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Cytocompatibility of a-C:H:N films deposited on polymeric fibrous scaffold

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The properties of DLC films, which are similar to those of diamond, are attractive because of their extreme mechanical hardness, high electrical resistivity, low friction, stability against acids, uniformly flat surface and optical transparency over a wide area. DLC films are deposited on several kinds of substrates at room temperature. These advantages of the DLC films lead to many application in mechanical, electrical and medical fields. In this study, the cytocompatibility of amorphous hydrogenated carbon-a-C:H:N films on polymeric fibrous materials has been investigated to apply to the biodevices. The a-C:H:N films was deposited on fibrous scaffolds by decomposed source methane gas in addition with N2 gas as dopant. The deposited a-C:H:N films were characterized for their chemical, optical, structural and electrical properties using X-ray photoelectron spectroscopy, contact angle measurement, Raman spectroscopy, and cellular affinity. We have found that the cell culture of a-C:H:N films increased monotonously with the increase of nitrogen concentration up to 40% of N2 concentration. The introduction of nitrogen gas leaded the addition of nitrogen atoms into the films. The cytocompatibility of a-C:H films was improved by the formation of C=N arrangement on the surface.

Biography

Ali Alanazi has completed his Ph.D. at the age of 32 years from Tokyo Denki University. He is the director of Biomedical engineering Department at the Ministry of Health in Saudi Arabia and Assistant professor of Biomedical Engineering at King Saud University, Riyadh, Saudi Arabia. He has published more than 10 papers in reputed journals and serving as a national Bioethics member in Saudi Arabia.

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