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Graphene growth using Pulsed Laser Deposition GAUTAM HEMANI, MANUEL QUEVEDO-LOPEZ, MASSIMO V. FISCHETTI, University of Texas at Dallas — To obtain improved electrical performance in graphene, an unconventional growth process using pulsed laser deposition (PLD) where graphene is grown directly on a silicon substrate is proposed. Using PLD, graphene was grown directly on device quality wafer using nickel metal and then characterized with Raman spectroscopy. Also, the Electron Backscatter Diffraction technique was used to characterize the grain structure of the Nickel after deposition in order to understand how the high temperatures affected the graphene growth process. Attempts have also been made to integrate this unconventional growth with standard semiconductor device fabrication in order to explore transfer free graphene based devices. Raman spectroscopy revealed that we have well defined spectra indicating from monolayer to few layer graphene, with minimum defects.

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