

Nano-Scale Observation of Nanomaterials by In-Situ TEM and Ultrathin SiN Membrane Platform

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In-situ observations of nano-scale behavior of nanomaterials are very important to understand on the nano-scale phenomena associated with phase change, atomic movement, electrical or optical properties, and even reactions which take place in gas or liquid phases. We have developed on the in-situ experimental technologies of nano-materials (nano-cluster, nanowire, carbon nanotube, and graphene, et al.) and their interactions (percolation of metal nanoclusters, inter-diffusion, metal contacts and phase changes in nanowire devices, formation of solid nano-pores, melting behavior of isolated nano-metal in a nano-cup, et al.) by nano-discovery membrane platform [1-4]. Between two microelectrodes on a silicon nitride membrane platform, electrical percolations of metal nano-clusters are observed with nano-structures of deposited clusters. Their in-situ monitoring can make percolation devices of different conductance, nanoclusters based memory devices, and surface plasmonic enhancement devices, et al. As basic evidence on the phase change memory, phase change behaviors of nanowire devices are observed at a nano-scale.

References

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