

Observation of Space-Charge-Limited Transport in InAs Nanowires

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Recent theory and experiment have suggested that space-charge-limited transport should be prevalent in high aspect-ratio semiconducting nanowires. We report on InAs nanowires exhibiting this mode of transport and utilize the underlying theory to determine the mobility and effective carrier concentration of individual nanowires, both of which are found to be diameter-dependent. Intentionally induced failure by Joule heating supports the notion of space-charge limited transport and proposes reduced thermal conductivity due to the nanowires polymorphism.