Plasma polymer fluorocarbon thin films deposited by roll-to-roll sputtering

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Carbon nanotube/polytetrafluoroethylene composite polymer targets (abbreviated as composite target) are proposed for use in the fabrication of plasma polymer fluorocarbon (abbreviated as PPFC) thin films using the mid-range frequency sputtering process. Large-area PPFC thin films were fabricated on roll-type PET substrate (polyethylene terephthalate, width 700 mm, thickness 100 μm) by a pilot-scale roll-to-roll sputtering system. The PPFC thin films exhibit an amorphous phase with a smooth surface and show a high water contact angle, optical transmittance and bendability. Mechanical property of PPFC thin films were studied using nanoindentation method and analyzed using X-ray photoelectron spectroscopy and Fourier transform infrared spectroscopy. As the carbon nanotube concentration in the composite target increases, a carbon cross-linked structure was formed which enhanced the film hardness and the modulus of the PPFC thin films.

Biography
Sung Hyun Kim has completed his Master course of Nano Fusion Technology in 2015 from Pusan National University. He is a Ph.D. student at the Korea Research Institute of Chemical Technology and Pusan National University.

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