



## Prof. Dr. Serge Zhuiykov

Center for Environmental & Energy Research  
Department of Solid-State Science, Faculty of Science



**Office** #727, Ghent University Building, Incheon Global Campus, 119-5 Songdomunhwa-Ro, Yeonsu-Gu, Incheon, Korea



**Phone** +82 32 626 4206



**Email** [Serge.zhuiykov@ghent.ac.kr](mailto:Serge.zhuiykov@ghent.ac.kr)

### Short Biographie

Professor Zhuiykov was awarded Ph.D. degree in Materials Science & Engineering from the Ukrainian State Technical University, USSR in 1991. He has worked at various universities in Australia, Japan, South Korea and Europe for more than 29 years. In 2002 he joined Scientific Services Laboratory, Melbourne, which was amalgamated with the Commonwealth Scientific Industrial Research Organisation (CSIRO) in 2004. He was also periodically working in Japan as an Invited Visiting Professor in 2004, 2005, 2007, 2009, 2010, 2011 and 2013.

During his time at CSIRO Professor Zhuiykov was a Stream Leader of the Sensors and Sensor Networks Transformation Capability Platform (2009-2011). He also led several important co-investment scientific projects. His research capabilities and leadership have resulted in his appointment as a Principal Research Scientist in 2012. In addition to his research activities, as an expert, Professor Zhuiykov was a member of two Technical Committees of the Standards Australia International (2003-2015). He was also the Leader of the Australian delegation at the International Standards Organisation (ISO) TC-21/SC-8 Technical Committee in 2005-2015.

Professor Zhuiykov is a recipient of 2007, 2011 and 2013 Australian Academy of Science and 2010 Australian Government Endeavour Executive Awards for his work on advanced functional nano-crystals and their applications. He is the author and co-author of about 280 original scientific publications, including 4 monographs (2020, 2018, 2014 and 2007, respectively), 9 book chapters and 15 international patents.

In 2017 Professor Zhuiykov was also selected as distinguished expert of very prestigious “**100 Talents**” Program of Shanxi Province, P.R. China.

## Research Area

Our research interest is focused on development new class of nano-materials: 2D semiconductors including metal oxides (WO<sub>3</sub>, TiO<sub>2</sub>, Nb<sub>2</sub>O<sub>5</sub>, MoO<sub>3</sub>) and dichalcogenides (MoS<sub>2</sub>, WS<sub>2</sub> etc.) for various environmental applications such as nano- and opto-electronic devices, environmental sensors, solar cells, catalytic and photo-catalytic applications.

## Education

(1984) Mechanical Engineering, STUU, Ukraine (BSc)

(1986) Mechanical Engineering, STUU, Ukraine (MSc)

(1991) Materials Science and Engineering, STUU, Ukraine (PhD)

## Experience

(2015~Present) Senior Full Professor, GUGC, Korea.

(2009~2015) Principal Research Scientist, Stream Leader, CSIRO, Australia

(2004~2009) Senior Research Scientist, CSIRO, Australia

(2002~2004) Manager, SSL, Australian Government Analytical Laboratories, Australia

(2000~2002) Research Associate, Kyushu University, Japan

## Top 5 Selected Publications

"Nano-engineering and functionalization of hybrid Au-MexOy-TiO<sub>2</sub> (Me = W, Ga) hetero-interfaces for optoelectronic receptors and nociceptors", **Nanoscale** 12 (2020) 20177–20188.

"Nanoscale all-oxide-heterostructured bio-inspired opto-responsive nociceptor", **Nano Micro Letters** 12 (2020) 83.

"A bioinspired opto-genetically engineered artificial neurobotics device with sensorimotor functionalities", **Nature Communications** 10 (2019) 3873.

"Nanostructured Semiconductor", Elsevier Science Publishing, Cambridge, UK 2018, 558p.

"Electronic tuning of 2D MoS<sub>2</sub> through surface functionalization", **Advanced Materials** 27 (2015) 6225-6229.

## Full Bibliography URL Link

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## Patent / Projects

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**World Patent: WO 2009/135270 A1**; A composite material for use in a sensing electrode for measuring water quality / S. Zhuiykov (AUSTRALIA). Filed: May 8, 2008, Published: November 12, 2009.

Upscaling properties of atomically-thin two-dimensional semiconductor oxides for diversified nano-electronics (2017-2021)

Enhancement of photo-electrochemical properties of the single-layered non-stoichiometric tungsten oxide developed by atomic layer deposition (2016-2020).

Eco-efficient modification of nanostructured two-dimensional titanium oxide for air pollutants oxidation (2016-2020).

Synthesis and Intercalation of Two-Dimensional Nano-crystals with Enhanced Charge-carrier Mobility (2013-2015).

Atomically-thin two-dimensional nano-crystals for the next generation of functional devices (2013)

Two-dimensional Semiconductors for Environmental and Energy Applications (2012-2014).

Water Quality Sensors Based on Nanostructured Semiconductor Oxides for the Next Generation of Advanced Sensor Networks (2011-2013).

## Research Field of Interests

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Nano-science and nanotechnologies, Two-dimensional (2D) semiconductors, Environmental Sensors, Surface functionalization of 2D semiconductors, Doped semiconductors.

## Organization of Interests visiting, research collaboration, networking, etc.

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Prof. Joon Dong Kim, Incheon National University, Incheon, South Korea  
Prof. Tetsuya Kida, Kumamoto University, Kumamoto, Japan  
Prof. Kourosh Kalantar-zadeh, University of New South Wales, Sydney, Australia  
Prof. Jie Hu, Taiyuan University of technology, Taiyuan, P.R. China  
Prof. H. Xu, North University of China, Taiyuan, P.R. China