

MRS Serbia Društvo za istraživanje materijala Srbije
Materials Research Society of Serbia

Belgrade, February 03, 2021

Dear Colleagues,

We are honored and pleased to nominate Professor Yury Gogotsi for the 2021 MRS-Serbia Award for a Lasting and Outstanding Contribution to Materials Science and Engineering. Prof. Gogotsi is a member of the International Advisory Board of MRS-Serbia and also, he take a participation as a Plenary speaker in many of YUCOMAT Conferences. He contributed to the development of the International Institute for the Science of Sintering as an active full member since 2002, and also he is a recipient of G.C. Kuczynski Prize 2002 for the paper that is considered to be a particular contribution to the sintering theory.

Yury Gogotsi is a scientist of international renown in the area of Materials Science and Engineering and including his name on the list of laureates would certainly contribute to the affirmation of MRS-Serbia award.

Yury Gogotsi was born on December 16, 1961, in Kyiv, Ukrainian SSR. He has completed elementary and secondary school in Kyiv, where he continued his education. In 1984 he received his Masters of Science (M.S.) degree in metallurgy from the Kyiv Polytechnic Institute, Department of high-temperature materials and powder metallurgy, in 1986 he achieved his Ph.D. thesis entitled “ *High-Temperature Corrosion of Structural Ceramics Based on Silicon Nitride, Silicon Carbide and Boron Carbide* “, as Candidate of Science in Physical Chemistry (advisor - prof. V.A.Lavrenko), at that time — the youngest Ph.D. in Chemistry in Ukraine, from the Kyiv Polytechnic Institute, and in 1995 he received a Doctor of Science (D.Sc.) degree in Materials Engineering from the National Academy of Sciences in Ukraine, entitled “ *Interactions of Non-Oxide Structural Ceramics with High-Temperature Gaseous, Media and Development of Methods for Improving Their Corrosion Resistance* “.

During his post-doctoral research period he received Alexander von Humboldt Fellowship at the University of Karlsruhe(1990-1992), Japan Society for the Promotion of Science (JSPS),

Fellowship at the Tokyo Institute of Technology, Japan (1992-1993), Germany NATO/Norwegian Research Council Fellowship at the University of Oslo, Norway

(1993–1995). In the period 1995–1996 his career of research scientist continued at the University of Tübingen, Germany. From 1996 to 2000 he had been working at the University of Illinois at Chicago (UIC), Department of Mechanical Engineering.

Since the year 2000 he has been working at the Drexel University, Department of Materials Science and Engineering; from 2017 as the Charles T. and Ruth M. Bach Endowed Professor and Distinguished University Professor (from 2010). He also serves as Director of the A.J. Drexel Nanomaterials Institute.

Gogotsi research interests are directed towards synthesis and surface modification of inorganic nanomaterials, such as nanodiamond, carbide-derived carbons, nanotubes, and two-dimensional carbides and nitrides (MXenes). His group also explores energy related and other applications of materials discovered and developed in Gogotsi Lab. His work on carbon and carbide nanomaterials with tunable structure and porosity had a major impact on the field of capacitive energy storage. His areas of study are materials science and engineering and nanomaterials.

Professor Gogotsi developed a general approach to synthesis of porous and low-dimensional materials using selective extraction of elements/ components, which can be used to generate porous carbide-derived carbons, carbon nanotubes, graphene, 2D carbides, etc. (Accounts Chem. Res., 2015; Chem. Soc. Rev., 2018). He developed novel carbon-based nanomaterials for capacitive energy storage, including carbide-derived carbon, carbon onions, and 2D carbides with controlled pore size and surface chemistry, and their matching to electrolytes has revitalized the ultracapacitors (supercapacitors) industry and made electrochemical capacitors a key technology complementing and often replacing batteries in storage of renewable energy, automotive applications from powering buses to harvesting energy from braking, and numerous electronic applications (Science, 2006, 2010, 2011, 2013, 2014, 2016; Angew. Chemie, 2008; JACS, 2008; Nature Nano, 2010; Nature, 2014, 2018, etc.)

His pioneering work (together with P. Simon) on the relations between the structure and capacitive performance of carbon nanomaterials led to a scientific breakthrough in the field and ultimately resulted in the development of a new generation of supercapacitors that facilitate the storage and utilization of electrical energy. In particular, he developed a “green” supercapacitor built entirely of environmentally friendly carbon and fluorine-free organic materials (ChemSusChem, 2013). He also invented a flow capacitor – new technology

challenging flow batteries (Adv. Energy Mater., 2012) and proposed and patented the concept of capacitive flow desalination (Electrochem. Comm, 2014). He discovered and described new forms of carbon, such as conical and polygonal crystals (Science, 2000). He was the first to conduct hydrothermal synthesis of carbon nanotubes (J. Mater. Research, 2000) and show the anomalously slow movement of water in functionalized carbon nanotubes by in situ transmission electron microscopy (Appl. Phys. Letters, 2001). This was the first observation of liquid water in confinement in TEM.

Gogotsi was a part of the team, with M. Barsoum and M. Naguib, that discovered a new family of two-dimensional (2D) carbides and nitrides — MXenes that showed exceptional potential for energy storage and other applications (Adv. Mater., 2011, Nature Rev. Mater. 2017). More than 30 new 2D carbides and nitrides have been synthesized at Drexel University, launching an explosive growth of activities in this field worldwide.

He is a highly productive researcher: 2 books co-authored, 14 books edited, 16 book chapters, more than 700 papers in peer-reviewed journals, including more than 30 papers in Nature family journals and Science, >100 papers in ACS journals, more than 300 plenary, keynote and invited lectures and seminars. He has been cited over 135,400 times and currently has an h-index of 169 ([Google Scholar](#)).

He has been honored by numerous awards as innovator, with more than 60 patents filed, that has significantly impacted to the state of the art and which have already proven their mettle in prototype devices for storing energy, computing, communication and health care. More than his 20 patents are already licensed to industry, that move nanotechnology to key mainstream markets.

He serves ACS as Associate Editor of ACS Nano since November 2013. He also served on the ACS Nano Lectureship selection committee in 2014 and delivered numerous invited talks at the ACS meetings. His paper P. Simon, Y. Gogotsi: Materials for Electrochemical Capacitors, Nature Materials (2008), has been cited more than 13,000 times. His paper J. Chmiola, G. Yushin, Y. Gogotsi, C. Portet, P. Simon, and P. L. Taberna: Anomalous Increase in Carbon Capacitance at Pore Sizes Less Than 1 Nanometer (2006), received more than 3000 citations.

For many years Prof. Gogotsi has an exceptional cooperation with colleagues from various institutions, he was invited to cooperation with the Korean

Advanced Institute of Science and Technology (KAIST), Korea as an Adjunct Professor of Chemical and Biomolecular Engineering and from Shinshu University, Japan as Distinguished Visiting Professor (2016-2022), Jilin University, Changchun, China as a Distinguished Foreign Professor and from Beijing University of Chemical Technology as a Visiting Professor (2016 –2019), and many others institutions (given in Resume).

Prof. Gogotsi is a recipient of many Professional Honors & Awards including this year's Ceramic Prize, The World Academy of Ceramics which is given once every 4 years and 2021 ACS Award in the Chemistry of Materials, 2020 ACS Philadelphia Section Award, 2020 George Gamow Award from the Russian-American Science Association (RASA) and plenty of others specified in Resume.

He is married and has two children. He lives with his family in USA.

Dragan Uskoković

Slobodan Milonjić

Yuri M. Solonin

Masahiro Yoshimura

Paul Weiss

Michael W. Barsoum

Eugene A. Olevsky

Vuk Uskokovic

Candidates' biographie and bibliography are attached.

Please be so kind and send us your opinion concerning nominated candidate for the 2021 MRS-Serbia Award.

We are looking forward to hearing from you.