

Candidate application to the ISGS Board of Directors

Prof. / Dr. Aleksandra LOBNIK

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CV with main research interests (no longer than 1/2 page)

Aleksandra Lobnik received her PhD in 1998 at the Institute of Organic Analytical Chemistry of Graz University, Austria. The topic of her Ph.D. was development of new Sol-gel based optical chemical sensors. In 1998/1999 she conducted her postdoctoral education at the same University. Since 2009 she has been employed as a Full Professor at the Faculty of Mechanical Engineering at the University of Maribor, where she teaches chemistry, analytical chemistry, and nanomaterials courses. The focus of Aleksandra Lobnik's research is the development of new optical chemical and bio-sensors for different applications, such as personal protection and security and smart textiles, environmental protection, food, medicine. The emphasis of her research work is based on synthesis of new sol-gel materials, nanomaterials, biomaterials, which can improve sensory characteristics, drastically.

In 2006 she co-founded a company IOS Ltd, and from 2017 she is the CEO of the IOS company. She is currently most involved in applicability of scientific research in the field of sensors, nanomaterials and water treatment. In the last five years she has participated in the development of new products in company IOS Ltd such as: new membrane biological reactor for sewage (MBR reactor), sensor for the measurement of ammonia in an aqueous medium and air, a sensor for detecting the freshness of the food, and in the field of "scale-up" production of new nanomaterials based on sol-gel synthesis. In the meantime, she strongly intensified cooperation with various Slovenian and foreign companies.

Aleksandra Lobnik is also active in the promotion of science, because she is regularly invited to the various committees and gives a wide range of interviews on the topic of sol-gel materials/nanomaterials and knowledge transfer from science to the real applications in widely accessible media such as television, daily newspapers and magazines.

In 2015 she lectured as TEDx invited lecturer in CERN on the topic of sensors.

<https://www.youtube.com/watch?v=mnJcP10Lr7g>.

She is also regular member of the delegation of the Slovenian Minister of Economy on official visits as a representative of Slovenian science, especially Nanotechnologies. From 2017 she is also the President of Slovenian Academic for Science and Engineering.

Bibliography includes more than 110 scientific papers published in international journals and journals of international scientific conferences, more than 30 invited lectures, more than 80 published summaries of lectures in anthologies, 7 chapters in scientific monographs; 56 reports on national and international projects, 32 international patent applications-patents; 12 editorial boards; mentorship and co-mentorship of 9 doctoral theses ; 46 mentorships of BA and MA students. As project manager she participated in more than 40 national and international research projects.

5 recent publications:

1. NEDELJKO, Polonca, TUREL, Matejka, LOBNIK, Aleksandra. Hybrid sol-gel based sensor layers for optical determination of biogenic amines. *Sensors and actuators. B, Chemical*, July 2017, vol. 246, str. 1066-1073.
2. LOBNIK, Aleksandra, KORENT UREK, Špela. Sol-gel based opto-chemical sensor for detection of diethyl chlorophosphate and method for its preparation : EP 2 678 673 (B1), 2016-06-08. Berlin, Germany: European Patent Office, 2016.
3. KOŠAK, Aljoša, BAUMAN, Maja, PADEŽNIK GOMILŠEK, Jana, LOBNIK, Aleksandra. Lead (II) complexation with 3-mercaptopropyl-groups in the surface layer of silica nanoparticles: Sorption, kinetics and EXAFS/XANES study. *Journal of molecular liquids*, March 2017, vol. 229, p. 371-379.
4. NEDELJKO, Polonca, TUREL, Matejka, KOŠAK, Aljoša, LOBNIK, Aleksandra. Synthesis of hybrid thiol-functionalized SiO₂ particles used for agmatine determination. *Journal of sol-gel science and technology*, September 2016, vol. 79, iss. 3, str. 487-496,
5. FRANČIČ, Nina, KOŠAK, Aljoša, LOBNIK, Aleksandra. Immobilisation of organophosphate hydrolase on mesoporous and Stöber particles. *Journal of sol-gel science and technology*, Sep. 2016, vol. 79, iss. 3, str. 497-509.

Statement of interest:

The main interest area to candidate for the ISGS Board of Director is to spread the knowledge and information about the sol-gel materials and their potential applications among young generation of scientists. The ISGS to be more active in promotion of the sol-gel science to young scientist, we could organize among the Sol-gel Workshops also some Young Scientist Conferences in the year between the two Sol-gel Conferences (the first could be in 2018). The aim of the conference is to give the possibility to the young generation of sol-gel scientist to present and to discuss their achievements among themselves and in the present of selected tutors from the sol-gel scientific area. In the frame of such a Conference we should encourage especially young women scientist to continue the academic carrier. Furthermore some ethical issues should be addressed to educate young scientist population about ethical behavior in the world of the science.

Furthermore, the activities from my side will be also oriented to the promotion of sol-gel materials and technologies by using the possibility of regular invitations of various committees and by giving interviews on the topic of nanomaterials/nanotechnologies in widely accessible media such as television, daily newspapers and magazines.

Another topic where is still room for some activities is also in encouraging the knowledge transfer, where we should popularize ISGS also to the adequate industry as much as possible. The activities such as discussion by round table on Knowledge transfer and problems arising from this topic should be addressed properly. Sol-gel Conference as well NanoApp (Nanomaterials & Application) Conference can be also some platform for the first activities on this topic.