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Vibrational spectroscopy in characterizing biogenic selenium nanoparticles


Modern vibrational spectroscopy techniques (Fourier transform infrared (FTIR) and Raman spectroscopies) have long found wide-scope applications in virtually all branches of materials science. Their applications have been rapidly developing in biological and nanobiotechnological fields as well; however, there are a large number of methodological difficulties, especially in FTIR biospectroscopy, related to performing proper sampling of biomaterials, adequate measurements and, last but not least, with a correct interpretation of the spectroscopic data. In this keynote talk, examples will be presented of using vibrational spectroscopy techniques for characterizing selenium (Se) nanostructures of microbial origin obtained by microbial reduction of selenium oxoanions to elementary Se⁰

nanoparticles (NPs). While Raman spectroscopy is sensitive to the structure of crystalline Se⁰ NPs of different allotropic modifications and also allows amorphous Se (or S-containing) NPs to be distinguished, FTIR spectroscopy is highly informative in characterizing thin biomolecular coating layers of biogenic nanostructures

Speaker Biography

Alexander A. Kamnev (born in 1958 in Saratov, Russia), Professor and DSc in physical chemistry, is a leading scientist at the IBPPM RAS (Saratov, Russia). He has published over 120 papers in peer-refereed international journals and has been serving as an editorial board member of *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* ("Elsevier") and *Current Enzyme Inhibition* ("Bentham Science Publishers").

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