

Abstract Submitted
for the OSF13 Meeting of
The American Physical Society

Electron transport in Individual GaAs Nanowire ZHUTING SUN, ANDREI KOGAN, University of Cincinnati, TIM BURGESS, CHENUPATI JAGADISH, Australian National University — We report electrical transport measurements in M-S-M nanowire structures on individual GaAs nanowires approximately 50 nm in diameter contacted via lithographically patterned Al/Ti metal films at various temperatures. The I-V characteristics of the M-S-M structures are device dependent. The measurement results were compared to a phenomenological model, and an analytical procedure for decoupling the M-S(Schottky) contact from the intrinsic parameters of individual GaAs nanowires, such as mobility and carrier density is proposed. We find the wires behave like bulk material at room temperature with the doping density around 10^{18} cm^{-3} , and the mobility around $8000 \text{ cm}^2/(\text{V} * \text{s})$. The work is supported by NSF grant DMR-1206784 and DMR-0804199 and University of Cincinnati.

Zhuting Sun
University of Cincinnati

Date submitted: 13 Sep 2013

Electronic form version 1.4