Side paths along the ITRS-Road

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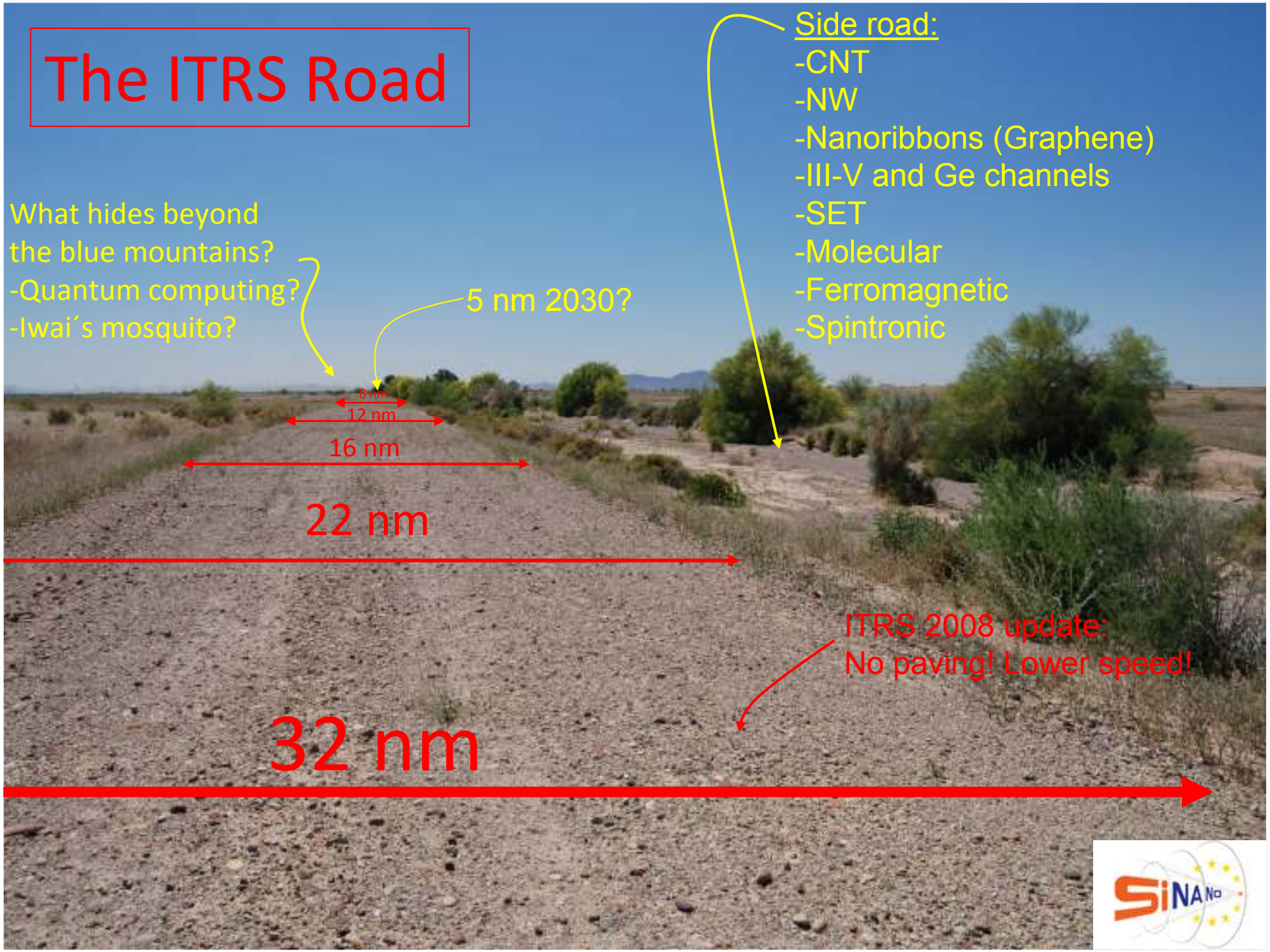
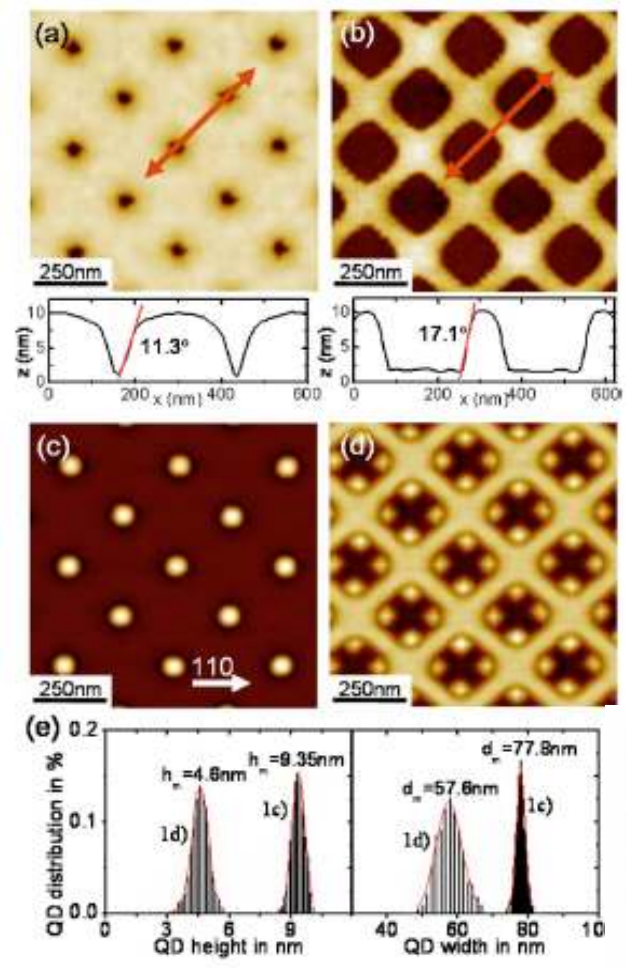
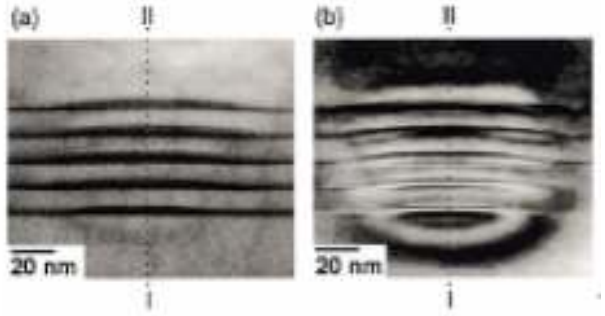

The ITRS Road
Side road:
-CNT
-NW
-Nanoribbons (Graphene)
-III-V and Ge channels
-SET
-Molecular
-Ferromagnetic
-Spintronic
What hides beyond
the blue mountains?
-Quantum computing?
-Iwai´s mosquito?
5 nm 2030?
8 nm
12 nm
16 nm
22 nm
32 nm
ITRS 2008 update:
No paving! Lower speed!

Templated self-assembled QDs



Dais et al, APL **92**, 143102 (2008)

Quantum computation
Spintronics
(Dot-FETs)

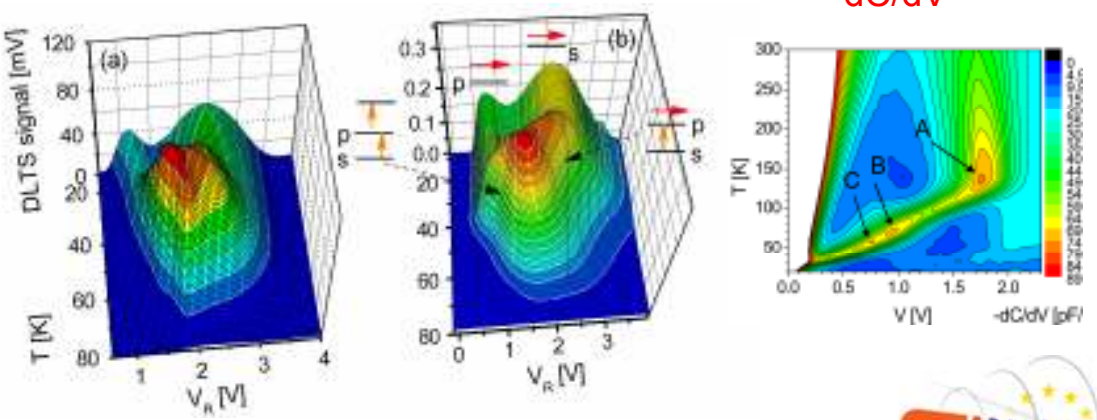


Schmidt & Eberl, IEEE TED, **48**, 1175 (2001)

Characterization

DLTS

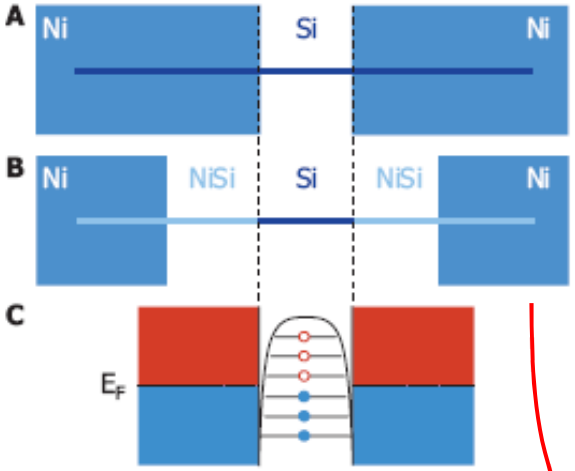
-dC/dV

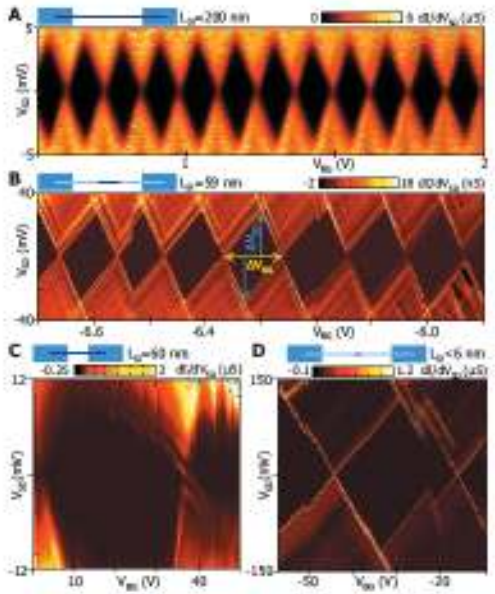


APL, **91**, 033110 (2007), APL **95**, 013104 (2009)

Silicon nanowires

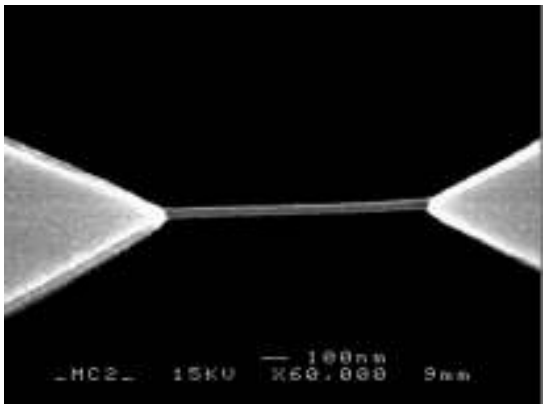
For the 5nm node?

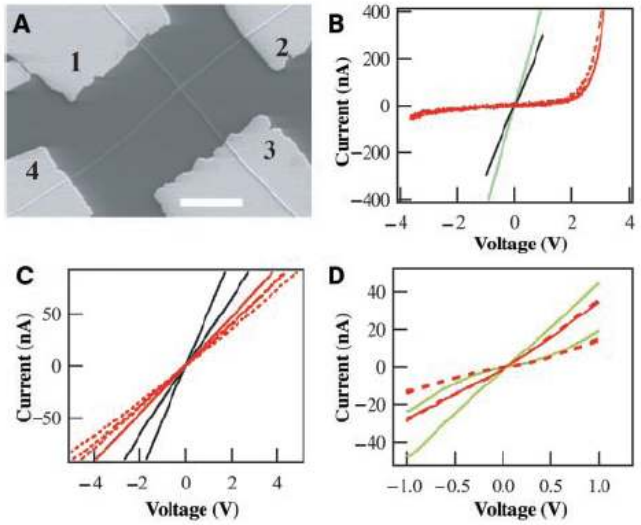




Zwanenburg et al, JAP, **105**, 124314 (2009)

Could perhaps be easier done by a top-down approach

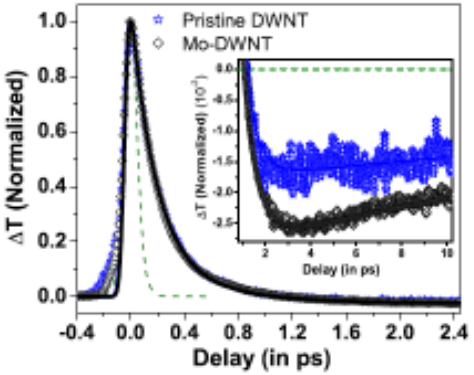




Cui & Lieber Science 291, 851 (2001

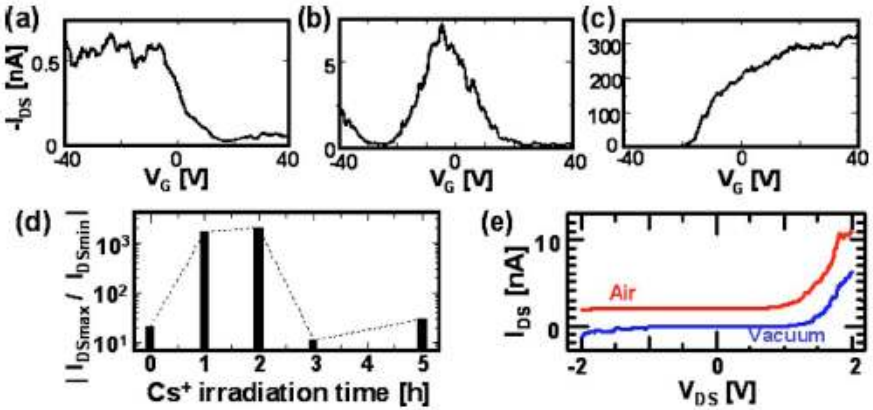
Carbon nanotubes

Optical switch



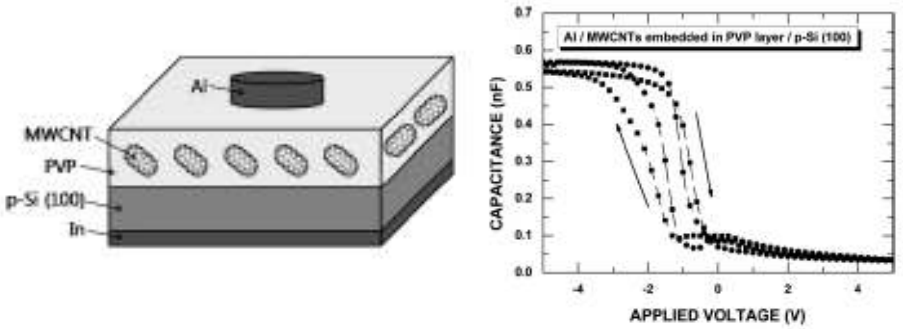
Kamaraiu et al APL **95**, 081106 (2009)

pn-junctions



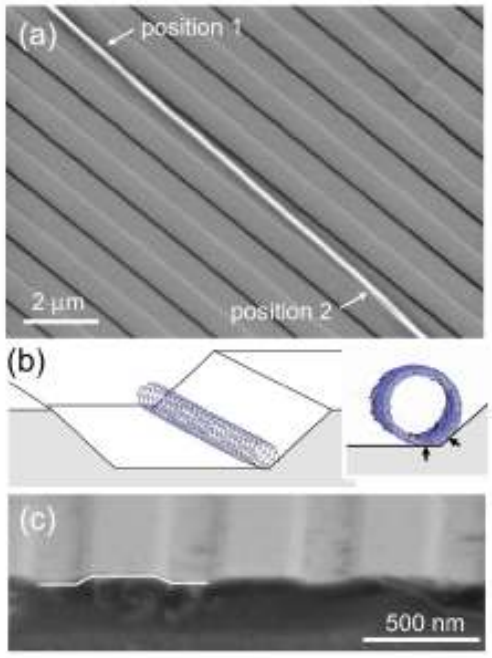
Kato et al, APL, **95**, 083109 (2009)

Non-volatile memory function



Kim et al, APL **95**, 022104 (2009)

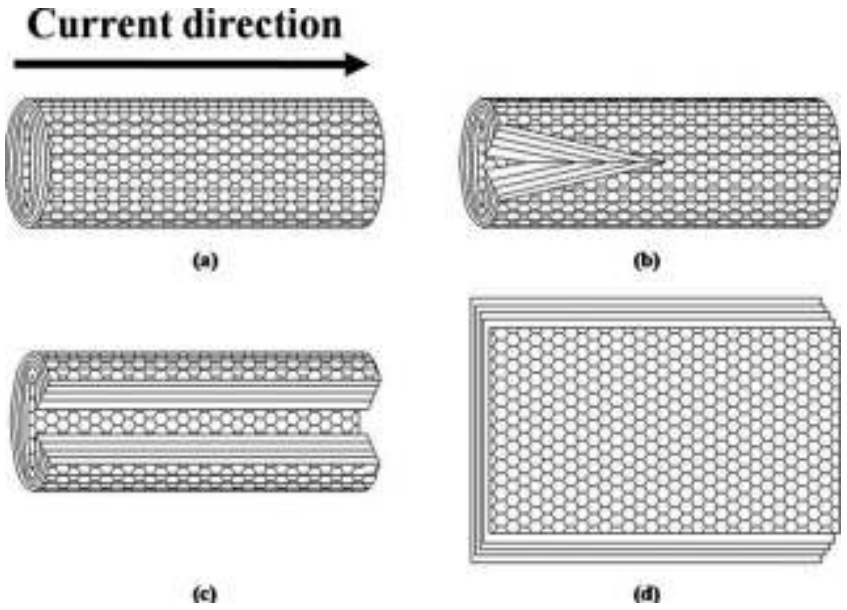
Aligning CNTs



Orofeo et al APL **94**, 053113 (2009)

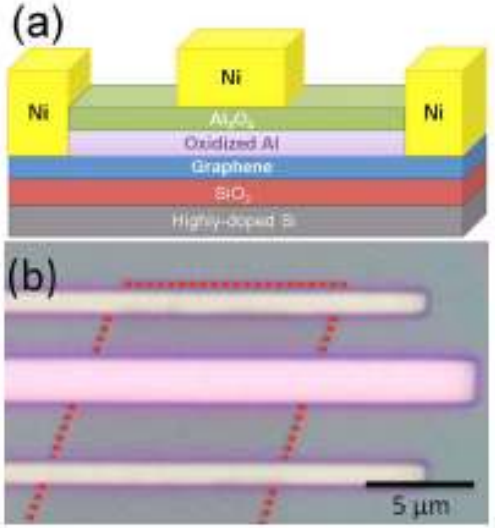
Graphene

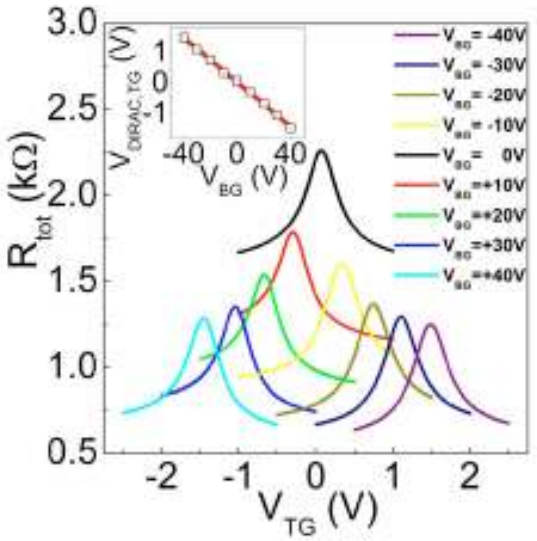
Making graphene from CNTs



Woo Sik Kim et al, APL 95, 0831013 (2009) (Seoul)

Transistors

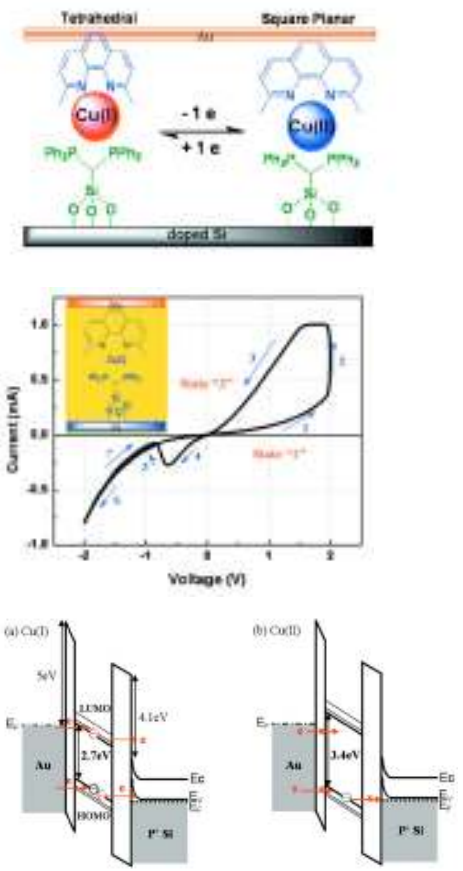




Seyoung Kim et al, APL 95, 0831013 (2009) (Univ. Austin)

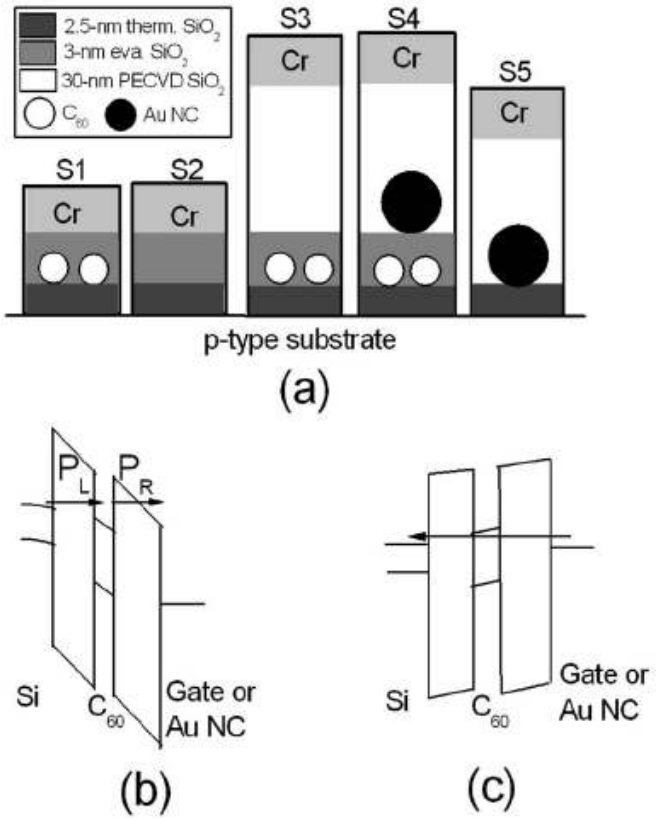
Molecular electronics

Molecular rotor device



Xue et al APL **95**, 093503 (2009)

C_{60} for non-volatile memory



Hou et al, APL **92**, 93159 (2008)