



HIGH TEMPERATURE NANOAMORPHOUS CARBON COATINGS FOR BIOCOMPATIBLE APPLICATIONS

Intex's materials technology in nanoamorphous carbon coatings derives from work done in Russia in the 80's. Intex acquired rights to this technology and brought it to the US in 1991, and has modified it appropriately for several applications. The Russian scientists did some work on biocompatibility of this class of coatings, which broadly fall in the category of diamond-like carbon coatings, but with a significant concentration of Si and O in the matrix. The result is a coating with low internal stress compared with dlc coatings and with higher temperature stability. This high temperature stability is good up to 750°C.

The nanoamorphous carbon coatings can also be made electrically conducting, with conductivity varying from dielectric to metallic.

There was some early Russian work on dental implants and other biomedical applications in the late 1980's, but Intex does not have access to the data and it was never published because it came at a time when Russia was disintegrating and the work was left unfinished. The original investigators are either deceased or dispersed.

Other work in that line tested a conducting version of this coating on surgical tools where rapid heating by sending a current through the coating was used to cauterize. From what Intex was told, all this was successful, but it suffered the same fate as Russia disintegrated. Intex does not have a facility to test for biocompatibility, but can provide sample coatings on suitable substrates for others to test. Titanium, for example, is a good substrate. There is historical data that diamond and diamond-like structures do well in biocompatibility testing.