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Effect of defects produced by electron irradiation on the electrical properties of graphene ADRIAN BALAN, JULIO ALEJANDRO RODRIGUEZ-MANZO, MATTHEW PUSTER, MARIJA DRNDIC, Univ of Pennsylvania — We present a study of the effects of the defects produced by electron irradiation on the electrical and crystalline properties of graphene. We realized back or side gated electrical devices from monolayer graphene crystals suspended on a 50nm SiNx. The devices are exposed to electron irradiation inside a 200kV transmission electron microscope (TEM) and we perform in situ conductance measurements. The number of defects and the quality of the crystalline network obtained by diffraction are correlated with the observed decrease in mobility and conductivity of the devices. We observe a different behavior between type of monolayer materials, and try to associate with different conduction with defect models. [1] Towards sensitive graphene nanoribbon-nanopore devices by preventing electron beam induced damage. M. Puster, J. A. Rodriguez- Manzo, A. Balan, M. Drndic. ACS Nano,10.1021/nn405112m.

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