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Blood compatibility of Diamond Like Carbon Film Synthesized by Metal Plasma Immersion Ion Implantation

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Diamond -like carbon (DLC) film has been considered as a potential surface coating biomaterial for heart valves and artificial hip joints due to its higher hardness and chemical inertance. In this work, metal plasma immersion ion implantation was employed to synthesize DLC films. The structure of the film was examined by Fourier Transform Infrared Spectroscopy and Raman Spectroscopy. Surface energy and blood compatibility of the DLC films were studied by measuring the contact angle, clotting time, thrombin time, platelet retention and platelet morphology. It was revealed that platelet adhesion on DLC film was much less than that of titanium biomaterials. The thrombin time and clotting time of DLC film were longer than those of Ti. The possible mechanism and its further improvement of DLC film are discussed.

Keywords: Plasma immersion ion implantation (PIII) Blood compatibility
Surface energy Diamond -like carbon (DLC) film

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