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The electrical characteristics of thin film transistors with graphene oxide and organic insulators

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Abstract

We have studied the electrical characteristics of nanographene oxide (n-GO) thin film transistor and n-GO organic thin film transistors with poly(methyl methacrylate) (PMMA) and poly-4-vinylphenol (PVP) as organic insulators. One of the alternate methods to prepare GO is achieved by oxidizing graphite via modified Hummers method. In this study, the GO was synthesized by a modified Hummers method. The graphene oxide thin films with PMMA and PVP were prepared by spin coating the precursor solution on a GO/SiO₂ dielectrics bilayer. The graphene oxide thin film transistor was found to exhibit a high mobility of 0.375 cm²/V.s. This indicates that n-GO film has a more important effect to fabricate a high mobility n-GO thin film transistor than n-GO based thin film transistor with PMMA and PVP. (C) 2014 Elsevier B.V. All rights reserved.

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