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Effect of strain on the electronic transport properties of mono- and bilayer graphene FEN GUAN, XU DU, Stony Brook University - SUNY — It has been theoretically proposed that strain can have a significant impact on the electronic and charge transport properties of mono- and bilayer graphene. Experimental study of such "strain engineering" in field effect devices has been limited, mainly due to the challenge in creating an effective tuning knob of strain. Here we report the fabrication and characterization of suspended graphene field effect transistor (FET) on a Polyimide substrate, where uniaxial strain is applied by bending the substrate. Magnetotransport measurement of both mono- and bilayer graphene FETs are carried out with variable strain, from compressive to tensile, over wide range of temperature (4.2-300K). The impact of the strain on the conductivity of graphene will be discussed and compared to the theoretical predictions on strain-induced gauge field and flexural phonon scatterings.

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