NANOSENSORS ENGINEERING: I. STRUCTURALLY MODULATED SnO_2 NANOWIRES

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Abstract – The results of research aimed at the gas sensing nanowires (NWs) engineering are presented. Structurally modulated SnO_2 NWs were obtained at 900^oC in the modified vapor-solid process, allowing that NW morphology could be encoded in a programmable way along its length. PVD technique was used for Ti/Au electrical contacts deposition and gas sensitive nanoscale chemiresistors formation.

Created nanostructures were characterized for their gas sensing performance. It was established that structurally-modulated NWs possess better gas sensitive characteristics in comparison with the straight ones. Obtained results are discussed from the positions of single-crystal "necks" formation in NWs.

Index terms: Nanostructure, Tin dioxide, Nanowire, Chemoresistor, Structural modulation, Morphology