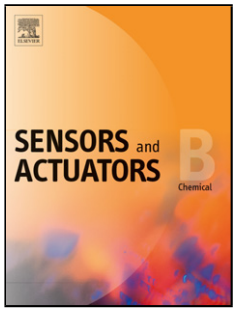

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Free-standing Dried Foam Films of Graphene Oxide for Humidity Sensing

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Abstract: Transparent free-standing films of graphene oxide (GO) have been prepared by a dried foam method using different oxygen-containing GO sheets as feedstocks. Then a humidity sensor was fabricated using the films as transparent and flexible sensing materials. The impedances of the films were measured at different relative humidity, and the results revealed that the relationship between impedance and relative humidity depends on both the oxygen content and the thickness of the GO films, and a linear relationship corresponds to an ultrathin film (in thickness of about 100 nm) while a non-linear relationship for thick films. In addition, the thin film can also show a dynamic switch behavior for humidity sensing. The transparent free-standing GO film has potential application working as an optical window combing the humidity sensing property.