Abstract Submitted
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Fabrication and Characterization of Graphene Nano-Mechanical Oscillators SHONALI DHINGRA, BRIAN D'URSO, University of Pittsburgh — Copper foil is the most commonly used substrate for chemical vapor deposition (CVD) growth of graphene, despite the impact of its surface roughness and polycrystalline structure on the resulting graphene. We instead grow graphene grown on large-domain thick ultra-flat copper discs, using LPCVD and APCVD. Compared to copper foil, graphene grown on these thick ultra-flat copper substrates by APCVD results in 50 times smoother graphene on copper. The grown graphene is transferred from copper using Poly (methyl methacrylate) (PMMA), and is patterned into nano-mechanical oscillators (NMO) of different geometrical shapes, using deep-UV lithography of PMMA. A study of the phase noise in the resonant frequency of the NMO, exhibits the characteristic '1/f' noise, which seems to depend on the number of layers of graphene.

Shonali Dhingra
University of Pittsburgh

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