



Biography of Prof. Dr. Spomenka Kobe

Prof. Dr. Spomenka Kobe, Scientific Advisor at the Department for Nanostructured materials. Until 1st May 2018, she was acting as a Head of the department (16 years). She is a full professor at the International Postgraduate School “Jožef Stefan” and a member of the Governing Board of the School. She is the Leader of the National Research Programme “Nanostructured Materials,” and until 2017 the Slovene director of The International Associated Laboratory PACS2 between CNRS, Nancy, France and Jožef Stefan Institute, Ljubljana, Slovenia. She initiated rare-earth magnet research activities in Slovenia and was the coordinator of the European project “Replacement and Original Magnet Engineering Option” - ROMEO (FP7-NMP). During her career, she has been a principal investigator of many national and international projects. Prof. Kobe is a Member of the Slovenian Academy of Engineering, and acts as the European Expert and Evaluator in the field of magnetism and magnetic materials.

Since the very beginning of her career, she has been involved in not only basic science, but also in research & development work for industrial projects, e.g., Iskra Feriti and Iskra Magneti. In parallel with these projects, she obtained her Master degree (January 1981) and Ph.D. degree (January 1991). For the work “Interpretation of the influence of microstructure on magnetic properties of materials,” she was awarded the State Award (Sklad Boris Kidrič) in 1987. In 1992 she was awarded the State Award of the Republic of Slovenia for the patent which was transferred to the production entitled “Invention of the process for thermal treatment of magnets based on samarium and cobalt.” The factory Magneti still produces and exports these magnets to the West European market.

For her research and development, she also received two innovation chains in the factory Feriti for the successful transfer of technologies to the production level. First one was for the technology transfer of strontium ferrites into the large scale production and the second one for the technology transfer of Ni-Zn ferrites into large scale production.

During the academic year 1989/1990, she was engaged as the visiting scientist at the Twente University Enschede, Netherlands, at the Department for Chemical Technology. During this year she had an invited talk at the Philips Components in Eindhoven, where she presented her work on strontium and Ni-Zn ferrites. In the study year 1996/1997, she was engaged as the visiting scientist at the University of Western Australia, Perth, Australia in the Laboratory for Magnetism and Magnetic Materials under the leadership of Prof. Robert Street.

Her research work was and still is oriented to basic and applied basic research of permanent magnets with an emphasis on the study of the influence of chemical composition and processing parameters of nanocrystalline powders of intermetallic alloys between rare earth and transition metals on phase composition and final magnetic properties.

These powders serve as the basis for the production of state-of-the-art high-energy sintered and bonded magnets. The processing of nanocrystalline powders based on intermetallic alloys Sm-Co, Nd-Fe-B and Sm-Fe-N are limited to modern ecologically sound technologies.

She is best known internationally as the founder and holder of the field of permanent magnetic materials on the basis of rare earth and transition metals in Slovenia. She is also a long-standing representative of Slovenia in the International Advisory Board for this area.

The complexity of her work is evident from her entire research and development opus. In her field of activities, she combines basic research, applied research, and the educational profession. The results are reflected in high-quality basic research, as evidenced by published works in foreign magazines with a high citation factor for materials, as well as invited lectures at foreign universities and international and domestic conferences. The effectiveness of her applied research is evident from the transfer of IJS-developed technologies into production, and in the number of granted domestic and foreign patents and technical improvements.

Her educational activity is evident from the pedagogical work at the Faculty of Natural Sciences and Technology, the University of Ljubljana, and in her work with mentoring postgraduate students. She continues her educational work at the Jožef Stefan International Postgraduate School, where she is also a Deputy President for the Department of Nanosciences and Nanotechnology. It should be emphasized that she is also a member of the Commission for the defense of doctoral theses at foreign universities (the University of Birmingham, University of Eindhoven and Trinity College Dublin).

She has demonstrated essential competencies in the acquisition of financial resources in international and domestic spaces, in the management of program groups, in the sixteen-year leadership of the department, and the management of numerous foreign and local research and development projects.

Over the past ten years, in addition to magnetic materials based on intermetallic alloys of rare earth and transition metals, she expanded her research field to complex alloys as part of the collaboration in the NoE CMA (Complex Metallic Alloys) European Network of Excellence. Through this Network, the Magnetic materials group she runs has been included in two new research areas, i.e., magnetocaloric materials and quasicrystals for storage of hydrogen. In a short period, they achieved the top level of global expertise in both areas of research, and she was also a mentor for two completed doctorates (Benjamin Podmiljšak, Andraž Kocjan). Benjamin Podmiljšak is the holder of the European Doctorate because the European Commission funded his work under NoE CMA.

In parallel with the research and management of permanent magnetic materials, Prof. Kobe significantly contributed to the establishment of the International LIA Laboratory between French CNRS / University Lorraine and the IJS, and until 2017 she was the Slovenian director of the Laboratory. The International Laboratory has a great perspective not only in basic research, but the results so far show the attractive magnetic and catalytic properties of some new materials with a vision of practical use.

During the period of the European Network of Excellence - Complex Metallic Alloys (NoE CMA), she was Deputy Director of Euroschool and a Slovenian leader in two socially engaged European projects promoting women in science: "Strengthening the role of Women Scientists in Nano Science" (2005-2008) and "Diversity" (2009-2011) - promotion of women in leading positions in the field of materials science. Since 2009, she is a member of the European Integrated Center for the development of new metallic alloys and compounds.

In her field of research, she also acts as a reviewer of articles in journals with high impact factors, including J. Appl. Phys., Journal of Physics and Chemistry of Solids, Journal of Alloys

and Compounds, Transactions on Magnetics, Materials Science and Engineering B, Journal of Materials Research, JMMM, Surface and Interface Analysis, itd.

She is actively involved as an expert of the European Commission in the field of magnetic materials, and was also a representative of the EC on the three bilateral and / the trilateral meetings of Europe-Japan-USA for this area. For the past couple of years she has been working as the Vice Chair in the evaluation of projects under the MSCA -ITN and MSCA-IF call.

The COBISS database shows that she has 641 bibliographic hits, which consists of 160 scientific articles, 9 professional articles, 27 invited lectures, 7 book chapters, 5 patents (2 international), 2 international patent applications, and mentorships for more than 10 masters and doctorates. She contributed to the popularization of science with three popular articles and seven interviews.

Since 2012 she has been a full-time professor at Jožef Stefan International Postgraduate School, and from 2009 to 2017 she was a member of the Scientific Council of the Jožef Stefan Institute. In 2017 she was elected as the member of the Governing Board of the Jožef Stefan International Postgraduate School.

She has been a long-time member of the Academic Society for Science and Engineering (SATENA); during 2014-2015 she served as its President, and she was elected a Member of the Slovenian Academy of Engineering in 2017.

Her functions since the year 2000 include:

2017 Member of the Slovenian Academy of Engineering.

2016 Member of the Governing Board of

2002 – May 2018 Head of Department of Nanostructured materials

2003 – 2019 Leader of the National research programme

2014 President of the Academic Society for Science and Engineering SATENA

2009 - 2013 Member of the Scientific Board of Jožef Stefan Institute

2012 Full professor at Jožef Stefan International Postgraduate School

2004 Member of the Executive Board of the Academic Society for Science and Engineering SATENA

2003 Scientific Advisor

2002 Member of the Jožef Stefan International Postgraduate School

2001 European Expert and Evaluator

Awards and recognitions:

State award for the research work (1987),

The best poster award, EMMA'87, Salford, UK (1987),

Two innovation awards (Iskra Feriti) (1987, 1989),

State award for the research work (1992),

Award for the innovation (Ekomag) International trade fair, Celje (1992).