

Abstract Submitted
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A study on tapered graphene nanoribbons with controlled angle: Fabrication and conductivity studies¹ SREEPRASAD THERUVAKKATTIL SREENIVASAN, BALABALAJI PADAVALA, PHONG NGUYEN, VIKAS BERRY, Kansas State University — Graphene, the newest member in the nanocarbon family, is a perfect single atom thick 2D sheet made up of carbon with exceptional electrical and mechanical properties. It is well-known that the band-gap of graphene nanoribbons (GNRs) can be controlled via their width. Here we demonstrate that GNRs with tapered morphology have semiconducting-to-metallic continuum along its length, and thus exhibit unique electrical properties. The device is fabricated from a single layer graphene grown on a Cu foil *via* the standard CVD process. Here, the graphene is transferred on a silica substrate and electron beam lithography etching is performed to produce a tapered graphene GNR device, followed by with Pd-Au electrode-deposition. We demonstrate the unique carrier transport properties, electrical rectification and carrier modulation in these novel devices.

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