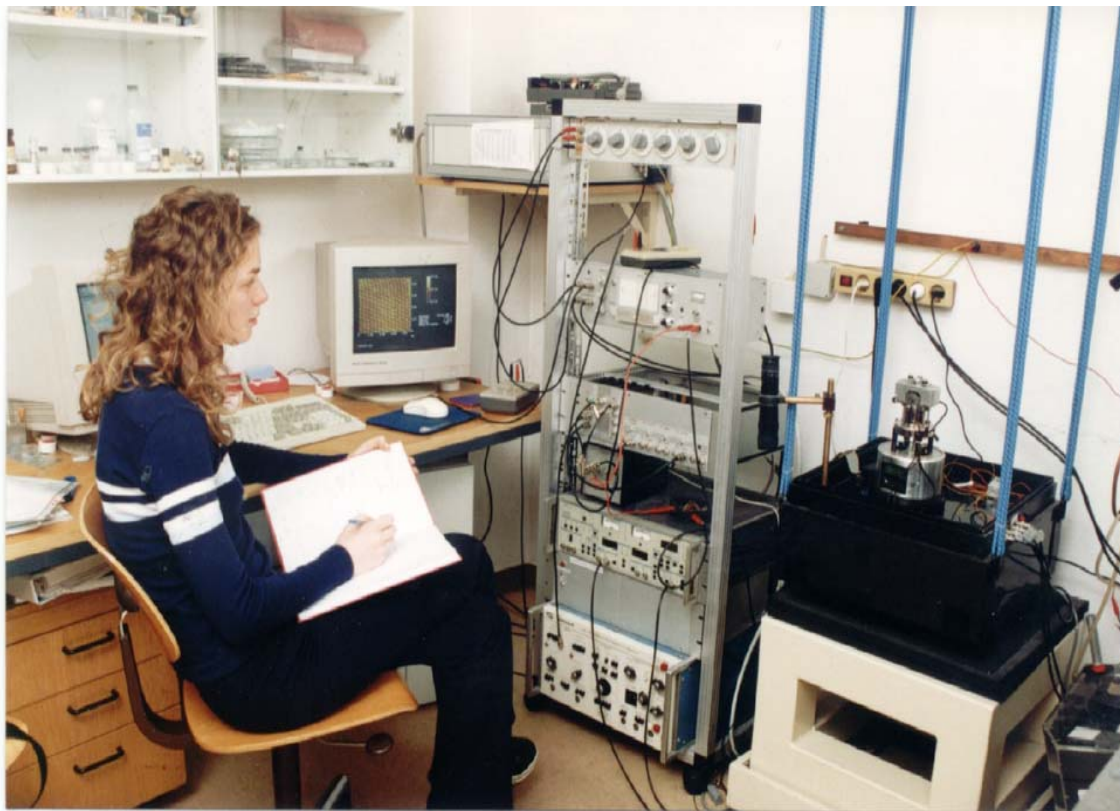
- Magnetna resonanca trdne snovi in tekočih kristalov
- Dielektrična spektroskopija in kalorimetrija
- Magnetometrija
- Svetloba in snov
- Biofizika

- Eksperimentalna fizika nanostruktur
- Kompleksna snov

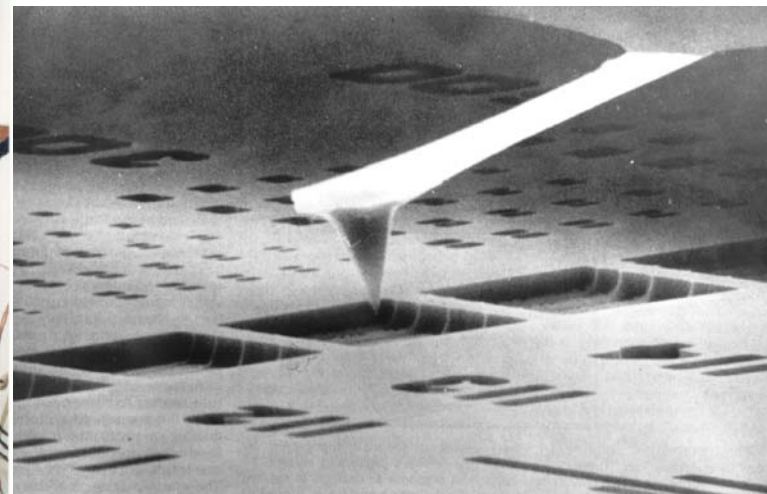
EKSPERIMENTALNA FIZIKA

NANOSTRUKTUR

- mikroskopija na atomsko silo (AFM)
- mikroskopija na tunelski tok (STM)
- nanoreaktor
- sinteza nanocevk

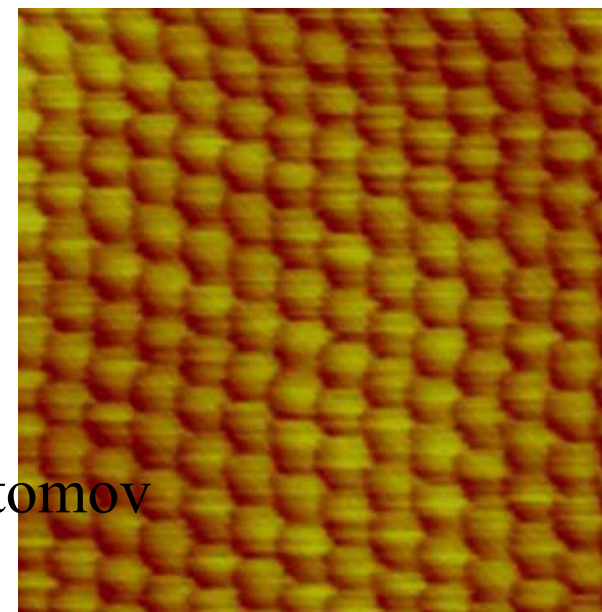


Tipalo AFM mikroskopa



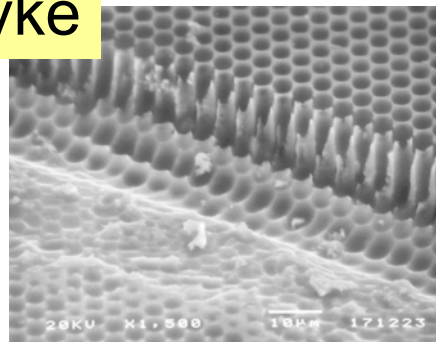
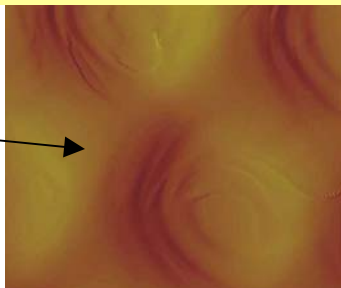
Od slike kristalov.....

.... do slike posameznih atomov



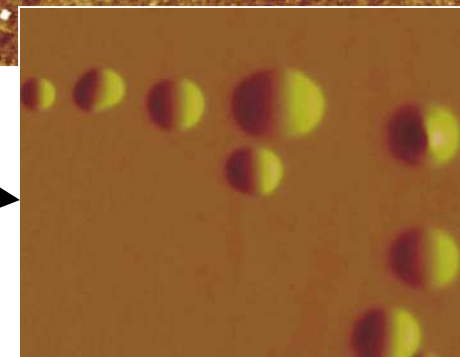
feroelektrične nanoceevke

“slika” dielektrične konstante



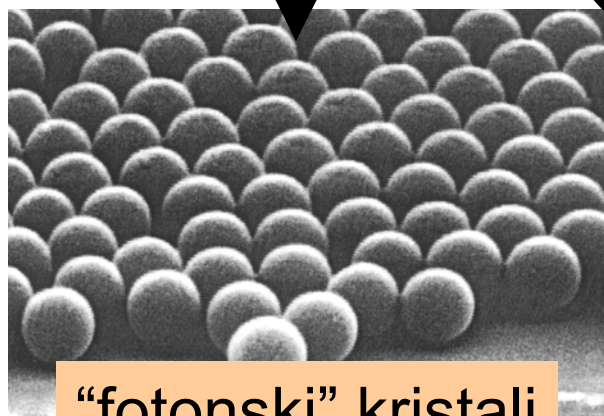
Casimirjeva fluktuacijska sila v nematiku

sile, strukture in manipulacija snovi



AFM študij omočenja

Interakcije med polimernimi površinami (Kemijski inst.)

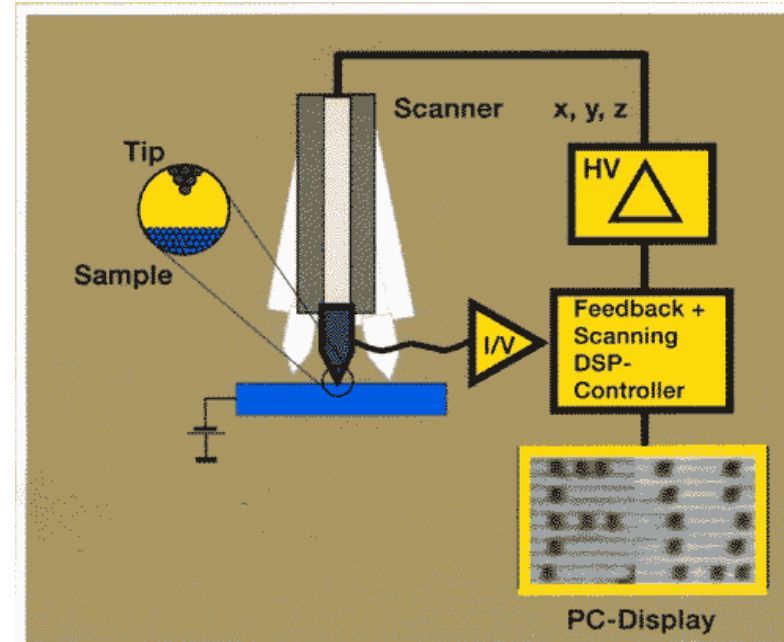
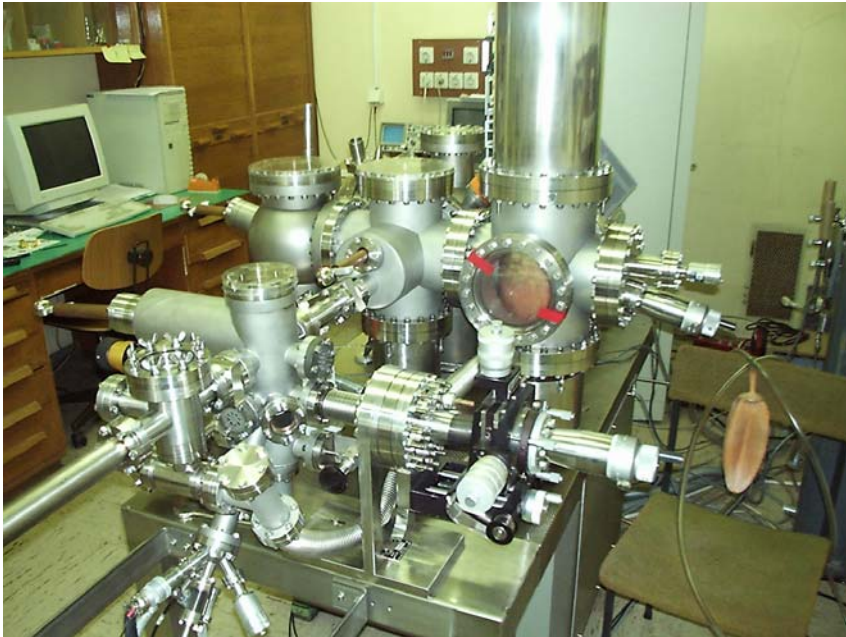


“fotonski” kristali

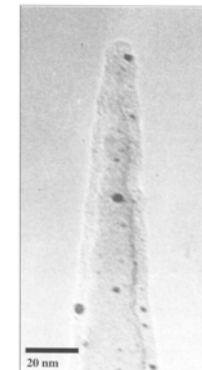


“bio” fizika (farmacija, biokemija, biologija)

STM mikroskop in nanoreaktor

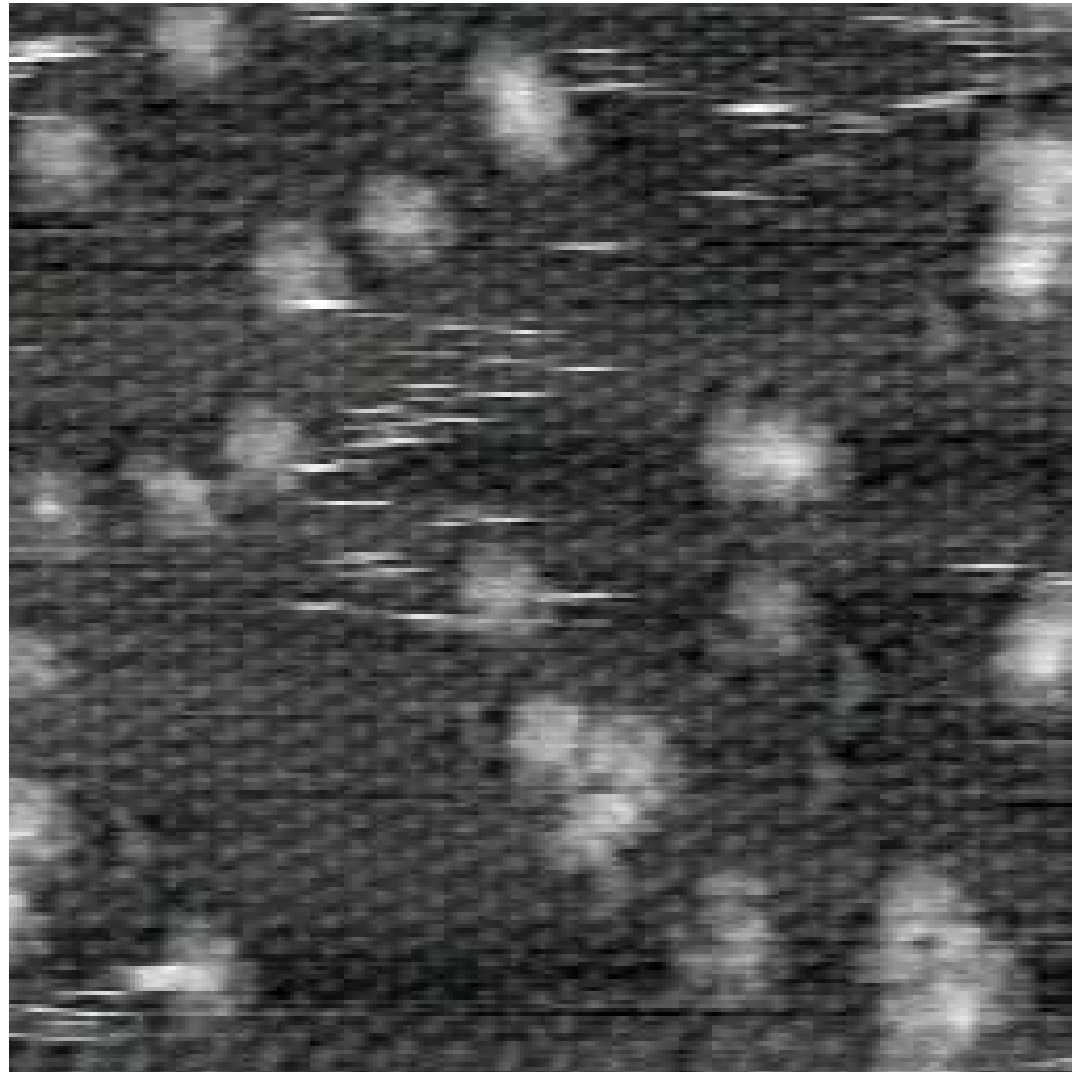


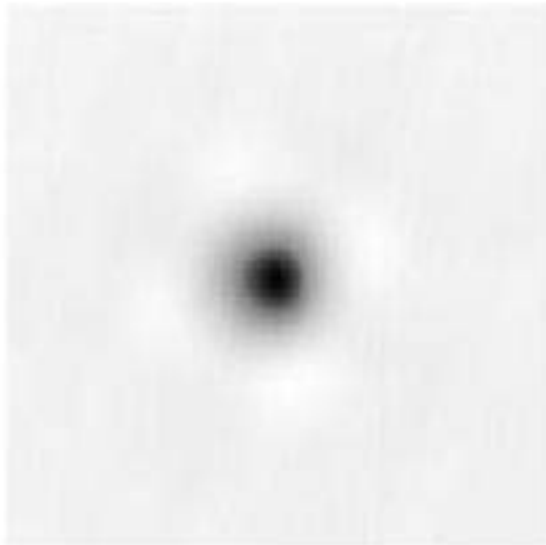
zaprt v visok vakuum in ohlajen na 10K



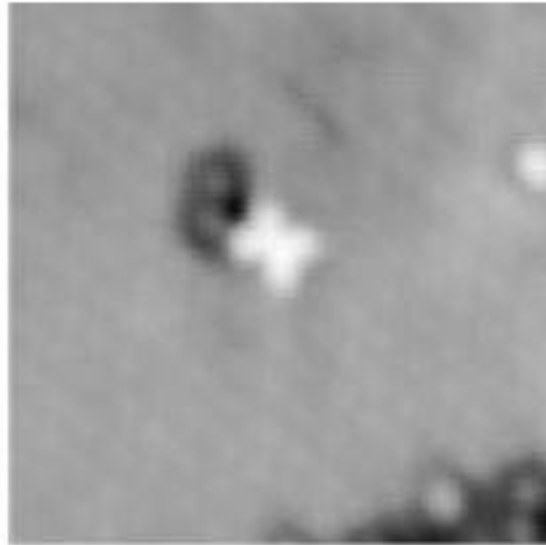
TEM of an Ultralever tip (courtesy of David Shaler, Purdue University).

Brownovo gibanje Pd atomov na površini
T=260K (M.Salmeron)

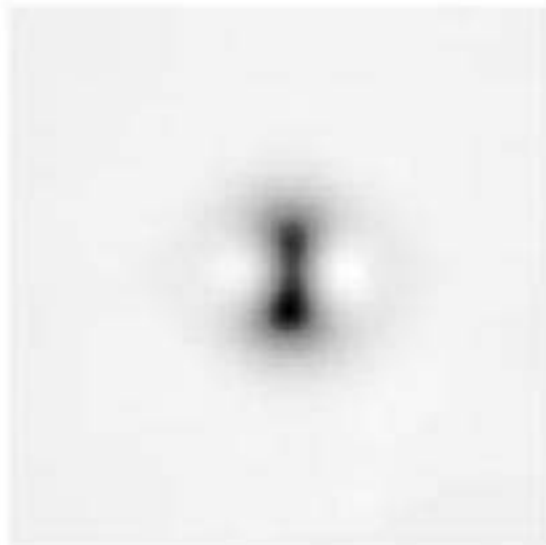




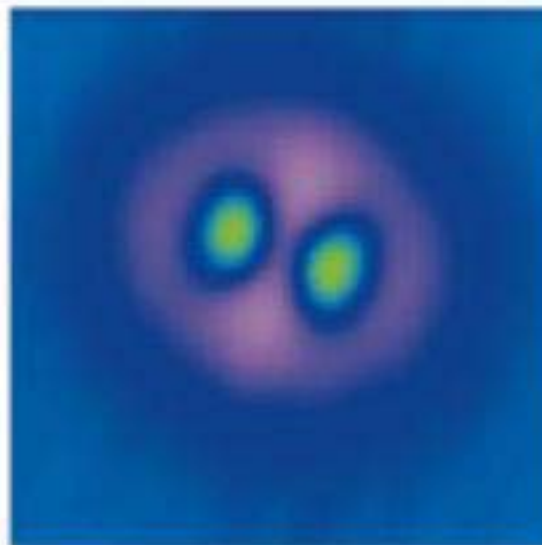
H on Cu(001)



O₂ on Pt(111)



C₂H₂ on Cu(001)



Fe(CO)₂ on Ag(110)

Nizke
temperature



Izjemna
stabilnost

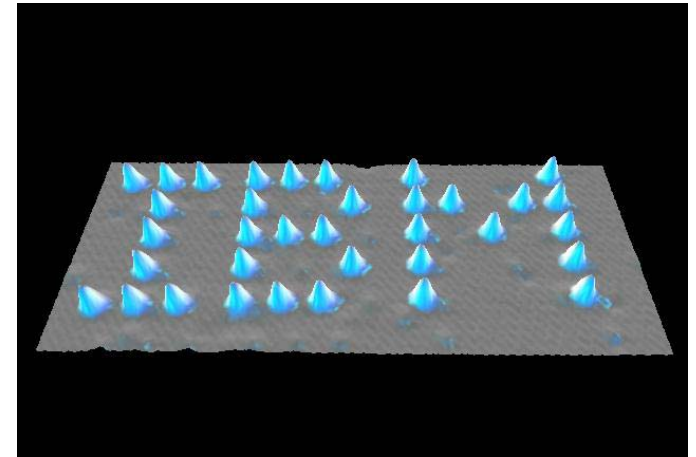
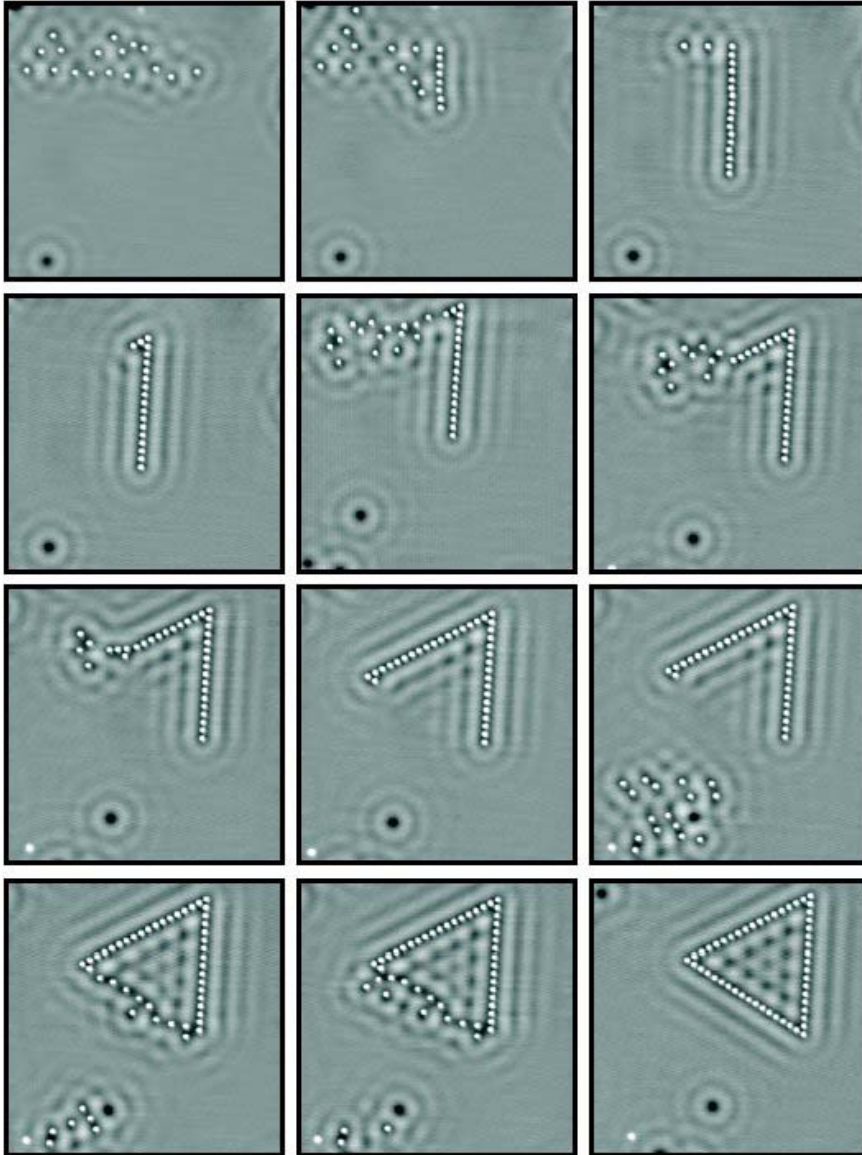


Notranja
zgradba
molekul

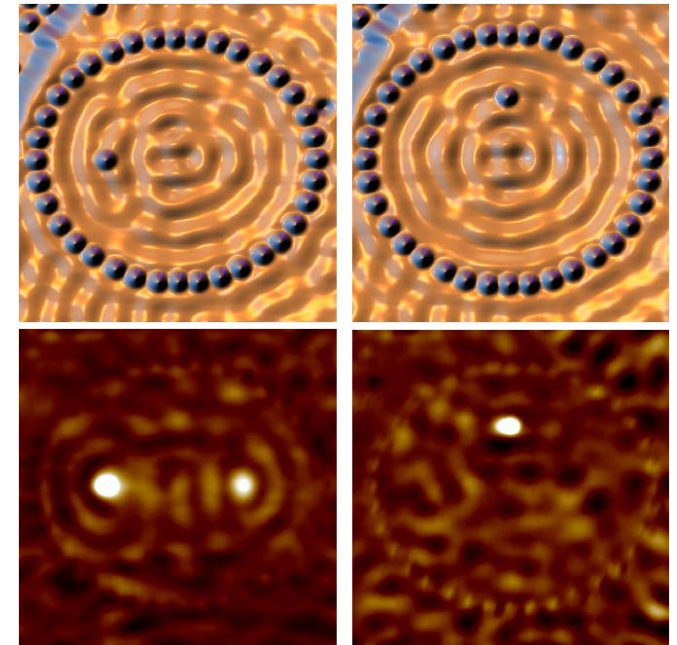
W. Ho. *J. Chem. Phys.*,
117 11033, 2002.

“nano-grafiti”

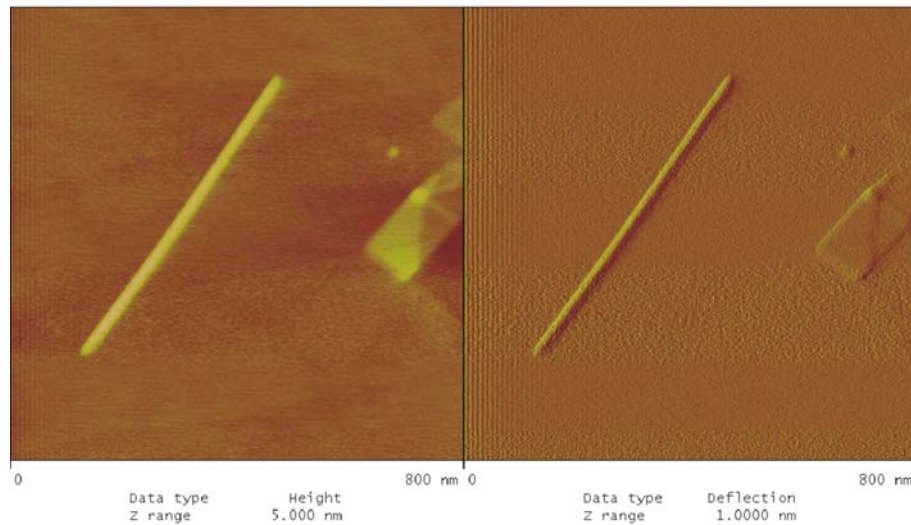
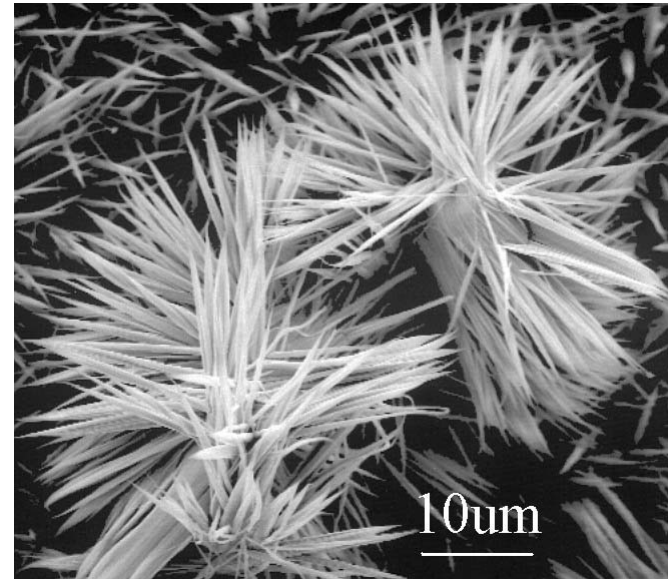
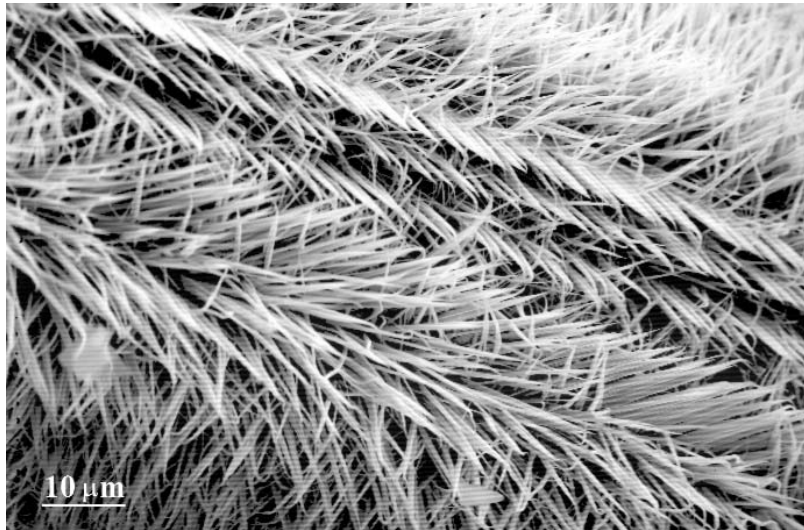
“kvantni peskovnik”



“kvantne korale”



Anorganske nanocevkke



graf2103800nm.026

- MoS₂, mikro in nanocevkke,
- “single wall” nanocevkke: debelina manjša od 1nm
- uporaba v elektronskih emitorjih

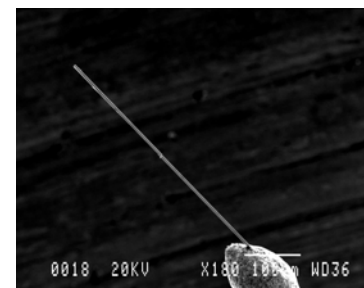
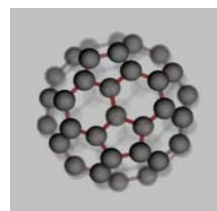
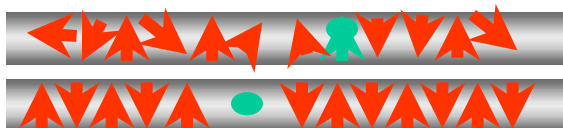
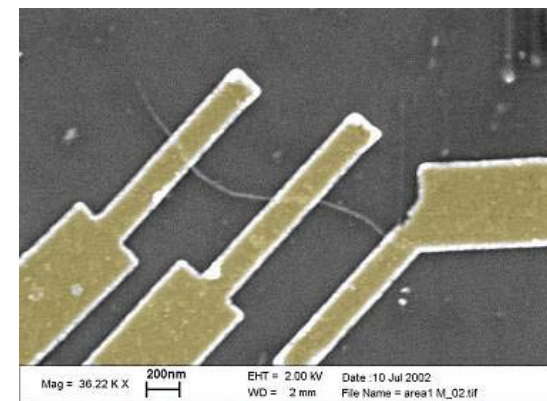
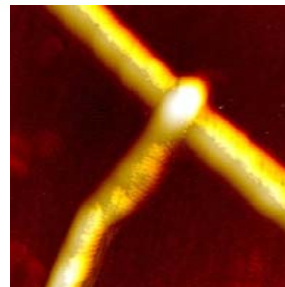


Fizika kompleksnih snovi: ...od superprevodnikov do DNK...

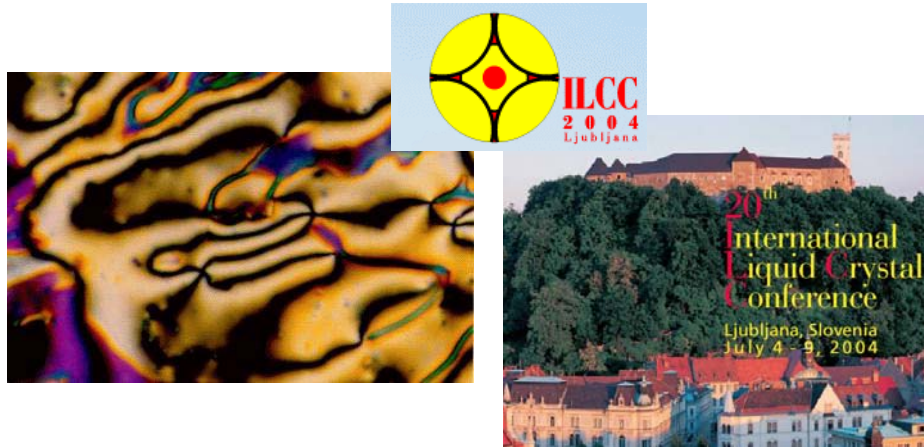
“21. Stoletje je stoletje kompleksnosti” – Stephen Hawking

Zanimivosti:

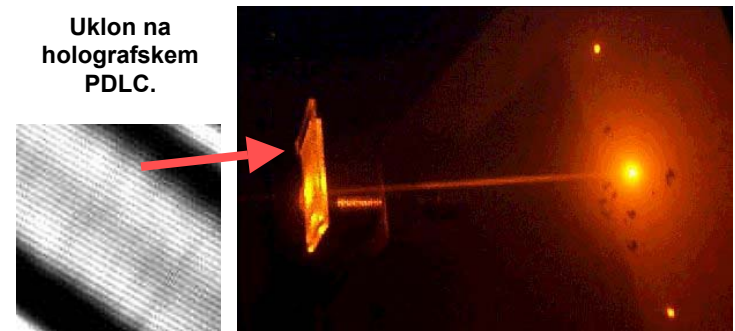
- Kvantni pojavi v različnih nanosistemih: samourejenih superprevodnikih, v nanožicah in nanocevkah do DNK in sorodnih bio-nanositemih
- Raziskave neravnovesnih pojavov v realnem času na femtosekundni skali
- Nelinearna optika, laserji v medicini
- Urejanje velemolekul, biomehanika



Interakcija svetlobe s snovjo

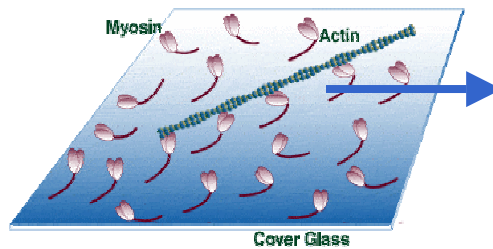


optika tekočih kristalov...



... raziskave novih materialov
za optične komunikacije ...

Molekularni motor miozin premika
vlakna aktina po površini. Film je
posnet s fluorescenčno mikroskopijo.



... dinamika molekularnih motorjev...

