

Title: Diamond-like carbon films deposited on curved surface of alumina

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This study aims at depositing diamond-like carbon (DLC) on curved surfaces of alumina. The microwave plasma jet chemical vapor deposition system was used to grow DLC films on alumina balls, inner surface of alumina tubes and reference alumina plates. Microstructures of the grown DLC films were examined using scanning electron microscopy (SEM), Raman spectrometer, and X-ray diffractometer (XRD). Ball-on-disk method was carried out to study wear behavior of the as-deposited balls. The erosion wear behavior of the as-deposited tubes was also investigated using an air-jet sandblasting method. Different ratios of the intensity of D- Raman peak and G- Raman peak (ID/IG) were found on different sites around plasmas. Six out of sixteen deposited balls were selected to perform ball on disk wear test. A better wear resistance of the as-obtained films was the ball coated with {001} planes on top of DLC films. The ball with {111} planes on top of films showed the worst resistant to wearing. The temperature around contact region in wear test was recorded using an infrared thermometer. It is found that the wearing temperatures of DLC-coated balls were lower than that of bare alumina ball. The results showed that the DLC-deposited balls have a better thermal conductivity. In addition, (111) and (220) planes were found on DLC films grown on inner walls of alumina tubes.

Biography

Chun-Hsi Su has completed his PhD at the age of 33 years from Northwestern University. He is a professor of National Taipei University of Technology, Taiwan. He has published more than 25 papers in reputed journals and is the inventor of 9 Taiwan invention patents.

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