

Accepted Manuscript

Full Length Article

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PII: S0169-4332(18)31399-0
DOI: <https://doi.org/10.1016/j.apsusc.2018.05.098>
Reference: APSUSC 39374

To appear in: *Applied Surface Science*

Received Date: 7 February 2018
Revised Date: 18 April 2018
Accepted Date: 15 May 2018

Please cite this article as: F. Du, J. Huang, H. Duan, C. Xiong, J. Wang, Wetting transparency of supported graphene is regulated by polarities of liquids and substrates, *Applied Surface Science* (2018), doi: <https://doi.org/10.1016/j.apsusc.2018.05.098>

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Wetting transparency of supported graphene is regulated by polarities of liquids and substrates

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Highlights

1. The wettability of graphene with airborne hydrocarbon adsorption that is supported on different substrates is studied by liquid contact angle.
2. The wetting transparency of the supported graphene is regulated by polarities of liquids and substrates.
3. The apparent transmitted polar energy of a substrate by monolayer graphene with airborne hydrocarbon adsorption is about 20%.

Abstract

Graphene has to be supported on a substrate in a variety of applications. The underlying substrate can exert a remarkable impact on the wettability of graphene, but the inherent mechanism remains elusive. By quantifying the static contact angles of water (polar liquid) and diiodomethane (nonpolar liquid) droplets on graphene supported on different kinds of substrate, we found that the apparent wetting transparency of the supported graphene with airborne hydrocarbon adsorption depends essentially on polarities of both the liquids and the underlying substrates, and

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