

## The Fabrication of Graphene Oxide and Cellulose Nanofibers Composite and Their Oxygen Barrier Properties

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Gas barrier film is one of the most important part in not only packaging system but also electronic assemblies because oxygen and/or moisture could change mechanical, electronic, and thermal properties of device. We suggest the method to fabricate oxygen barrier film with graphene oxide (GO) and cellulose nanofibers (CNFs) composite with ease. Graphene oxide (GO) has been used as a filler in polymer matrix due to its high aspect ratios and mechanical strength to fabricate super gas barrier films.

The addition of CNFs does not disturb GOs on gas barrier ability from oxygen transmittance rate (OTR) data. Also, it seems that CNFs do not affect stacked structure of GOs. However, supplement of CNFs increased adhesion property of GO to PET film and made GO/CNFs coating stable after film folded. XRD pattern and Raman spectra indicated the effect of CNFs on GO structure. Also, SEM images showed that GO surface incorporated CNFs changed its wrinkle structure. We expect this thin film can be used for oxygen barrier film of electronic devices.