

Large-Scale Integration of 1-D Wire-Based Devices

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Recently, various devices based on 1-dimensional wires have been drawing an attention as next-generation device architecture. However, a major stumbling block holding back their practical applications is a difficulty in high-throughput assembly of such devices. One promising nano-manufacturing method for nanowire-based devices can be "surface-programmed assembly." In this strategy, molecular patterning methods such as dip-pen nanolithography [1] are utilized to functionalize the desired solid substrate area with organic molecules, and nanostructures (e.g. nanoparticles [2], carbon nanotubes [3], proteins etc.) in the solution are specifically assembled onto the functionalized area via *self-assembly* mechanism. In this presentation, I will discuss about: 1) nanomanufacturing method of nanowire-based integrated circuits and 2) properties of fabricated devices.

References

1. S. Hong and C. A. Mirkin *Science* **288**, 1808 (2000).
2. X. Liu, L. Fu, S. Hong, V. P. Dravid, and C. A. Mirkin *Advanced Materials* **14**, 231 (2002).
3. S. Rao, L. Huang, W. Setyawan, and S. Hong, *Nature* **425**, 36-37 (2003)