

## Scanning Tunnelling Microscope Studies of nanowires and nanoparticles

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We reported the scanning tunnelling microscope studies of nanowires and nanoparticles. The growth mechanism and electronic local density of states of a single nanowire and single nanoparticle were explored using low temperature scanning tunneling microscopy (STM) and spectroscopy (STS). Quantum confine effect and surface effect are observed in the samples [1-3]. Recently, we also observed the coexistence of Coulomb blockade and zero bias anomaly both in nanowires and nanoparticles [4-6]. Further analysis is carried out to explore the nature of these behaviors.

References (The author with \* as superscript is the corresponding author):

- [1] Y. Sun, R. Xu, J. Y. Yang, L. He\*, J. C. Nie, R. F. Dou, W. Zhou, L. Guo, *Nanotechnology* 21,335605, (2010). Selected as the cover story and research highlight of *Nanotechnology* of Issue 33.
- [2] Y. Sun, J. Y. Yang, R. Xu, L. He\*, R. F. Dou, J. C. Nie, *Appl. Phys. Lett.* 96, 262103 (2010).
- [3] R. Xu, Y. Sun, J. Y. Yang, L. He\*, J. C. Nie, L. L. Li, Y. D. Li, *Appl. Phys. Lett.* 97, 113101, (2010).
- [4] X. Hong, D. Wang, R. Yu, H. Yan, Y. Sun, L. He, Z. Niu, Q. Peng and Y. D. Li\*, *Chem. Commun.* In Press (2011)
- [5] H. Yan, R. Xu, J. C. Nie, X. Hong, Y. D. Li, and L. He\*, In prepare.
- [6] R. Xu, H. Yan, J. C. Nie, Y. D. Li, and L. He\*, In prepare.