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Aluminum based nanostructures for biosensing

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The ability to different various neuropeptides in human organism and evaluation of their amount are very significant in neuropsychology and physiology. Last time, the localized surface plasmon resonance (LSPR) was widely introduced into biosensing. Sensitivity of optical biosensors was significantly improved using metal nanostructures based in general on the application of gold and silver. Nanostructures prepared from these metals appear LSPR in the visual and near infrared spectrum. However, the difference in the neuropeptides come out in the middle and deep ultraviolet spectrum where gold and silver are inapplicable. It is known that aluminum nanostructures can display the LSPR in the ultraviolet spectrum. However, there are some difficulty in the aluminum nanostructure preparation due to its easily oxidation and good adherence to the glass. In this work, we present a simple method for preparation the aluminum nanostructures consisting of aluminum nanoparticles surrounded by a thin layer of aluminum nitride.

Biography

Alexander Axelevitch has completed his PhD in 2002 in Physical Electronics from Tel-Aviv University, Tel-Aviv, Israel. Since 1995, he has been with Holon Institute of Technology (HIT). He currently leads the Nanotechnology and Microelectronics Branch of the Engineering Faculty, the Laboratory of Microelectronics and Thin Films and works as the Senior Lecturer in faculty of Engineering in HIT. His main research interest includes thin films deposition methods, transition metal oxides, alternative energy sources, solar cells, plasmonic effects. He has eight patents, 65 referred articles and more 150 papers presented on scientific meetings.

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