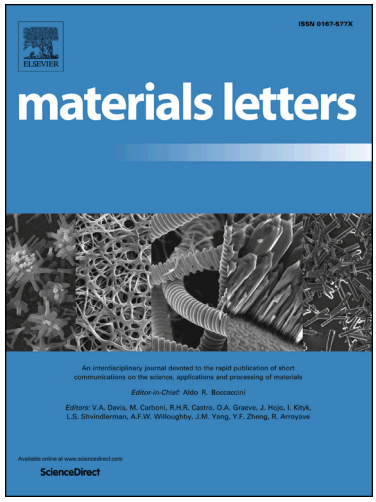

Double-glow plasma fabrication of graphene-oxide film and its UV photo-induced surface behavior

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Double-glow plasma fabrication of graphene-oxide film and its UV photo-induced surface behavior

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Abstract

We demonstrated a new method by preparing a large-area graphene-oxide (GO) film on the quartz plates using the double glow plasma surface alloying technology (DGPSA). The relationship between UV photo-induced wettability and tribological performance was investigated. The results indicated that GO film exhibited the special hydrophilic-hydrophobic conversion under the ultraviolet irradiation. The wettability of GO film increased from 32° to 75° after 5 min of irradiation, indicating a photo-induced hydrophobic surface. In view that UV irradiation induced the hydrophobicility of graphene, the friction coefficient of the obtained GO film after UV irradiation is lower than that before UV irradiation and their wear-proof properties are also improved. This work aims to confirm that the GO film prepared by DGPSA can display the obvious surface hydration behaviors and the tribological properties under the UV irradiation.

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