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## Recent Work

### Title

Biocompatible Ag-doped Carbon Coatings with Biocidal Effect

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<https://escholarship.org/uc/item/3kc0k8rc>

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### Publication Date

2006-04-24

To be presented at  
AVS 53rd International Symposium & Exhibition,  
November 12 -17, 2006  
Moscone West Convention Center •San Francisco, California

**Biocompatible Ag-doped Carbon Coatings with Biocidal Effect**  
(Session B11 Bacterial Biofouling)

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April 24, 2006

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This work was supported by the U.S. Department of Energy, under Contract No. DE-AC02-05CH11231 with the Lawrence Berkeley National Laboratory. J. L. Endrino acknowledges financial support from the Marie Curie Outgoing Fellowship Grant MOIF-CT-2005-021951.

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Medical implants can be an appropriate solution to many health problems, however, any time a foreign device is implanted into one's body there is a high risk for infection. For this reason, there is an increasing interest in the development of multifunctional coatings that can provide a highly biocompatible surface while protecting from infection threats. Recent studies have shown the possibility of incorporating antibacterial elements into carbon coatings with the idea of providing medical implants with necessary infection resistance. In general, diamond-like-carbon (DLC) coatings have excellent tissue biocompatibilities and high chemical inertness; consequently they are suitable as a matrix material that can embed different drug release substances.

In this study, Ag/C nanocomposite coatings have been prepared using two different deposition techniques: i) dual cathode pulsed cathodic-arc (PCA) from silver and graphite cathodes and ii) Ag cathodic-arc in reactive methane (CH<sub>4</sub>) atmosphere. The silver to carbon ratio in the samples was varied from 0 to 0.1 and was controlled by adjusting the relative arc pulse frequencies of the silver and carbon pulsed sources. Chemical composition, microstructure and mechanical properties of the samples were analyzed using glow discharge optical spectroscopy (GDOES), scanning electron microscopy (SEM) and the nanoindentation technique. Morphological examinations of samples deposited on 24-well tissue culture plates confirmed that there were no adverse effects in the production of specific osteoblast proteins on low content silver-doped carbon coatings.