

Structure and Haemocompatibility of Tetrahedral Amorphous Carbon Films Prepared by Pulsed Laser Ablation

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Tetrahedral amorphous carbon films (ta-C) as promising blood-contacting biomaterials have been prepared by pulsed laser deposition. The structural and optical properties of these films have been studied by scanning electron microscopy, Raman spectroscopy, UV-visible optical absorption spectroscopy and contact angle measurement. Results show that ta-C films with different bond ratios of sp^3 C to sp^2 C can be obtained by changing the repetition frequency of the pulsed laser during deposition. The blood compatibility of the samples was evaluated by tests of platelet adhesion and kinetic clotting time. The quantity and morphology of the adherent platelets on the surface of samples were investigated by scanning electron microscopy. The haemocompatibility of ta-C films depends on the bond ratio of sp^3 C to sp^2 C and the better blood compatibility of the samples is attributed to a suitable sp^3 C fraction in ta-C films.

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