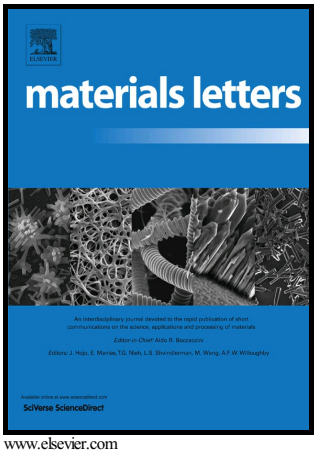

Highly **transparent superhydrophilic graphene oxide coating for antifogging**

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Highly transparent superhydrophilic graphene oxide coating for antifogging

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Abstract

The superhydrophilic property of the surface allows water to spread completely across the surface rather than remain as droplets, thus making the surface antifogging. In this work, graphene oxide was prepared by the modified Hummers method, and the superhydrophilic and highly transparent functional graphene oxide coating had been fabricated on the glass substrate through a spin coating process. The as-prepared coated glass had a static water contact angle of 3.7° and a relatively high transmittance reaching about 76% throughout the visible region. For comparison, we studied the antifogging properties of the graphene oxide coated glass and the bare glass surfaces. The result shows these glass exhibits absolutely different fogging characteristics, and the graphene oxide coated glass has the superior antifogging property.

Keywords: Graphene oxide, Functional, Superhydrophilic, Transparent, Antifogging, Surfaces

1. Introduction

The wettability of solid surface is an attractive topic due to its importance in fundamental research and practical applications [1]. Water vapor can condense on solid surface at a certain temperature or humidity, and water will form little droplets on a solid surface if the surface is poor hydrophilic or hydrophobic. Therefore the light would be refracted and scattered by water droplets so that the transparent materials turn hazy, which causes fogging problem [2]. Endowing the solid surface with excellent wetting characteristic such as superhydrophilicity is a very efficient way to solve the above-mentioned problem [3]. Nowadays, superhydrophilic surface, a special wettability with a water contact angle of less than 5°, has received great attention as antifogging coating [4]. Numerous materials, for example, metal oxide (TiO_2, ZnO, SnO_2 and WO_3) and graphene had been developed for preparing superhydrophilic surface [5-9].

Following the studies on graphene, graphene oxide (GO) has been widely investigated