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Do the dopants can change the properties of biomaterials making them more adjustable to the application? Evaluation of biological effect of various elements introduced into the diamond-like carbon coatings**Dorota Bociaga**

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Diamond-like carbon coatings and their modification has been the subject of intense research during recent years. The reason is that the surface coatings can adapt surface properties for special biomedical applications. The upper layer is responsible for an implant's interaction with surrounding tissues. Applying the biocompatible DLC coating on the biomaterials surface, the cells reactions can be changed, while the bulk properties of a base material will stay untouched. The adaption and improvement of the performance and capabilities of DLC coatings can be realized using surface modification technologies. Several deposition methods are available. One of them is multi-target magnetron sputtering method which we used. Different concentration of dopants was obtained by changing the magnetron sputtering power during the deposition process. The surface characteristics involved the SEM and XPS analysis as well as the measurement of the surface wettability and surface free energy. The biological assessment of the deposited coatings was based on two complementary cell proliferation and viability assays (live/dead and XTT test) performed using two different cell lines, i.e. EA.hy926 and Saos-2 (ATCC). The performed research demonstrated that the magnetron sputtering allows modifying the metallic implants surface using specific element as a dopant and thus enhances their biological response. Assessment of the surface properties revealed that different elements can improve different properties of the biomaterials. In result the *in vitro* assessment of the doped DLC coating can suggest its potential best application as implant surface coating.

Biography

Dorota Bociaga is involved in the field of biomedical engineering. She is the author of scientific papers, co-author of two patents and two implementations. Since 2003, she coordinates national and international projects mainly concerning use of nanotechnologies in medical applications. She is the Reviewer of scientific papers, expert of medical devices certification and implementation process.

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