

Project title: Nanometer thin photovoltaics based on plasmonically enhanced van der Waals heterostructures
Acronym: PV-Waals

Participant: Sonja (Miodrag) Aškračić
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Contact person: Aleksandar Bogojević, alex@ipb.ac.rs, director



BIOGRAPHY

Date and place of birth: 18.01.1983. Sarajevo, Republic of Bosnia and Herzegovina

Research field areas: optical and vibrational properties of oxide and hydroxide nanostructures and 2D materials, Raman and photoluminescence spectroscopy, numerical modelling of vibrational spectra, SERS, spectroscopic bioimaging,

Education:

Degree	University/Faculty/Module (Field)	
B.Sc	University of Belgrade, Faculty of Physics, Serbia Module: Theoretical and Experimental Physics Title: Raman characterization of polycrystalline and nanocrystalline CeO ₂	2006
M.Sc	University of Belgrade, Faculty of Physics, Serbia Module: Condensed Matter Physics	2007
PhD	University of Belgrade, Faculty of Physics, Serbia Group: Center for Solid State Physics and New Materials, IPB Title: Phonons and Defect States in Oxide Nanomaterials	2014

Scientific title: Associate Research Professor

Selected publications:

- S. Aškračić, V. D. Araújo, M. Passacantando, M. I. B. Bernardi, N. Tomić, B. Dojčinović, D. Manojlović, B. Čalija, M. Miletić and Z. D. Dohčević-Mitrović, [Nitrate-assisted photocatalytic efficiency of defective Eu-doped Pr\(OH\)₃ nanostructures](#), Physical Chemistry Chemical Physics 19, 31756 (2017)
- M. M. Jakovljević, S. Aškračić, G. Isić, B. Vasić, R. Gajić and M. Artemyev, “Pseudo-refractive index and excitonic features of single layer CdSe/CdS core-shell nanoplatelet films”, Nanotechnology 31, 435708 (2020).
- I. Milošević, B. Vasić, A. Matković, J. Vujin, S. Aškračić, M. Kratzer, T. Griesser, C. Teichert and R. Gajić, “Single-step fabrication and work function engineering of Langmuir-Blodgett assembled few-layer graphene films with Li and Au salts”, Scientific Reports 10, 8476 (2020).
- M. Miletić, S. Aškračić, J. Rüger, B. Vasić, L. Korićanac, A. S. Mondol, J. Dellith, J. Popp, I. W. Schie and Z. D. Dohčević-Mitrović, “Combined Raman and AFM detection of changes in HeLa cervical cancer cells induced by CeO₂ nanoparticles – molecular and morphological perspectives”, Analyst 145, 3983 (2020).
- S. Aškračić, Z. Dohčević-Mitrović, V. Araujo, G. Ionita, M. De Lima and A. Cantarero, [F-centre luminescence in nanocrystalline CeO₂](#), Journal of Physics D: Applied Physics 46, 495306 (2013)
- S. Aškračić, Z. Dohčević-Mitrović, A. Kremenović, N. Lazarević, V. Kahlenberg, and Z. V. Popović, [Oxygen Vacancy-Induced Microstructural Changes of Annealed CeO_{2-x} Nanocrystals](#), Journal of Raman Spectroscopy 43, 76 (2012)
- S. Aškračić, Z. D. Dohčević-Mitrović, M. Radović, M. Šćepanović, and Z. V. Popović, [Phonon-Phonon Interactions in Ce_{0.85}Gd_{0.15}O_{2-x} Nanocrystals Studied by Raman Spectroscopy](#), Journal of Raman Spectroscopy 40, 650 (2009)
- R. Kostić, S. Aškračić, Z. Dohčević-Mitrović, and Z. V. Popović, [Low-Frequency Raman Scattering from CeO₂ Nanoparticles](#), Applied Physics A 90, 679 (2008)

International collaboration:

- [Laboratory of Nanochemistry, Institute for Physico-Chemical Problems, BSU, Belarus](#) (Mikhail Artemyev)
- [Department of Physical and Chemical Sciences, University of L'Aquila, L'Aquila, Italy](#) (Maurizio Passacantando)
- [Spectroscopy&Imaging group, Leibniz Institute of Photonic Technology, Jena, Germany](#) (Iwan Schie)
- [Group NanoA. Materials Science and Engineering Department, Universidade Federal Rural de Pernambuco, Cabo do Santo Agostinho, Brazil](#) (Vinicius Dantas de Araujo)

Experimental skills relevant for the project: Raman spectroscopy, photoluminescence spectroscopy, cryogenic measurements, spectroscopic ellipsometry, fabrication of thin dielectric films and film-coupled plasmonic nanostructures.

Programming/numerical modeling: R, MATLAB, Python

Link to the database of researchers:

<https://scholar.google.com/citations?hl=en&user=T2M6CqsAAAAJ>

Experience in leading scientific projects:

I. Bilateral scientific collaboration (funded by MESTD on the Serbian side)

Duration	Project information
2016-2018	Title: Metallic and semiconducting nanostructures for bio-imaging application (MSNanoBioImag) Foreign partner: Institute for Physico-Chemical Problems, BSU, Belarus (PI: Mikhail Artemyev)

II. European Cooperation in Science and Technology (COST Actions)

Duration	Project information
2014-2018	Title: Raman-based applications for clinical diagnostics (Raman4Clinics), COST Action BM1401 Chair: Jurgen Popp, Leibniz Institute of Photonic Technology, Jena, Germany Serbian MC Member : Sonja Aškrabić

PhD thesis supervision:

PhD student: Mirjana Miletić

Thesis thematics: Application of Raman spectroscopy for the study of the nanoparticles effect on eukaryotic cells

Role: supervisor at Institute of Physics Belgrade