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Study of electrical conductivity and Schottky contacts in single gallium nitride nanowire by Atomic Force Microscope JENCY PRICILLA SUNDARARAJAN, QUINN MACPHERSON, BRIAN HARE, DAVID N MCILROY, Department of Physics, University of Idaho, Moscow, ID 83844 — We report the electrical conductivity of individual n-type gallium nitride (GaN) nanowires grown by the vapor-liquid-solid process. Longitudinal and transverse conductivity of bare and gold-decorated GaN nanowires were studied using conductive atomic force microscope (C-AFM) at room temperature. The devices were manufactured by photo-lithography technique in the nanotechnology cleanroom. We explored the nanodevices by scanning electron microscope (SEM) and identified the nanowires with good electrical contacts. The same nanowires were investigated under C-AFM for conductivity measurements. We observed a decrease in conductivity in terms of magnitude on gold-decorated nanowires compared to bare GaN nanowires due to the formation of depletion region. Schottky contacts employing individual n-type GaN nanowires were realized using Pt/Ir coated silicon AFM tip.

Jency Pricilla Sundararajan
Department of Physics, University of Idaho, Moscow, ID 83844

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