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Electrical Transport Properties of Graphene Oxide Transistor Using Step-by-Step Reduction SEUNG JAE BAEK, MIN PARK, Seoul National University, BYUNG HOON KIM, YONGSEOK JUN, Ulsan National Institute of Science and Technology(UNIST), YUNG WOO PARK, Seoul National University — Step by step reduced graphene oxide(GO) thin film transistors were electrically characterized as a temperature and gate voltage. The GO transistors were prepared by thermally reduced using step by step method in same samples. The reduction temperature were subtracted from the inflection point of thermogravimetric analysis(TGA) plot and their points are 88, 158, 185, 215, 250, 300 degree Celsius. All GO condition at various reduction temperatures were defined using Raman spectroscopy and atomic force microscopy(AFM). Temperature dependence electrical measurements were carried out using two terminal technique and various temperatures up to unmeasurable condition. Our charge transport behaviors well fitted to 2 dimensional variable-range hopping(2D VRH) mechanism and fluctuation induced tunneling(FIT) model. Also the conductivity level of each step was increased more than 10^4 times.

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