



ANTI-CORROSION PROPERTIES OF DLC FILMS

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ABSTRACT

Ferrous-based materials rust easily when treated with corrosive solutions, particularly the inner surface of tubes. Diamond-like carbon (DLC) films have a high anti-corrosion property. In this study, we deposited DLC films on the inner wall of a stainless steel tube using a plasma-based ion implantation and deposition (PBII&D) technique. To investigate the anti-corrosion property of deposited DLC films in the tube, a corrosion test was performed using a circulatory system with dynamic flow of a corrosive solution for 7 days. The surface of samples before and after the corrosion test was observed by a scanning electron microscope (SEM). Variation in the samples was characterised using Ar ion laser Raman spectroscopy (Raman) and energy dispersive X-ray spectroscopy (EDS). The results indicate that DLC films exhibit an anti-corrosion property towards corrosive solutions, which will facilitate their use as protective coating for medical applications.

Keywords: Diamond-like Carbon, Anti-corrosion Chemicals, Protective Coating