

Zakhar Maletskyi



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APPOINTMENTS

01/09/2020-present

Norwegian University of Life Sciences (NMBU)

Faculty of Science and Technology (REALTEK), Ås (Norway) www.nmbu.no

Associate Professor of Water & Environmental Engineering

Research: Environmental & Industrial Process Analytics with focus on membrane, electrochemical, adsorption and ion exchange processes

Teaching: Water & Wastewater Treatment, Water Resources Management

International Outlook: Water Harmony network with research projects in Europe and North America; development projects in East Africa, Eastern Europe, Central and South Asia

01/09/2019–31/08/2020

Researcher

01/09/2015–31/08/2019

Postdoctoral Fellow, Membrane Processes for Water & Wastewater Treatment

01/12/2012–31/08/2015

Research & Development Manager

Ecosoft BWT, Kiev (Ukraine) www.ecosoft.com

Ecosoft is a water treatment solutions developer and manufacturer active in 60 countries with operational offices in Germany, Belgium and manufacturing facilities in Ukraine.

I was a leader of the R&D team responsible for 5 employees

01/12/2009–30/11/2012

Industrial PhD Fellow

National Technical University of Ukraine / Ecosoft BWT, Kiev (Ukraine) <https://kpi.ua/en>

Industrial research project “Hybrid adsorbents selective to Iron and Arsenic”

- Responsible for the course “Modern methods of water treatment: Membrane & Sorption Processes”
- Managed Fulbright Senior Specialist project between University of Wisconsin-Madison (USA) and National Technical University of Ukraine (2011)
- Co-supervised 1 BSc and 2 MSc students

01/08/2008–30/11/2009

Research Engineer

Ecosoft BWT, Kiev (Ukraine) www.ecosoft.com

Laboratory research on POE/POU water treatment solutions

12/04/2008–22/05/2008

Visiting Researcher

11/04/2009–24/05/2009

Karlsruhe Institute of Technology (KIT), Forschungszentrum Karlsruhe, Institute of Technical Chemistry, Karlsruhe (Germany)

Researcher in a joint project “Development of new polyfunctional sorption materials based on waste ion exchange resins” (2008-2009)

ACADEMIC QUALIFICATIONS

- 2013 **PhD in Engineering - Water treatment technology**
National Technical University of Ukraine "KPI", Kiev, Ukraine
- 2009 **Master in Chemical Technology and Engineering - Water treatment technology**
National Technical University of Ukraine "KPI", Kiev, Ukraine

PROFESSIONAL CERTIFICATIONS

- 2015 **Project Management Professional (PMP)**
Certified by the Project Management Institute (PMI), Pennsylvania (United States)
Cert. #1839847, 04.08.2015 <https://certification.pmi.org/registry.aspx>

INSTITUTIONAL RESPONSIBILITIES

- Nov 2020 – Feb 2021 **Board member (institute representative), NMBU**
Faculty research board
- 2020 **Committee coordinator, NMBU**
Evaluation committee for the PhD degree of Abhilash Muralidharan Nair
- 2019 **Facilitator, NMBU**
Development of the WESH group research strategy
- 2017 **Research program coordinator, NMBU**
Strategic PhD program "Environmental effects on societal infrastructure – water"

COMMISSIONS OF TRUST

- 2020-present **Management Committee member**
EU COST Action CA19123 – Protection, Resilience, Rehabilitation of damaged environment
Management Committee substitute
EU COST Action CA19139 – Process-based models for climate impact attribution across sectors
Working Group Co-Leader Brussels, Belgium
Water Human Capital, Working Group of the Water Europe, European Technology Platform
- 2019-present **Board Member** Oslo, Norway
Forum for technology and development cooperation (Tekna-FTU)
- 2 Apr 2019 **Technical Expert** Geneva, Switzerland
United Nations Workshop of the European Union Water Initiative Plus for the Eastern Partnership (EUWI+ 4 EaP)
- 12-13 Feb 2019 **Technical Expert** Bonn, Germany
United Nations WHO Meeting of policymakers and experts

- 2019 **Expert Team Member**
United Nations WHO/UNECE Sanitation Scoping Study in the pan-European region (review for 56 countries), Joint Secretariat for the Protocol on water & health
- 2013-2015 **Program Coordinator** Kiev, Ukraine
Professional Certification program of the Water Quality Association (WQA, US) in Russian speaking countries
- 2012-2014 **National Organiser** Kiev, Ukraine
Stockholm Junior Water Prize, Stockholm International Water Institute, responsible for Ukraine

PEER-REVIEW

3-5 assignments per year

IWA Water Research; MDPI Water; MDPI Membranes; Water, Air, & Soil Pollution; Elsevier Desalination; MDPI Resources; MDPI Toxins, Elsevier books

ORGANISATION OF MEETINGS

- 2020 **Scientific Committee Secretary** Online
International Conference on Water, Society and Climate Change (WaSo), concluding event of the NORAD-NORHED project, 85 presenters and around 200 participants
- Moderator** Brussels, Belgium
Play to learn the Nexus Approach - Serious Game: learning for a resource-efficient and green economy. Water Knowledge Europe 2020 - EU Green Deal Call Brokerage event, organised by Water Europe (online), around 30 participants
- Chair of the Organising Committee** Oslo, Norway
UN World Water Day national event "Water and Climate Change", around 20 presenters
- Scientific Committee Secretary** Harbin, China
European Water Association & International Water Association joint conference "Water Management in Cold Climate", around 100 participants
- 2019 **Workshops Co-Facilitator** Colombo, Sri Lanka
International Water Association World Water Development Congress
- Rapporteur** Oslo, Norway
European Water Association Green Capital Conference: Sustainable urban drainage solutions (SUDS)
- 2018 **Workshop Coordinator** Norway-Germany
NATO Science for Peace, Water Safety Advanced Research Workshop
- Scientific advisory committee member** Kandy, Sri Lanka
The 9th International Conference on Sustainable Built Environment, special session on Water Management in Developing Countries
- 2016 **Scientific committee secretary** Oslo, Norway
International Water Association, Particle Separation Conference, around 150 participants
- Scientific committee secretary** Spitsbergen
European Water Association, Water Management in Cold Climate Conference, around 100 participants

MEMBERSHIPS

International Water Association (IWA)
 Water Europe – Technological Platform of the European Commission (WssTP)
 Norwegian Society of Graduate Technical and Scientific Professionals (Tekna)
 European Membrane Society (EMS)
 International Society of Automation (ISA)
 Project Management Institute (PMI)
 WaterNet professional NGO
 Norwegian Trekking Association (DNT)

FELLOWSHIPS

2017 **Fellowship for research stays abroad (NMBU)**
 Research stays at the Michigan State University (US) and Kyungpook National University (South Korea)

2008-2009 **Young scientists research fellowship (German Research Foundation, DFG)**
 Research stay at the Forschungszentrum Karlsruhe (Karlsruhe Institute of Technology)

EDUCATIONAL ACTIVITIES

Academic instruction Co-instructor at the Norwegian University of Life Sciences
 Total 209 teaching hours since 2016 in 5 courses:
THT 271 (15 ECTS) Treatment of water and wastewater: Basic course
THT 310 (15 ECTS) Applied Water and Wastewater Treatment
THT 311 (10 ECTS) Water Resources Management and Treatment Technologies
THT 312 (5 ECTS) Water Management in Cold Climate
IMRT 100 Introduction about the water treatment industry

Invited lectures **South Kazakhstan State University** (Kazakhstan, June 2020 and 2016)
Qingdao University of Technology (China, 29-29 August 2018)
Qingdao University of Technology (China, December 2017)
Shandong Jianzhu University (China, November 2017)

Instruction in Lifelong Learning Courses **Water Harmony online training for academic staff** (May-July 2020)
United Nations Economic Commission for Europe (UNECE),
“Water resource management and modern water treatment technologies”
 professional extension course in the context of Protocol on Water and Health supporting National Dialogue on Water Policy under Integrated Water Resources Management in Kyrgyzstan and Kazakhstan
 24-25 September 2018 in Bishkek, Kyrgyzstan
 26-27 September 2018 in Shymkent, Kazakhstan
 22-23 October 2018 in Osh, Kyrgyzstan

Supervision Co-supervised a PhD student (2016-2019)
Main supervisor to 9 and co-supervisor to 5 MSc students
Supervised visiting researchers and exchange students: Mitacs Globalink (1), ERASMUS+ (7), NORAD-NORHED (1)

Educational Projects (12)

2021-2023 1 mil EUR	WP leader, proposal co-developer DIGIWATER – Digitalisation of water industry by innovative graduate water education ERASMUS+ Knowledge Alliance (EU)
2021-2023 1 mil EUR	WP leader, proposal co-developer CCWater – Graduates for Climate Change adapted water management ERASMUS+ Capacity Building in Higher Education (EU)
2020-2021 0,3 mil NOK	Contributor NANOWATER – Managing nanoparticles and use of nanotechnology in water Diku-RCN, Partnership with North America Program (Norway)
2020-2021 25 000 EUR	Contributor Arctic Water Arctic Research and Studies programme of the Icelandic and Norwegian Foreign Ministries
2018-2021 0,9 mil EUR	Coordinator for NMBU, WP leader SWARM – Strengthening of MSc curricula in Water Resource Management for the Western Balkans HEIs and stakeholders www.swarm.ni.ac.rs ERASMUS+ Capacity Building in Higher Education (EU)
2018-2019 0,3 mil NOK	Project Manager TENOR – Towards the circular EcoNomy in Organic faRming www.tenorproject.eu Diku Eurasia Program (Norway)
2018-2019 0,3 mil NOK	Project Manager AECa – Advancing Electrocoagulation for Water Safety and Circularity www.aeco-project.org Diku-RCN, Partnership with North America Program (Norway)
2017-2023 12,3 mil NOK	WP leader, Coordinating Secretary MEMPREX – International partnership on membrane processes in water treatment for research and educational excellence www.memprex.org RCN INTPART (Norway)
2017-2019 2 mil NOK	Contributor WaterMagic – Water Management in Cold Climate www.watermagic.org Diku High North Program (Norway)
2016-2020 6 mil USD	WP leader WaSo – Water, Society and Climate Change www.wasoproject.org NORAD NORHED (Norway)
2015-2018 1,1 mil EUR	Coordinating Secretary Water Harmony – Harmonising water related graduate education www.waterh.eu

2012-2020
15 mil NOK

ERASMUS+ Capacity Building in Higher Education (EU)

Coordinating Secretary

Water Harmony – Integration of Education, Research, Innovation and Entrepreneurship. Curricula development and improvement of teaching tools www.waterh.net

Diku Eurasia (Norway)

SCHOLARLY ACTIVITIES

Research Projects (5)

2020-2023
5,8 mil NOK

Project Manager & Principal Investigator

AEC0 – Advancing EleCtrochemical processes for water safety and circularity

RCN INTPART (Norway)

2019-2021
2 mil EUR

WP leader, proposal co-developer

Water Harmony JPI – Closing the Water Cycle Gap with Harmonised Actions for Sustainable Management of Water Resources

ERA-NET Water JPI (EU)

2016-2018

Researcher

HumusTek – New technology for purification of NOM-containing water for reserve water supply

RCN Regional Research Fund (Norway)

2015-2018

Project manager for NMBU, principal investigator

CE-MBR – Development of Chemically Enhanced Membrane Biological Reactor

RCN liN (Norway), funded through industrial partner

2015-2017
0,5 mil USD

Researcher

IMPREC – Improving wastewater treatment with better phosphorus recovery

EEA Grants POL-NOR (Norway)

Peer-reviewed journal publications (17)

Published (12)

1. **Maletskyi, Z.**; Zigta, D.K.; Kulesha, O.; Ratnaweera, H. Chemical Enhancement for Retrofitting Moving Bed Biofilm and Integrated Fixed Film Activated Sludge Systems into Membrane Bioreactors. *Membranes-Basel* 2019, 9, doi:10.3390/membranes9100135.
2. Kulesha, O.; **Maletskyi, Z.**; Kvaal, K.; Ratnaweera, H. Strategy for Flux Enhancement in Biofilm Ceramic Membrane Bioreactor Applying Prepolymerized and Non-Prepolymerized Inorganic Coagulants. *Water-Sui* 2019, 11, doi:10.3390/w11030446.
3. **Maletskyi, Z.** Water Critical Infrastructure Preparedness in Emerging Economies. In *Physical and Cyber Safety in Critical Water Infrastructure*, Ratnaweera, H., Pivovarov, O., Eds. IOS Press BV: Amsterdam, 2019; pp. 91-99.
4. Kulesha, O.; **Maletskyi, Z.**; Ratnaweera, H. State-of-the-art of membrane flux enhancement in membrane bioreactor. *Cogent Eng* 2018, 5, doi:10.1080/23311916.2018.1489700.
5. Kulesha, O.; **Maletskyi, Z.**; Ratnaweera, H. Multivariate Chemometric Analysis of Membrane Fouling Patterns in Biofilm Ceramic Membrane Bioreactor. *Water-Sui* 2018, 10, doi:10.3390/w10080982.
6. **Maletskyi, Z.**; Mitchenko, T.; Makarova, N.; Shevchuk, E.; Kolomiets, Y. Comparative assessment of sorption properties of commercially available and experimental hybrid materials aimed to impurities of As(III) and As(V) in water. *Water & Water purification technologies. Scientific & Technical News* 2012, 1(7), 21-30.
7. Orestov, Y.; **Maletskyi, Z.**; Mitchenko, T. Peculiarities of physical-chemical transformation of iron

compounds in groundwater. Water & purification technologies. Scientific & Technical News 2011, 1(3), 4-11.

8. **Maletskyi, Z.**; Mitchenko, T.; Makarova, N.; Hoell, W.H. Properties of anion exchange resins exhausted by humic compounds. Desalin Water Treat 2011, 25, 78-83, doi:10.5004/dwt.2011.1524.
9. **Maletskyi, Z.**; Mitchenko, T. About the mechanism of properties transformation of anion exchange resins impregnated with humic substances. Scientific notes of National Kiev Mohyla Academy. Chemical technologies and science 2011, 118, 21-30.
10. Fendri, F.; Mitchenko, T.; **Maletskyi, Z.** Optimization of the reverse osmosis seawater demineralization technologies for a power producing industry. Desalin Water Treat 2011, 25, 84-90, doi:DOI 10.5004/dwt.2011.1832.
11. Shobotov, S.; Kvitka, A.; **Maletskyi, Z.** Structural optimization of double-stage membrane system for seawater demineralization. Water & Purification Technologies. Scientific & Technical News 2010, 2(2), 59-72.
12. **Maletskyi, Z.**; Mitchenko, T.; Makarova, N.; Hoell, W. Formation and properties of hybrid sorbents based on anion exchange resins and humic substances. Scientific notes of National Kiev Mohyla Academy. Chemical technologies and science 2009, 92, 69-75.

Manuscripts under review (1)

13. Cuprys, A.; **Maletskyi, Z.**; Rouissi, T.; Ratnaweera, H.; Knystautas, É; Drogui, P. Simultaneous removal of heavy metals and ciprofloxacin from municipal wastewater using functionalized biochar beads. Science of the Total Environment.

Manuscripts under preparation (4)

14. **Maletskyi, Z.**; Litynska M.; Ratnaweera H. Heated Iron Oxide Particles for water treatment: relationship between synthesis conditions and properties. Preparing for: Water MDPI. Submission in December 2019
15. **Maletskyi, Z.**; Koltsova E.; Ratnaweera H. UV-VIS spectroscopy for prediction of Trihalomethanes Formation Potential in disinfection of drinking water. Preparing for: Water MDPI. Submission in January 2020
16. **Maletskyi Z.**; Shostak V.; Ratnaweera H.; Tarabara V. Natural and synthetic coagulants for water and wastewater treatment: A review. Submission in February 2020
17. Kyrii S.; Kosogina I.; Astrelin I.; Klimenko N.; **Maletskyi Z.**; Ratnaweera H. Towards cradle-to-cradle in alumina refinery: Perspective of bauxite tailings as natural organics adsorbents for water treatment. Submission in February 2020

Book chapters (5)

1. **Maletskyi, Z.** Advances in Membrane Materials and Processes for Water and Wastewater Treatment. In Multidisciplinary Advances in Efficient Separation Processes, American Chemical Society: 2020; Vol. 1348, pp. 3-35.
2. **Maletskyi, Z.** Water for boilers. Chemical water treatment. In Current water issues. Modern water treatment world, Mitchenko, T., Ed. WaterNet: Kiev, Ukraine, 2019; pp. 56-62. ISBN 978-966-97940-1-7
3. **Maletskyi, Z.**; Mitchenko, T. Ion exchange. In Physico-chemical methods of water treatment. Water resources management, Astrelin, I., Ratnaweera, H., Eds. Water Harmony: 2015. ISBN 978-82-999978-0-5
4. **Maletskyi, Z.** New developments in water and wastewater treatment technologies. In Physico-chemical methods of water treatment. Water resources management, Astrelin, I., Ratnaweera, H., Eds. Water Harmony: 2015. ISBN 978-82-999978-0-5
5. Orestov, Y.; Mitchenko, T.; **Maletskyi, Z.** Membrane processes. In Physico-chemical methods of water treatment. Water resources management, Astrelin, I., Ratnaweera, H., Eds. Water Harmony: 2015. ISBN 978-82-999978-0-5

Conference papers (17)

1. **Maletskyi, Z.**; Zigta, D. Membrane fouling control in centralized and decentralized Bf-MBR wastewater treatment plants. In Proceedings of IWA Water and Development Congress and Exhibition, Colombo, Sri Lanka, 1-5 December 2019.
2. **Maletskyi, Z.**; Ratnaweera, H.; Kulesha, O. Membrane fouling reduction in biofilm MBR applying polymeric and monomeric inorganic coagulants. In Proceedings of The 9th IWA Membrane Technology Conference and Exhibition for Water and Wastewater Treatment and Reuse,

- Toulouse, France, 23-27 June 2019; pp. 67-68.
3. **Maletskyi, Z.**; Kulesha, O. Comparison of Al- and Fe-based Membrane Fouling Reducers for Biofilm Membrane Bioreactor. Euromembrane, Valencia, Spain, 9-13 July 2018.
 4. **Maletskyi, Z.**; Kulesha, O. Fouling behavior of chemically modified mixed liquor from submerged ceramic biofilm-membrane bioreactor. Abstr Pap Am Chem S 2018, 256.
 5. **Maletskyi, Z.** Multiple water sources and water-smart society for emerging markets. In Proceedings of 9th International Conference on Sustainable Built Environment (ICSBE), Kandy, Sri Lanka, 13-15 December 2018.
 6. **Maletskyi, Z.** Towards water-smart circular economy. Building a case in organic farming. In Proceedings of 5th International Water Forum "Water Resources and Climate", Minsk, Belarus, 5-6 October 2017.
 7. Kulesha, O.; **Maletskyi, Z.**; Todt, D.; Ratnaweera, H. Development and validation of performance evaluation protocol for small wastewater treatment MBR systems In Proceedings of S2SMALL International IWA Conference on Sustainable Solutions for Small Water and Wastewater Treatment Systems, Nantes, France, 22-26 October 2017.
 8. **Maletskyi, Z.**; Mitchenko, T. Human Right to Water in Countries with Transition Economy: Water Quality Monitoring Issues. In Proceedings of IWA World Water Congress, Lisbon, Portugal, 21-26 September 2014.
 9. **Maletskyi, Z.**; Mitchenko, T.; Shevchuk, E.; Stender, P.; Kolomiets, Y. Comparative assessment of filter media for arsenic removal from drinking water: Commercially available and perspective hybrid sorbents. In Proceedings of 11th World Filtration Congress, Graz, Austria, 16-20 April 2012.
 10. **Maletskyi, Z.**; Mitchenko, T.; Makarova, N. Obtaining and properties investigation of Hybrid Sorbents based on nanoparticles of Humic Substances. In Proceedings of IWA Specialist Conference "Applications of Nanotechnology in the Water Sector", Monte Verità, Ascona, Switzerland, 15 May 2011; p. 83.
 11. **Maletskyi, Z.**; Mitchenko, T.; Shevchuk, E.; Orestov, Y. Hybrid sorbents for iron removal process in RO technologies. In Proceedings of International Congress on Membranes and Membrane Processes, Amsterdam, The Netherlands, 23-29 July 2011.
 12. **Maletskyi, Z.**; Mitchenko, T.; Shevchuk, E.; Orestov, Y. Prevention of Iron fouling by feed water pretreatment with hybrid sorbent. In Proceedings of 6th IWA Specialist Conference on Membrane Technology for Water & Wastewater Treatment, Aachen, Germany, 4-7 October 2011.
 13. Fendri, F.; Mitchenko, T.; **Maletskyi, Z.** Cost-effective seawater desalination technology based on reuse of municipal water. In Proceedings of International Conference EuroMed, Tel Aviv, Israel, 3-7 October 2010; p. 87.
 14. **Maletskyi, Z.**; Mitchenko, T.; Makarova, N.; Shevchuk, E. Eliminating Arsenic from RO concentrates by the reuse of anion exchange resins. In Proceedings of International Conference EuroMed, Tel Aviv, Israel, 3-7 October 2010; pp. 85-87.
 15. Fendri, F.; Mitchenko, T.; **Maletskyi, Z.** Varying seawater salinity as optimization factor in water demineralization and efficient way of municipal wastewater utilization. In Proceedings of IWA Regional Conference and Exhibition on Membrane Technology and Water Reuse, Istanbul, Turkey, 18-22 October 2010; pp. 684-687.
 16. Makarova, N.; Mitchenko, T.; Shevchuk, E.; **Maletskyi, Z.** Investigation and development of special hybrid sorbents for application in membrane technologies of arsenic extraction from water. In Proceedings of IWA Regional Conference and Exhibition on Membrane Technology and Water Reuse, Istanbul, Turkey, 18-22 October 2010; pp. 68-70.
 17. **Maletskyi, Z.**; Mitchenko, T.; Wolfgang, H.; Makarova, N.; Sus, M. Hybrid sorbents based on exhausted anion exchange resins for iron removal. In Proceedings of Desalination for the Environment, Baden Baden, Germany, 2009.

Other publications (8)

Popular science and technical publications, as the contributing editor of the "Water & Purification Technologies" magazine

1. EcoTechnologies of Water Treatment. **Maletskyi, Z.** 2015. 1-2: WaterNet, May 2015, Water & Purification Technologies Magazine, Vols. 75-76, pp. 4-12.
2. Effectiveness of drinking water filters during the spring time. **Maletskyi, Z.** 2013. 1: WaterNet,

Academic Curriculum Vitae

March 2013, Water & Purification Technologies Magazine, Vol. 67, pp. 16-32.

3. Industrial water desalination. **Maletskyi, Z.** 2013. 3: WaterNet, November 2013, Water & Purification Technologies Magazine, Vol. 69, pp. 4-12.
4. Membrane technology for water treatment and desalination. **Maletskyi, Z.** 2010. WaterNet, 2010, Water & Purification Technologies Magazine, Vols. 9-10.
5. Reverse Osmosis: Chemistry and Technology. **Maletskyi, Z.** 2011. 1: WaterNet, February 2011, Water & Purification Technologies Magazine, Vol. 55, pp. 22-28.
6. Water Desalination and energy saving technologies. **Maletskyi, Z.** 2010. WaterNet, 2010, Water & Purification Technologies Magazine, Vols. 11-12.

Collaborations

Map of collaborators in educational and research projects listed under respective activities

