

## EuChemS-DAC Study Group / Task Force Annual Report for 2021-2022

<b>Study Group / Task Force Name: Nanoanalytics</b>
<b>Study Group / Task Force Head and Affiliation:</b> Prof. Dr. Sergei Shtykov (Head), Saratov State Univ., Russia
<b>Study Group / Task Force Members and Affiliations:</b> Prof. Dr. Pavel Nesterenko, Moscow State Univ., Russia Prof. Dr. Nikolay Khlebtsov, IBPPM, Russian Acad. of Sci., Russia Prof. Joao Luis Machado Santos, Univ. Porto, Portugal Prof. Raluca-Ioana Stefan-van Staden, Nat. Inst. of Res. Electrochem. and Condensed Matter, Romania
<b>Objectives:</b> The aim of the Nanoanalytics Task Force is to start a dialog within the analytical chemistry community on the concept of Nanoanalytics. There is however a need to explain in a clear way what Nanoanalytics does, what the outputs of Nanoanalytics are and what the terminology means. - A concept and definition of Nanoanalytics. - The most important types and classifications of nanotechnologies used in the chemical analysis. - The scope of applications of Nanoanalytics in Chemical Analysis. - Preparation of a textbook and/or manuals for students.
<b>Activities and Outputs in 2021-2022</b> (e.g. reports, publications, seminars, meetings): <b>Shtykov S.N.</b> develops fundamental and applied aspects of nanoanalytics. IUPAC project completed and publication to be released: - Labuda J., Johnston L.J., Mester Z., Gajdosechova Z., Goenaga-Infante H., Berek J., and <b>Shtykov S.</b> Analytical chemistry of engineered nanomaterials: Part 1. Scope, regulation, legislation, and metrology (IUPAC Technical Report) // Pure Appl. Chem. 2022. Vol. 94. Sept-Oct. - <b>Shtykov S.N.</b> Coordination compounds (chelates) in analytical chemistry: solutions - sorbents – nanoplatfoms. J. Coord. Chem. 2022. V. 48(10). P. 620-628. <b>Khlebtsov N.G.</b> Head of a scientific group that develops the theory and practice of using various types of gold and silver plasmonic nanoparticles in bioanalysis. - Bucharskaya A.B., <b>Khlebtsov N.G.</b> Khlebtsov B.N. et. al Photothermal and Photodynamic Therapy of Tumors with Plasmonic Nanoparticles: Challenges and Prospects. Molecules. 2022. 21.15(4).1606. - Genin V.D.... <b>Khlebtsov N.G.</b> et. al Changes in Optical Properties of Model Cholangiocarcinoma after Plasmon-Resonant Photothermal Treatment. Photonics. 2022. 9, 199. <b>Raluca-Ioanna Stefan-van Staden</b> develops the application of carbon nanoparticles in electroanalysis. <b>R-I. Stefan-van Staden et. al</b> Stochastic Microsensors Based on Carbon Nanotubes for Molecular Recognition of the Isocitrate Dehydrogenases 1 and 2. Nanomaterials (Basel). 2022. 12(3). 460. <b>Nesterenko P.N.</b> develops the use of carbon nanoparticles in chromatographic analysis. - Koreshkova A.N., Gupta V., Peristy A., Paull B., <b>Nesterenko P.N.</b> Chromatographic properties of hydrogenated microdiamond synthesized by high pressure and high temperature. J. Chromatogr. A 2022. V.1673. 463127. <b>Santos J.L.M.</b> is developing applications in the analysis of quantum dots. - Castro, Rafael C.; Ribeiro, David S.M.; <b>Santos, João L.M.</b> "Visual detection using quantum dots sensing platforms". Coord. Chem. Rev. 429 (2021): 213637.
<b>Activities planned for 2022-2023:</b> - in accordance with the proposal of the organizing committee of Euroanalysis 21 in Geneva on 27-31 August, 2023, the organization of a scientific session and a training course on nanoanalytics. - in accordance with the proposal of the organizing committee of the IV Congress of Russian Analysts on Sept. 26-30, 2022, the organization of a scientific session on nanoanalytics. - continued preparation of papers and reviews on the use of nano-objects and nanotechnology in chemical analysis. - continued preparation of a textbook and/or manuals for master and post graduate students.
Report submitted by: Sergei Shtykov 
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