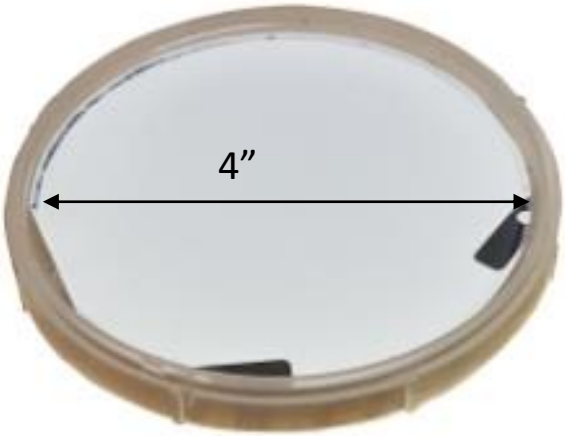
ZnMgO Nanowire Materials & Growth Tool

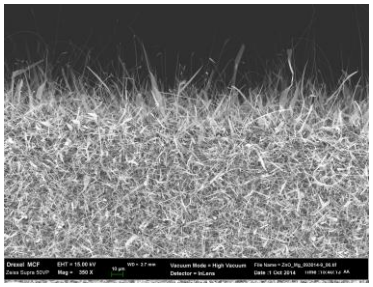
sales@StructuredMaterials.com
http://www.SMICVD.com/

Product Description: ZnMgO nanowires have many attractive features for light sensing and emitting (cathodoluminescence, electroluminescence, and photoluminescence), as well as for providing a rich flat white surface. Our new Vapor Liquid Solid - Chemical Vapor Deposition (VLS-CVD) hybrid tool features 3 main zones - growth zone, gas injection zone, and source sublimation zone, as well as trim heating regions. Our VLS-CVD 100 System, as shown below, is unique in that it has been designed with thermal and flow modeling to present a large area >100mm growth surface at a uniform growth temperature to a uniform flux of sublimed or vapor/gas precursors. The result is repeatable growth of large areas of nanowires - using VLS or a hybrid mode of VLS and CVD to grow doped and undoped nanowire alloys. SMI offers nanowire services in support of our nanowire deposition tool sales effort.

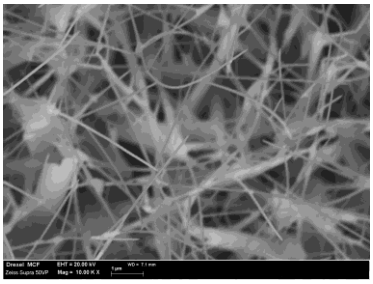
Hot zone of the patent pending prototype vertical tube furnace of the hybrid Vapor-Liquid-Solid interface - CVD nanowire growth tool in the applications laboratory at SMI.

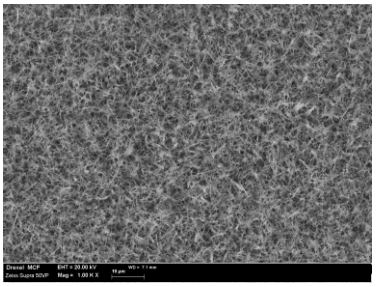


ZnMgO nanowires on 4” diameter wafer and 1” square wafers

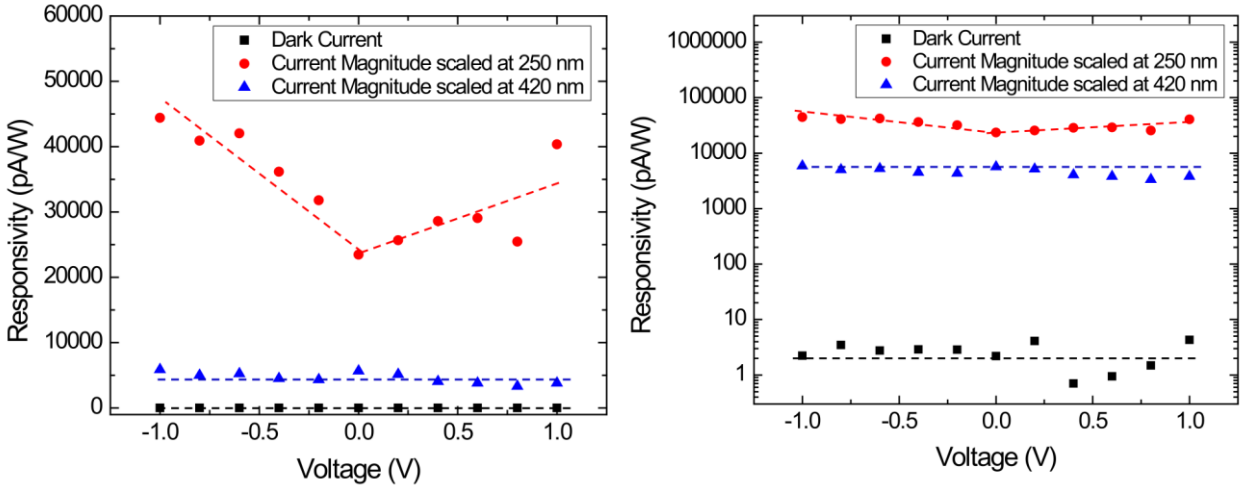


CVD ZnMgO nanowires deposited on gold seeded silicon (100) substrates





VLS ZnMgO nanowires deposited on ZnO thin film seeded silicon (100) substrates



Current vs. Voltage taken using a lock-in amplifier with a DC voltage applied and 400 Hz light modulation. 250 nm modulated light shows significantly more responsivity than 420 nm as it is above the band gap energy. Dark current was taken with the lamp shutter closed but everything else on (chopper, room lights, etc.). Responsivity units are (pA / Watt).

Specifications:

Hot Zone:	**5 or 6, clamshell optional**
Temperature:	**Through 1000°C**
Source 1 Temperature:	**Through 1000°C**
Source 2 Temperature:	**Through 1000°C**
Gases:	**Primary Ar, O_2 (NO_x, O_3 , H_2O options) dopants and others optional**
Substrate Sizes:	**5" platter standard easily scalable to 8" wafers.**
Substrate and material loading:	**Linear slide loading.**

Contact SMI for Materials and Tool Information and Pricing