Ultra Long Oxide Nanowires for Nanoscale Smart Devices (DMR-1006547)

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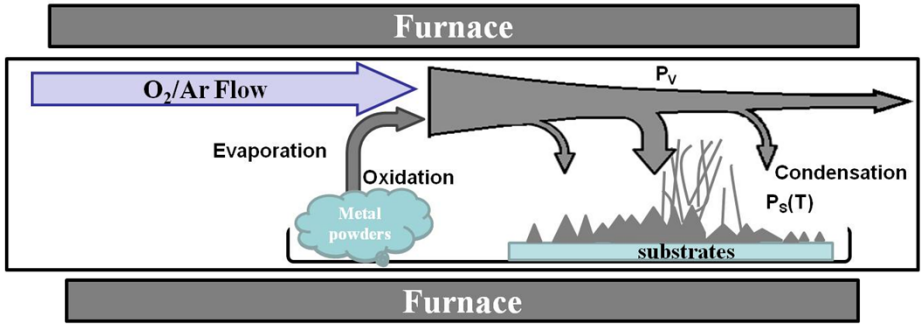
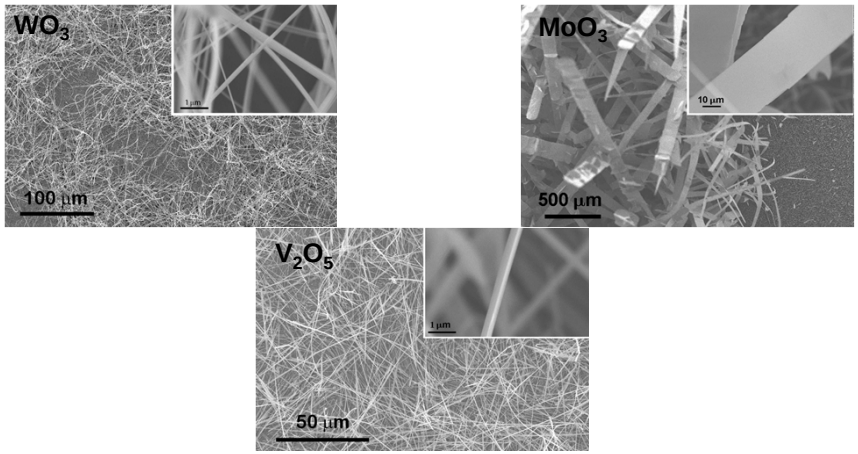
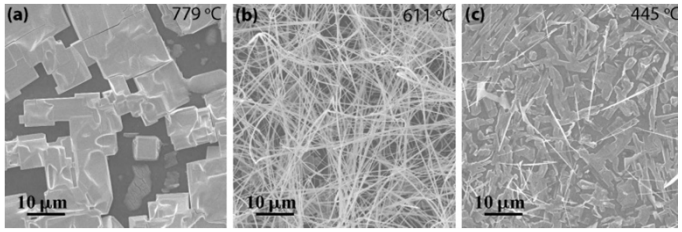
- WO_3, MoO_3, and V_2O_5,were select as inorganic smart materials for nanoscale smart devices.
- Ultra long 1D nanostructures have been synthesized with large aspect ratios about 10^3-10^4.
- The growth of nanostructures was explained using vapor-solid (VS) mechanism
- The nanostructure growth is sensitive to the vapor supersaturation ratio controlled by both the oxidation and evaporation processes.



Schematics of growth processes of oxide NWs



Various 1D nanostructures with large aspect ratios



Evolution of WO_3 NWs with substrate temperature

Effect of O_2 flow on WO_3 NWs