

**185d** Controlled Growth of 1d and Quasi-1d Nanostructures—Cnms's Capabilities in Nanomaterials Synthesis [Invited]

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The Center for Nanophase Materials Sciences (CNMS), located at Oak Ridge National Laboratory (ORNL), is a highly collaborative user research facility for the synthesis, characterization, theory/modeling/simulation, and design of nanoscale materials and structures and the understanding of nanoscale phenomena. In this talk, I will review the CNMS's capabilities in exploring new synthetic approaches and catalysts for controlled growth of various kinds of 1D and quasi-1D nanostructures with an emphasis on oxide nanostructures. Specifically, I will show our results on the growth of elemental semiconductors (Si and Ge) nanowires by using Au as a catalyst, the growth of silicon oxide nanowire assemblies by using molten gallium as a catalyst, the fast growth of superlong ZnO nanowires by using semiconductor germanium as a catalyst, the fabrication of magnetic (oxide) nanorods by solvothermal methods, the growth of transparent conducting oxides (TCOs) (ZnO, SnO<sub>2</sub>, In<sub>2</sub>O<sub>3</sub>, Ga<sub>2</sub>O<sub>3</sub>, CdO) nanobelts by thermal evaporation and condensation technique, and our new concept in fabricating “seeable and touchable” nano/micro hybrid structures such as ZnO combs and ZnO styluses. Finally I will briefly outline our future interests in 1D nanostructure synthesis.