

Abstract Submitted
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High aspect ratio cell probes based on ZnO nanowires MATTHEW KNARR, Lock Haven University, MARIAN TZOLOV, Lock Haven University, Department of Physics — ZnO is a useful and versatile material being used in nanotechnology and has many potential applications as a material in nanoscale biotechnological devices. The growth of ZnO nanowires using a gold catalyst has been extensively researched. In this project we propose an alternative growth method using electrophoretically deposited gold nanoparticles as a catalyst, rather than use of the more common gold thin film catalyst, in order to grow ZnO nanowires. Colloidal Au nanoparticles approximately 25 nm in diameter are used as the catalyst source and 0.003” diameter tungsten wire as the substrate. The gold nanoparticles were deposited on the tip of the tungsten wire by electrophoresis. The ZnO nanowires were deposited by chemical vapor transport process in a three zone tube furnace. Scanning electron microscopy was used to image the nanowires and energy dispersive X-ray spectroscopy to analyze the composition of the probes. We will illustrate our approach on electrically insulating the probe so that only the very tip can probe electrically the interior of biological cells.

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