Design and Biological Investigation of Novel Nanoparticles and Nanoformulations

Nanoparticles, nanoformulations, nanocomposites, nanodrug delivery, agronanochemistry

Research group is focused on multidisciplinary experimentation and investigation in basic and applied nanoscience. The first scope involves synthesis and physico-chemical characterization of novel nanoparticles and novel fullerenol-based nanoformulations of commercial antineoplastics as well as of other active components. Biological investigation of novel nanoparticles and nanoformulations are conducted on *in vitro* models of human malignant cell lines, as well as on different *in vivo* animal models, complemented with monitoring of enzymes activity, gene expression and investigation of genotoxicity and patohystology. Group also deals with synthesis and physico-chemical characterization of nanomaterials with potential photocatalytic activity and also nanomaterials with potential application in agriculture.

SELECTED PROJECTS

Title: *Functional, functionalised and enhanced nanomaterials*
Type: Ministry of Education, Science and Technological Development of the Republic of Serbia.
Duration: 2011–2019
Head of the Project: PhD Zlatko Rakočević.
Subproject leader: PhD Aleksandar Đorđević, Full Professor

Title: *Cancer nanomedicine – from the bench to the bedside*
Type: CA COST Action CA17140, 2018-2022
Head of the UNS unit: PhD Aleksandar Đorđević.

Title: *Application of new carbon nano formulations in order to increase the resistance of grape vines to water stress*
Type: Bilateral project Serbia-Montenegro.
Duration: 2019-2020
Head of the Project: PhD Milan Borišev.

Title: *Application of gold nanoparticles in order to decrease radioresistant potential of tumor cell lines*
Type: The Provincial Secretariat for Higher Education and Scientific Research.
Duration: 2014–2015
Head of the Project: PhD Aleksandar Đorđević.

COLLABORATIONS

- University of Belgrade, Institute for Nuclear Sciences "Vinča", Serbia
- University of Belgrade, Institute of Molecular Genetics and Genetic Engineering, Serbia
- University of Novi Sad, Medical Faculty, Oncology Institute of Vojvodina, Sremska Kamenica, Serbia

SELECTED EQUIPMENT

Gel permeation chromatography (*Viscotek GPCmax*) system with four detectors (*Triple Detector Array-TDA 305, UV Detector 2000*).

CONTACT PERSON

Dr Aleksandar Đorđević, Full Professor;aleksandar.djordjevic@dh.uns.ac.rs; tel: +38121458243, +38121454065
http://wwwold.dh.pmf.uns.ac.rs/nanobiomedicina/