

Generation of hydrophobicity on the surfaces of nano and other materials using atmospheric plasmas

Jeong-Won Kim, Soon-Gook Cho, Kwang-Cheol Ko, Hyun-Jong Woo, and Kyu-Sun Chung

Department of Electrical Engineering, Hanyang University, Seoul, Korea

Using plasmas, hydrophobic surfaces are made on various substances such as polyimide films, filter paper, cotton clothes and multi-walled carbon nanotube (MWCNT) with hexamethyldisiloxane (HMDSO), trimethylchlorosilane (TMCS) and toluene reagents. Plasmas are easily and rapidly to change surface of hydrophilic materials into hydrophobic. We have also optimized processing time and maximized contact angle for super-hydrophobicity of MWCNT. Contact angles have been calculated by measuring between substance and probe liquid, and total surface free energies are determined by the Owens-Wendt equation. Figure 1 shows the measured contact angles with time and ratio of reagents on MWCNT.

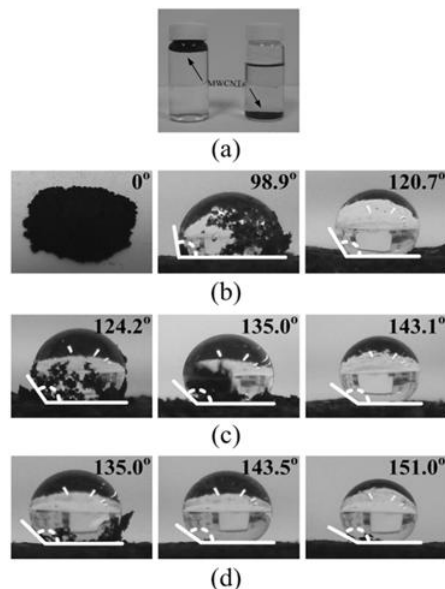


Figure 1.

Keywords: Hydrophobicity, MWCNT, Atmospheric Plasmas