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**ABSTRACTS**

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## DETERMINATION OF POROSITY OF CERAMIC MATERIALS BY TERAHERTZ SPECTROSCOPY

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Until recently, there were practically no devices capable of measuring the porosity of materials in the terahertz range. This type of radiation is transparent, passing through many materials, such as wood, plastic, ceramics, but is absorbed by water and metal. It is also safe for the study of living organisms. In this study, we analyzed the porosity of ceramic pellets based on hydroxyapatite with additives of multi walled carbon nanotubes of various concentrations in range from 0 to 0.5 wt.%. A relationship was found between the absorption coefficient and the porosity of the material. It was shown the promise of THz spectroscopy for express measurements of porosity in ceramic materials.

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## LASER SPECTROSCOPY OF INTERACTIONS OF CARBON NANOPARTICLES WITH BIOMACROMOLECULES

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The urgent task of modern biomedicine is the creation of effective and safe theranostic nanoagents. This requires a comprehensive study of the mechanisms of interaction of nanoparticles with the biological environment. Carbon nanoparticles, most of which are non-toxic and biocompatible, are promising materials for the creation of theranostic nanoagents. However, to date, questions about the mechanisms of interaction of carbon nanoparticles with molecules of the environment, including biological ones, are still open, which does not allow one to tell about the effectiveness and safety of new theranostic nanoagents.

The work presents the results of studying the interactions of detonation nanodiamonds with biomacromolecules by laser spectroscopy (Raman scattering, coherent anti Stokes Raman scattering). The analysis of the obtained results made it possible to make the conclusions about the mechanisms of adsorption of biomacromolecules on the surface of nanodiamonds and to establish the conformational changes of molecules during their interaction with the surface of nanoparticles using vibrational spectra.

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