

13 February 2021

Prof. Dr. Dragan Uskokovic, President
MRS Serbia
Institute of Technical Sciences of SASA
Knez Mihailova 35/IV, PO Box 377
11000 Belgrade
Serbia

Dear Prof. Uskovic (Dragan):

I write to support the nomination of **Prof. Yury Gogotsi**, Distinguished University Professor and and Charles T. and Ruth M. Bach Endowed Chair at Drexel University, for the Award for a Lasting and Outstanding Contribution to Materials Science and Engineering. Prof. Gogotsi is recognized worldwide for his contributions to the field of carbon, carbide, and nitride nanomaterials. In particular, with DoE support, he co-discovered and elaborated the MXene family of two-dimensional metal carbides and carbonitrides. These materials have important energy-related applications in energy storage, catalysis, electromagnetic shielding, sensors, and water treatment. His work has inspired many others, as there are now over 1000 laboratories in over 70 countries around the world. MXene technology has already been licensed widely, and transferred to industry for scale-up and product development.

Beyond his MXene work, Prof. Gogotsi has made exceptional contributions to the field of materials chemistry and electrochemistry. He has repeatedly driven the field to make quantitative measurements that can be compared from one laboratory to another. I recruited Prof. Gogotsi to serve as Associate Editor of *ACS Nano* (the #1 ranked nanoscience and nanotechnology journal and now #22 of all journals in all fields, according to Google Scholar), and he is one of the most active members of our highly collaborative team, not only in handling numerous manuscripts, but also in moving the energy-related community forward with his wisdom, shared in editorials, perspectives, papers, reviews, talks, and other outreach. It is my great pleasure to be able to tap his thoughts through our frequent conversations on science, manuscripts under consideration, and entire fields of research. I go out of my way to make time to talk with him and to see him.

MXenes have extremely high capacitance and important catalytic properties. His 2012 *ACS Nano* paper, announcing MXenes as a materials family, received the Best Paper award from the American Ceramic Society for the most important contribution of the year. Prof. Gogotsi explained the intercalation pseudocapacitive storage mechanism in MXenes, which led to interest in energy storage in two-dimensional materials beyond graphene. Two-dimensional transition metal carbides are predicted to become the largest family of 2D materials. At *ACS Nano*, we not only published many of his key papers on MXenes, including on the cover of our October 2015 issue, which was selected as an Editors' Choice and was in 0.1% of the most cited papers in the field (ISI Hot Paper), but he has also drawn the top work in this area from around the world. After all, if he puts his stamp of approval on it, then it is "certified" as being of consequence.

He is the pre-eminent scientist in the field of non-oxide materials for electrochemical energy storage. In addition to MXenes, carbide-derived carbons (CDCs), discovered/developed by Prof. Gogotsi, are of great interest for many fields and are also finding broader use. The CDCs are being widely investigated for applications in areas ranging from tribology to carbon dioxide adsorption and blood cleansing. The use of CDC coatings on silicon carbide dynamic seals of water pumps in heavy trucks and cars has been implemented in industry and it eliminates their dry failure and extends their lifetime by at least a factor of two. These materials are making fast progress towards applications. Prof. Gogotsi's research on CDCs demonstrated that pores of a specific size could lead to increased energy storage. In 2006, he conducted a study of pore size effect on capacitance of CDC and showed that the solvent shell around the ions could be stripped away if appropriate sub-nanometer pore sizes were used. The influence of this work is far-ranging as it provided a new approach for increasing the capacitance and led to new understanding of double-layer phenomena under confinement. More importantly, it resulted in awakening the research community that there is much new science to be done in that field. Research groups throughout the world now investigate nanoscale carbon and ions in confinement following his seminal research on the topic.

Prof. Gogotsi's high standing in the scientific community is evident from the many national and international awards and honors he has received. Major awards like the RUSNANO Prize put him in the same group of prominent nanoscientists like Bob Langer (the year before him) and Chad Mirkin (the year after him). He has received numerous other awards and recognitions worldwide, including an honorary degree (doctor *honoris causa*) from the oldest French university, as well as honorary and visiting professorships at several European and Asian universities. He delivers numerous plenary and keynote talks every year at major conferences around the world. He is internationally recognized as a leading authority in materials chemistry and nanoscience.

Prof. Gogotsi's activities go far beyond doing research, managing his productive research group, and teaching at Drexel. He goes to Washington on congressional visits to explain to members of congress and senators the need for funding basic science. He has been invited to multiple DOE BES, NSF, and DoD workshops to help agencies identify priority research directions in nanoscience, materials for energy, and other fields. He is also actively involved in organizing Nano Days and other public events. We served together as panelists at the World Science Festival in New York to describe the future of energy storage to the public. For his extraordinary contributions in multiple fields of energy research, for his discoveries, and for his service to the field and to science, I recommend Prof. Gogotsi most strongly and without reservation for the Award for a Lasting and Outstanding Contribution to Materials Science and Engineering.

Sincerely yours,



Paul S. Weiss

UC Presidential Chair

Distinguished Professor of Chemistry & Biochemistry, Bioengineering, and Materials

Science & Engineering

ACS Nano Editor-in-Chief