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Previous publishing name: Ivan Kozyatnyk

PROFILE

Docent (Associate Professor qualification), Materials Chemistry (2025). Materials-oriented environmental and analytical chemist specializing in carbon-based porous materials and their performance in environmentally relevant systems. My work combines chromatography and mass spectrometry method development for complex matrices and exposure-relevant measurements, including gas chromatography, liquid chromatography, and thermal desorption gas chromatography mass spectrometry, with design, modification, and structure–property evaluation of porous carbons such as activated carbon, biochar, and hydrochar for water and greywater treatment and pollutant removal. I also apply life cycle assessment (LCA) to quantify environmental trade-offs and guide technology choices. I bridge materials chemistry, including porosity and surface functionality linked to performance, regeneration, and end-of-life, with rigorous analytical workflows such as method validation, quality assurance, complex matrix handling, and implementation-oriented collaborations across academia, healthcare laboratories, and industry.

PROFESSIONAL EXPERIENCE

2024 – now - **Linköping University, Department of Science and Technology (ITN), Laboratory of Organic Electronics**, Norrköping, Sweden

Associate professor (Funded by Swedish Foundation for Strategic Research, 20% of full-time); Docent in Materials Chemistry (awarded December 2025)

- SSF-funded research role focused on advanced analytical methods for sustainable energy materials, including development and application of chromatography- and mass spectrometry-based workflows for complex material-related samples.
- Lead LCA activities linked to sustainable energy materials and technologies, integrating analytical data to improve inventory quality and decision relevance.
- Contribute to strategic method development and cross-disciplinary collaboration between analytical chemistry, materials chemistry, and sustainability assessment within the host environment.

2020 – now - **Region Östergötland, Occupational and Environmental Medicine**, Linköping, Sweden

Researcher, Chemist

- Platform responsible for the GC–MS capability, including planning and prioritization of analyses, method performance, and long-term development of the platform to meet applied investigation and research needs.
- Develop, validate, and apply chromatographic methods for a broad range of organic compounds in indoor and occupational air, using LC, GC and GC–MS workflows; ensure robust QA/QC and reliable interpretation/reporting for stakeholders.
- Principal Investigator (main applicant) for the FORMAS-funded project on Moringa oleifera protein–modified biochar for water treatment (greywater), coordinating project delivery and scientific outputs.

2016 – 2019 - **Umeå University, Department of Chemistry**, Umeå, Sweden

Postdoctoral researcher

- Led research on sustainable use of biochar and hydrochar as low-cost sorbents for removal of emerging organic pollutants from drinking water and wastewater, emphasizing environmentally relevant matrices and practical applicability. Scientific visit to University of Edinburgh, UK.

- Established hydrothermal carbonization workflows (including microalgae feedstocks) and contributed to scale-up activities around a hydrothermal carbonization pre-pilot setup, translating lab protocols into reproducible material production.
- Led experimental evaluation of adsorption performance, regeneration, and end-of-life management of spent biochar adsorbents, including comparative assessment of after-treatment options to support circular use.
- Integrated life cycle thinking into technology evaluation (formal training in applied sustainability assessment), supporting evidence-based trade-offs between performance, regeneration, and environmental impact. Course on Applied Sustainability Assessment, KU Leuven, Belgium.

2015 – 2016 - **Arterium Corporation, JSC Kievmedpreparat**, Kyiv (Ukraine)

Senior analytical chemist

- Led a team of four analytical chemists in development, validation, and method transfer to support pharmaceutical product development and lifecycle management.
- Owned planning and execution of method validation and transfer under regulated frameworks, ensuring documentation quality and audit readiness.
- Prepared and coordinated analytical documentation for registration and re-registration dossiers for pharmaceutical products, including generics and biosimilars, working cross-functionally with QA and regulatory colleagues.

2012 – 2014 - **Umeå University, Department of Chemistry**, Umeå (Sweden)

Postdoctoral researcher

- Developed and evaluated sorbent-based strategies for permeable reactive barriers (PRBs) targeting groundwater micropollutants (e.g., PCB, PAH, phthalates, BTEX) and selected metals, including field sampling and analysis to connect laboratory performance with real groundwater conditions.
- Applied integrated analytical workflows for contaminants and metals in complex aqueous matrices, including GC-MS and ICP-MS, supported by sorbent characterization (e.g., N₂ sorptiometry).
- Advanced dissolved organic matter (DOM) and metal speciation studies using hyphenated size exclusion chromatography (SEC)-ICP-MS approaches, including investigations of metal distribution in DOM and mercury leaching behavior from soils/sorbents.
- Performed DOM characterization using complementary approaches (FTIR, NMR, pyrolysis-GC, SEC) to support mechanistic interpretation of transport and binding.

2010 – 2012 - **JSC Science-Industrial Center "Borshchahivskiy Chemical-Pharmaceutical Plant "**, Kyiv, Ukraine

Development chemist

- Developed and validated analytical methods for pharmaceutical products using HPLC, UV/Vis, automated titration, and pharmaco-technological testing, supporting both product development and routine control needs.
- Responsible for analytical development/validation activities for about ten products, including planning, execution, troubleshooting, and documentation of validation packages in a GMP environment.
- Conducted biowaiver-related dissolution testing (in vitro dissolution studies) and interpreted results to support equivalence arguments where applicable.
- Prepared and coordinated analytical documentation for registration and re-registration dossiers, working across development, quality, and regulatory functions.

2010 - **Adam Mickiewicz University, Department of Water Treatment Technology**, Poznań, Poland

Visiting research fellow (4 months)

- Conducted a 4-month research visit on drinking water treatment optimization using biodegradable organic carbon as a decision-relevant indicator to evaluate process changes across treatment steps.

- Studied transformation and adsorption behavior of DOM (e.g., fulvic acids) and their oxidation by-products under ozonation/chlorination, with emphasis on equilibrium and kinetic adsorption on activated carbon and interactions with corrosion products in distribution-relevant systems.
- Produced peer-reviewed outputs from the visit (3 publications) and disseminated results via conference presentations; applied complementary analytical tools (UV/Vis, SEC, FTIR) to support mechanistic interpretation relevant to treatment design.

2003 – 2010 - **A.V. Dumansky Institute of Colloid and Water Chemistry National Academy of Science of Ukraine**, Kyiv, Ukraine

PhD student, Research fellow, Engineer

- Developed advanced treatment concepts for removal of DOM from drinking water by combining biological and physico-chemical processes at sorbent interfaces, with emphasis on biological activated carbon performance and regeneration strategies.
- Investigated adsorption dynamics and process performance under ozonation and biologically relevant conditions, supported by water and material characterization (e.g., TOC, UV/Vis, thermogravimetry, N₂ sorptiometry).
- Contributed to pilot-scale implementation with the Kyiv Dnipro drinking water treatment plant, supporting pilot installation, field sampling, and data interpretation to connect laboratory findings with operational conditions.
- Contributed to national standardization work as a contributing participant (via the institute) in preparation of the Ukrainian Drinking Water Standard.

EDUCATION AND ACADEMIC QUALIFICATIONS

- 2025 - Docent (Associate Professor qualification) in Materials Chemistry, Linköping University, Sweden (awarded December 2025)
- 2009 - PhD in Chemistry (Environmental Safety), A.V. Dumansky Institute of Colloid and Water Chemistry, National Academy of Sciences of Ukraine, Kyiv, Ukraine.
Thesis: Transformation of natural organic matter during drinking water purification and treatment
- 2005 - MSc in Environmental Engineering and Ecology, National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Kyiv, Ukraine
- 2003 - BSc in Environmental Engineering and Ecology, National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Kyiv, Ukraine

PROJECTS, GRANTS & PRIZES

Competitive research funding (awarded; applicant/PI)

- 2024–2030 - Swedish Foundation for Strategic Research (SSF): Adjunct Professor/Lecturer grant – "Analytical methods and LCA for sustainable energy materials". Principal applicant/PI. Funding to applicant/position: 1 499 774 SEK.
- 2020–2024 - Formas: "Biochars modified with Moringa oleifera proteins for water treatment". Principal applicant/PI. Funding to applicant/position: 2 901 000 SEK.
- 2017 - COST Action FP1306 (LIGNOVAL) – Short Term Scientific Mission (STSM): "Low-cost adsorbents for emerging organic pollutants removal from waste and drinking water". Principal applicant/PI. Funding: 2200 EUR
- 2010 - Mianowski Fund Scholarship (Poland): "Behavior of natural organic matter during drinking water treatment". Principal applicant/PI. Funding: 2000 EUR.
- 2005–2006 President of Ukraine grant for gifted youth: "Technology for natural and wastewater purification combining physicochemical and biological processes". Principal applicant/PI. Funding: 6000 EUR.
- 2005–2006 - National Academy of Sciences of Ukraine grant (young scientists): "Biosorption of organic and inorganic matter in natural and wastewater purification". Co-applicant. Funding: 4000 EUR.

Funded projects (role and contribution)

- 2025 - Formas: "Recovery and fractionation of waste-derived volatile fatty acids" (PI: Amir Mahboubi, University of Borås). Collaborator; co-supervisor of a PhD student within the project.
- 2023–2025 - Wallenberg Initiative Materials Science for Sustainability (WISE): "Electrification of liquid organic hydrogen carrier (e-LOHC)" (PI: Mikhail Vagin, Linköping University). Co-applicant.
- 2019 - European Regional Development Fund (Green North): "Hydrothermal carbonization pilot plant" (PI: Mats Tysklind, Umeå University). Project-funded researcher (employed in the project).
- 2018 - VINNOVA: "From problem to product – Nutrient capture by microalgae" (PI: Stina Jansson, Umeå University). Project-funded researcher (employed in the project).
- 2016–2018 - Kempe Foundation: "After-treatment of end-of-life biochar adsorbent materials" (PI: Stina Jansson, Umeå University). Postdoctoral researcher (project-funded role).
- 2012–2014 - Kempe Foundation: "Alternative environmental technologies for contaminated soil at sites with ongoing industrial activity" (PI: Peter Haglund, Umeå University). Postdoctoral researcher (project-funded role).

Awards and recognitions

- 2023 - Environmental Prize, Region Östergötland, Sweden.
- 2021 - Letter of commendation, Ministry of Education and Science of Ukraine.
- 2019 - MSCA COFUND Fellowship, Rey Juan Carlos University, Madrid, Spain (awarded; declined due to start of permanent position): "Chemical- and bio-electrochemical technologies for resource recovery from wastewater."
- 2019 - MSCA Individual Fellowship (2018 call): Seal of Excellence.
- 2014 - Poster Prize, RSC Younger Members Symposium (3rd), Birmingham, UK.
- 2009 - Kulskiy Prize, National Academy of Sciences of Ukraine (series of articles).

TEACHING, SUPERVISION AND PEDAGOGICAL QUALIFICATIONS

Pedagogical training (higher education)

- 2024 - Higher education pedagogy for PhD supervisors, Linköping University, Sweden.
- 2022 - Research supervision, Linköping University, Sweden.
- 2022 - Supervision of problem-based learning tutorials, Linköping University, Sweden.
- 2015 - Corporate lecturer training, Arterium Corporation, Ukraine.
- 2002–2005 - Pedagogy/psychology and research-methods courses as part of degree studies, Kyiv Polytechnic Institute, Ukraine.

Teaching experience

- 2024–2026 - Environmental Safety: Life Cycle Assessment (LCA), National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute". Lecturer; course development (lectures and practical assignments); about 20 students/year.
- 2023–2026 - Health and Disease 2, Linköping University. Base group supervisor (PBL tutorials); 6 groups supervised.
- 2016 - Evaluation of Active Substance Master File and CTD Module 3 documentation in bulk drug development, Arterium Corporation. Lecturer; course development and delivery.
- 2015 - Biowaiver, drug interchangeability and the Biopharmaceutics Classification System (BCS), Arterium Corporation. Lecturer; course development and delivery.

Supervision

PhD (co-supervisor)

- 2025–present - Faudillah Alhumairah, Linköping University (ITN/LOE). Co-supervisor.

- 2025–present - Negar Basereh, University of Borås (Swedish Centre for Resource Recovery). Co-supervisor.
- 2009–2010 - Tetiana Poliakova; Tetiana Boichenko, A.V. Dumansky Institute (NAS of Ukraine). Co-supervisor.

MSc / degree projects (main supervisor unless stated)

- 2025 - Felicia Karlsson, Linköping University. Degree project (Chemistry programme). Main supervisor.
- 2025 - Emelie Aröd, Linköping University. Degree project (Chemistry programme). Main supervisor.
- 2023 - Simon Andersson, Linköping University. Degree project (Biomedical Analyst programme). Main supervisor.
- 2022–2024 - Catherine Ndinda, University of Nairobi. Master's student. Co-supervisor.
- 2016 - Elin Berg, Umeå University. Bachelor's degree project. Co-supervisor.

Other supervision and mentoring

- 2025–2026 - Olena Bortnikova, Region Östergötland. Workplace practice from the State employment agency. Supervisor.
- 2022–2023 - Iryna Yakupova, Region Östergötland. Visiting PhD student (refugee from Ukraine). Supervisor.
- 2015–2016 - Team leadership and mentoring of three analytical chemists in R&D, Arterium Corporation. Group leader.

Educational outreach

- 2022 - Environmental education and water purification: lectures and practical sessions, summer camp for Ukrainian refugee children (Ukrainian Association Östergötland), Sweden.
- 2022 - Educational session for Kenyan small household farmers: water purification using locally available resources (with local partners), Kenya.

MEMBERSHIPS AND PROFESSIONAL SERVICE

- 2006–present - International Water Association: Board member of the Specialist Group on Sanitation and Water Management in Low- and Middle-Income Countries.
- 2008–present - Royal Society of Chemistry.
- 2022–present - Swedish Chemical Society.
- 2022–present - Ukrainian Association Östergötland: Board member; Head of the association (2022).

EDITORIAL AND PEER-REVIEW ACTIVITIES

Academic editor

- PLOS ONE (2023–present): Academic Editor.

Peer reviewer

Completed 170+ manuscript reviews. Regular reviewer for leading journals including: Environmental Science & Technology; Water Research; Science of the Total Environment; Journal of Hazardous Materials; Environmental Pollution; Chemosphere; Journal of Environmental Management; Bioresource Technology; ACS ES&T Water; Journal of Environmental Chemical Engineering. Additional reviewing activity across further journals available upon request.

RESEARCH EVALUATION AND REVIEW PANELS

- 2026 – Marie Skłodowska-Curie Actions (EU) – External evaluator for Doctoral Networks (2025 call).
- 2022–2023; 2025 – COST (EU) – External Expert and Rapporteur, Open Call Actions.
- 2020; 2021; 2023; 2024; 2025 – National Research Foundation of Ukraine (Ukraine) – External expert/reviewer for competitive calls (incl. Leading and Young Scientists Research Support; Science

for the safety of human and society; Cutting-edge investigations in mathematical, natural and technical sciences; Science for the Recovery of Ukraine in the War and Post-war periods; Excellence Science in Ukraine).

- 2023; 2025 – Research and Innovation Foundation (Cyprus) – Review panel member/external expert, RESTART Programmes for Research, Technological Development and Innovation.
- 2025 – Science Fund of the Republic of Serbia (Serbia) – Review panel member/external expert, IDEAS programme (2024 call).
- 2023 – EURIZON (EU, H2020) – Evaluator, Fellowship Programme (Remote Research Grants for Ukrainian Researchers).
- 2017–2020 – Ministry of Education and Science of Ukraine (Ukraine) – Member of evaluation panel, Young Scientists project calls (thematic area covering environmentally clean production and construction, environmental protection, mineral extraction/processing, chemical processes and substances in the environment, rational environmental management).

CONFERENCE AND COMMUNITY LEADERSHIP

- 2025 - Co-chair, session on Innovative membrane and adsorptive technologies for sustainable wastewater reuse and resource recovery, IWA Water and Development Congress & Exhibition, Bangkok, Thailand.
- 2023 - Session chair, wastewater strategies and treatment technologies, IWA Water and Development Congress & Exhibition, Kigali, Rwanda.
- 2013 - Session chair, 8th Conference on Sustainable Development of Energy, Water and Environment Systems, Dubrovnik, Croatia.
- 2013–2014 - Member, Postdoc Council, Umeå University, Sweden.

SKILLS AND OTHER QUALIFICATIONS

- Languages: English (fluent); Swedish (upper-intermediate); Ukrainian (native); Polish (intermediate).
- Software and data tools (selected): ChemStation (Agilent); LabSolutions (Shimadzu); ChromaTOF (LECO); OriginPro; SIMCA/MODDE; OpenLCA; Umberto LCA.
- Public outreach: Regular contributor to the Region Östergötland Occupational and Environmental Medicine blog (posts in Swedish on environmental topics).

SCIENTIFIC/RESEARCH INTERESTS

- Materials chemistry of porous carbon materials, including structure and property relationships, surface functionality, adsorption, regeneration, and end of life
- Environmental and analytical chemistry with emphasis on chromatography and mass spectrometry methods for complex matrices and exposure-relevant measurements, including indoor and occupational air.
- Applications in water and greywater treatment using sorbents based on activated carbon, biochar, and hydrochar, including hydrothermal carbonization and natural organic matter.
- Sustainability assessment using LCA of laboratory practices, environmental technologies, and material choices.

REFERENCES

Available upon request.

List of publications

ORCID: 0000-0002-2185-7885

Name change (2025): Legally changed surname from Kozyatnyk to Hetman; publications and records prior to 2025 may appear under Ivan Kozyatnyk

*- corresponding author

PEER-REVIEWED ARTICLES

1. Alhumairah, F., Gueskine, V., Abrahamsson, T., **Hetman, I.**, Domeij, F., Leanderson, P., Strakosas, X., Wiberg, C., Crispin, R., Vagin, M. 2026. Nernstian diagnostics of imperfect selectivity in naphthalene diimide-based aqueous organic redox flow battery. *Advanced Sci.*, e7494. <https://doi.org/10.1002/adv.74945>
2. **Hetman, I.*** 2026. Life cycle assessment of hydrogen and helium as carrier gases in gas chromatography analysis. *Green Chem.*, 28, 839 – 851. <https://doi.org/10.1039/D5GC05912G>
3. Sundberg, C., Tibbetts, H., Zakrisson, L., Njenga, M., Ndinda, C., **Hetman, I.*** 2026. Early-stage sustainability assessment of greywater treatment with moringa seed extract and biochar. *J. Clean. Prod.* 538, 147349. <https://doi.org/10.1016/j.jclepro.2025.147349>
4. Deekshitha, K., **Hetman, I.**, Neli, Ö.U., Jayarama, A., Pinto, R. 2025. AI-accelerated innovations in photodegradation and depolymerization of waste plastics: a critical review on mechanistic insights, environmental impact, and future perspectives. *Eur. Polym. J.* 239, 114278. <https://doi.org/10.1016/j.eurpolymj.2025.114278>
5. **Kozyatnyk, I.**, Benavente, V., Weidemann, E., Jansson, S. 2025. Adsorption of organic contaminants of emerging concern using microalgae-derived hydrochars. *Sci. Rep.* 15, 9059. <https://doi.org/10.1038/s41598-025-92717-y>
6. **Kozyatnyk, I.***, Yakupova, I. 2025. Impact of chemical and physical treatments on the structural and surface properties of activated carbon and hydrochar. *ACS Sustainable Chem. Eng.*, 13, 6, 2500-2507. <https://doi.org/10.1021/acssuschemeng.4c09189>
7. Ndinda, C., Njenga, M., **Kozyatnyk, I.*** 2024. Exploring biochar and Moringa oleifera seed proteins for greywater remediation on small farms. *Bioresour. Technol.*, 405, 130935. <https://doi.org/10.1016/j.biortech.2024.130935>
8. Rebryk, A., **Kozyatnyk, I.***, Njenga, M. 2024. Emission of volatile organic compounds during open fire cooking with wood biomass: traditional three-stone open fire vs. gasifier cooking stove in rural Kenya. *Sci. Tot. Env.*, 934, 173183. <https://doi.org/10.1016/j.scitotenv.2024.173183>
9. **Kozyatnyk, I.***, Njenga, M. 2023. Use of biochar and Moringa oleifera in greywater treatment to remove heavy metals and contaminants of emerging concern. *Bioresour. Technol. Rep.*, 24, 101615. <https://doi.org/10.1016/j.biteb.2023.101615>
10. **Kozyatnyk, I.**, Benavente, V., Weidemann, E., Gentili, F., Jansson, S. 2023. Influence of hydrothermal carbonization conditions on the porosity, functionality, and sorption properties of microalgae hydrochars. *Sci. Rep.*, 13, 8562. <https://doi.org/10.1038/s41598-023-35331-0>
11. Wu, Zh., Vagin, M., Boyd, R., Ding, P., Leanderson, P., **Kozyatnyk, I.**, Greczynski, G., Odén, M., Björk, E. 2023. Effect of product removal in hydrogen peroxide electrosynthesis on mesoporous chromium (III) oxide. *ACS Appl. Nano Mater.*, 6, 20, 18748–18756. <https://doi.org/10.1021/acsanm.3c02364>
12. Latham, K., Matsakas, L., Figueira, J., **Kozyatnyk, I.**, Rova, U., Christakopoulos, P., Jansson, S. 2022. Impact of temperature and residence time on the hydrothermal carbonization of organosolv lignin. *J. Anal. Appl. Pyrolysis*, 166, 105623. <https://doi.org/10.1016/j.jaap.2022.105623>
13. **Kozyatnyk, I.**, Oesterle, P., Wurzer, C., Mašek, O., Jansson, S. 2021. Removal of contaminants of emerging concern from multicomponent systems using carbon dioxide activated biochar from lignocellulosic feedstocks. *Bioresour. Technol.*, 340, 125561. <https://doi.org/10.1016/j.biortech.2021.125561>

14. Mustafa, M., **Kozyatnyk, I.**, Gallampois, C., Oesterle, P., Östman, M., Tysklind, M. 2021. Regeneration of saturated activated carbon by electro-peroxone and ozonation: Fate of micropollutants and their transformation products. *Sci. Tot. Env.*, 776C, 145723. <https://doi.org/10.1016/j.scitotenv.2021.145723>
15. Latham, K., **Kozyatnyk, I.**, Figueira, J., Carlborg, M., Rosenbaum, E., Jansson, S. 2021. Self-generation of low ash carbon microspheres from the hydrothermal supernatant of anaerobic digestate: formation insights and supercapacitor performance. *Chem. Eng. J. Adv.*, 6C, 100097. <https://doi.org/10.1016/j.ceja.2021.100097>
16. **Kozyatnyk, I.**, Yacout, D.M., von Caneghem, J., Jansson, S., 2020. Comparative evaluation of after-treatment of end-of-life carbon adsorbent materials. *Bioresour. Technol.*, 302, 122866. <https://doi.org/10.1016/j.biortech.2020.122866>
17. Smolin, S., **Kozyatnyk, I.***, Klymenko, N., 2020. New approach for the assessment of the contribution of adsorption, biodegradation and self-bioregeneration in the dynamic process of biologically active carbon functioning. *Chemosphere*, 248, 126022. <https://doi.org/10.1016/j.chemosphere.2020.126022>
18. **Kozyatnyk, I.***, Latham, K., Jansson, S., 2019. Valorisation of humic acids by hydrothermal conversion into carbonaceous materials: physical and functional properties. *ACS Sustainable Chem. Eng.*, 7(2), 2585–2592. <https://doi.org/10.1021/acssuschemeng.8b05614>
19. **Kozyatnyk, I.***, Lövgren, L., Tysklind, M., Haglund, P., 2017. Multivariate assessment of barrier materials for treatment of complex groundwater rich in dissolved organic matter and organic and inorganic contaminants. *J. Env. Chem. Eng.*, 5, 3075–3082. <https://doi.org/10.1016/j.jece.2017.06.011>
20. **Kozyatnyk, I.***, Bouchet S., Björn, E., Haglund, P., 2016. Fractionation and size-distribution of metal and metalloid contaminants in groundwater rich in dissolved organic matter. *J. Hazard. Mater.*, 318, 194–202. <https://doi.org/10.1016/j.jhazmat.2016.07.024>
21. **Kozyatnyk, I.***, Lövgren, L., Haglund, P., 2015. On the leaching of mercury by brackish seawater from permeable barrier materials and soil. *J. Env. Chem. Eng.* 3(2), 1200–1206. <https://doi.org/10.1016/j.jece.2015.04.017>
22. Świetlik, J., Laskowski, T., **Kozyatnyk, I.***, 2015. Adsorption of natural organic matters on the products of water-pipe corrosion. *Water, Air, & Soil Pollution*, 226(7), 1–9. <https://doi.org/10.1007/s11270-015-2485-4>
23. **Kozyatnyk, I.***, Haglund, P., Lövgren, L., Tysklind, M., Gustafsson, A., Törneman, N., 2014. Evaluation of barrier materials for removing pollutants from groundwater rich in natural organic matter. *Water Sci. Technol.*, 70(1), 32–39. <https://doi.org/10.2166/wst.2014.192>
24. **Kozyatnyk, I.***, Świetlik, J., Raczyk–Stanisławiak, U., Klymenko, N., Nawrocki, J., 2014. Oxidized fulvic acids adsorption on activated carbon. *Water Sci. Technol.: Water Supply*, 14(2), 238–245. <https://doi.org/10.2166/ws.2013.193>
25. **Kozyatnyk, I.***, Świetlik, J., Raczyk–Stanisławiak, U., Dąbrowska, A., Klymenko, N., Nawrocki, J., 2013. Influence of oxidation on fulvic acids composition and biodegradability. *Chemosphere*, 92(10), 1335–1342. <https://doi.org/10.1016/j.chemosphere.2013.05.046>
26. Klymenko, N.A., **Kozyatnyk, I.P.**, Savchina, L.A., 2010. Removing of fulvic acids by ozonation and biological active carbon filtration. *Water Res.*, 44(18), 5316–5322. <https://doi.org/10.1016/j.watres.2010.05.035>
27. **Kozyatnik, I.P.**, Savchina, L.A., Klimenko, N.A., Samsoni-Todorova E.A., 2010. Equilibrium adsorption of fulvic acids on activated carbon and its dependence on preozonation of solutions. *J. Water Chem. Technol.*, 32(4), 200–205. <https://doi.org/10.3103/S1063455X10040028>
28. **Kozyatnik, I.P.**, Klimenko, N.A., Savchina, L.A., 2010. The effect of water ozonation on the efficiency of extracting natural organic matter during filtration through biologically activated carbon. *J. Water Chem. Technol.*, 32(3), 139–144. <https://doi.org/10.3103/S1063455X10030021>
29. Klimenko, N.A., **Kozyatnik, I.P.**, Savchina, L.A., Pavlikovskaya, I.V., Vrubeľ, T. L., 2009. The change of the content in water of biologically accessible organic carbon in the course of water treatment. *J. Water Chem. Technol.*, 31(6), 405–409. <https://doi.org/10.3103/S1063455X09060095>

30. Klimenko, N.A., Polyakova, T.V., Savchina, L.A., **Kozyatnyk, I.P.**, 2009. Adsorption and heterogeneous catalytic oxidation of organic matter in aqueous solutions. *J. Water Chem. Technol.*, 31(5), 275–285. <https://doi.org/10.3103/S1063455X09050014>
31. Klimenko, N.A., Savchina, L.A., **Kozyatnyk, I.P.**, Goncharuk, V.V., Samsoni–Todorov, A.O., 2009. The effect of preliminary ozonization on the bioregeneration of activated carbon during its long–term service. *J. Water Chem. Technol.* 31(4), 220–226. <https://doi.org/10.3103/S1063455X09040031>
32. Savchyna, L.A., **Kozyatnyk, I.P.**, Poliakova, T.V., Klymenko, N.A., 2009. Influence of surface chemistry and structure of activated carbon on adsorption of fulvic acids from water solution. *Water Sci. Technol.*, 60(2), 441–447. <https://doi.org/10.2166/wst.2009.344>
33. Klimenko, N.A., Savchina, L.A., Polyakova, T.V., **Kozyatnyk, I.P.**, 2009. Adsorption–catalytic removal of fulvic acids on activated carbons in the presence of hydrogen peroxide. *J. Water Chem. Technol.* 31(2), 92–97. <https://doi.org/10.3103/S1063455X09020039>
34. Klimenko, N.A., Savchina, L.A., **Kozyatnyk, I.P.**, Topkin, Yu.V., Polyakova, T.V., 2008. The impact of surface chemistry of activated carbon and its structure on adsorption of fulvic acids from aqueous solutions. *J. Water Chem. Technol.* 30(6), 344–350. <https://doi.org/10.3103/S1063455X08060039>
35. Klimenko, N.A., Savchina, L.A., **Kozyatnyk, I.P.**, Malysheva, M.L., Polyakova, T.V., 2008. The impact of various oxidation modes on the variation of structural characteristics of activated carbon. *J. Water Chem. Technol.* 30(5), 269–275. <https://doi.org/10.3103/S1063455X08050020>
36. **Kozyatnyk, I.P.**, Klimenko, N.A., Savchina, L.A., Vrubel', T.L., 2008. The use of hydrogen peroxide for raising the efficiency of filter operation with biologically activated carbon. *J. Water Chem. Technol.* 30(2), 136–149. <https://doi.org/10.3103/S1063455X08020021>
37. Klymenko, N.A., Savchyna, L.A., **Kozyatnyk, I.P.**, 2008. Estimation of features of activated carbon materials used for drinking water purification. *Polish. J. Chem.*, 82., 283–290.
38. Goncharuk, V.V., **Kozyatnyk, I.P.**, Klimenko, N.A., Savchina, L.A., 2007. Natural bioregeneration of activated carbons in filters for add–on treatment of drinking water during their continuous operation. *J. Water Chem. Technol.*, 29(6), 300–306. <https://doi.org/10.3103/S1063455X07060057>
39. Klimenko, N.A., Savchina, L.A., **Kozyatnyk, I.P.**, 2006. The combination of adsorption processes on activated carbon and oxidation with nonionic surfactant solutions filtration. *Ekotekhnologii i Resursosberezhenie*, 5, 52–56 (in Russian)
40. Klimenko, N.A., **Kozyatnyk, I.P.**, Savchina, L.A., 2006. Interaction of hydrogen peroxide with a layer of activated carbon during filtration of a H₂O₂ solution. *J. Water Chem. Technol.*, 28(5), 14–18.
41. Klimenko, N.A., Savchina, L.A., Samsonov–Todorov, A.O., **Kozyatnyk, I.P.**, 2006. Assessment of resource capabilities of activated carbon in add–on purification processes of tap water. *J. Water Chem. Technol.*, 28(4), 24–33.
42. Klimenko, N.A., Savchina, L.A., **Kozyatnyk, I.P.**, 2006. Reactivation of activated carbon adsorption capacity during oxidative catalytic regeneration. *Ekotekhnologii i Resursosberezhenie*, 2, 29–34 (in Russian).
43. Goncharuk, V.V., Klimenko, N.A., Savchina, L.A., Vrubel, T.L., **Kozyatnyk, I.P.**, 2006. Water treatment and demineralization technology: Current issues in the technology of drinking water conditioning. *J. Water Chem. Technol.*, 28(1), 2–49.

MANUSCRIPTS

– **Hetman, I.***, Rebryk A., Gözmen, B., Çalhan, S.D., Dimitrios Kalderis, D. Insights into the mechanisms of volatile organic compounds formation during the hydrothermal carbonization of olive tree sawdust, rice husk and wine pomace. - *Under review*.

BOOK EDITING

– *Filtration Materials for Groundwater: A Guide to Good Practice*. **Kozyatnyk, I.** (eds), 2016, IWA Publishing, London, UK, p. 144.

BOOK CHAPTER

- Tomin, O., **Hetman, I.**, 2026. Regenerative methods of biochar as a sustainable adsorbent. In Chew K.W. and T. Kurniawan, T. (Eds.) Wastewater Treatment with Biochar. Elsevier – *In press*.
- Klymenko, N., **Kozyatnyk, I.**, 2016. Filtration materials for groundwater treatment. In **Kozyatnyk, I.** (eds) Filtration Materials for Groundwater: A Guide to Good Practice, IWA Publishing, London, UK, pp. 19–36.

PATENTS

- **Kozyatnyk, I.P.**, Meshkova–Klymenko, N.A., Savchyna, L.A., Tytarenko, N.Z., 2008. Method for adsorption filter operation. Patent of Ukraine, UA82627 dated 25.04.2008.
- Meshkova–Klymenko, N.A., Savchyna, L.A., Hrechanyk, S.V., Nevylna, L.V., Shvydenko, O.H., Tytarenko, N.Z., **Kozyatnyk, I.P.**, 2006. A method for purifying water from organic pollutants. Patent of Ukraine, UA76034 dated 15.06.2006.

CONFERENCES (last five years)

- **Hetman, I.**, Ndinda, C., Njenga, M. Transforming greywater: sustainable treatment strategies with biochar and Moringa extract. IWA Water and Development Congress & Exhibition, Bangkok, Thailand, 08-12 December 2025. *Co-chairing a session on Innovative membrane and adsorptive technologies for sustainable wastewater reuse and resource recovery*.
- **Kozyatnyk, I.**, Ndinda, C., Njenga, M. Biochar and Moringa oleifera seed proteins for greywater remediation. The 7th IWA International Conference on Ecotechnologies for Wastewater Treatment, 23-26 June 2025, Stockholm, Sweden.
- **Hetman, I.** Towards a circular and sustainable Ukraine: life cycle assessment progress in policy, technology, and academia. XXV International Science Conference Ecology. Human. Society. 12 June 2025, Kyiv, Ukraine.
- Wu, Z., Ding, P., Gueskine, V., Boyd, R., Greczynski, G., Leanderson, P., **Kozyatnyk, I.**, Odén, M., Crispin, R., Berggren, M. and Björk, E., Electrochemical Refinery for Sustainable Hydrogen Peroxide Production Using Conducting Polymer and Metal Oxide. In 2025 AIChE Annual Meeting. AIChE.
- **Kozyatnyk, I.**, Ndinda, C., Njenga, M. Exploring the synergy between biochar and Moringa oleifera seed proteins for greywater remediation. 17th IWA Conference on Small Water and Wastewater Systems and 9th IWA Conference on Resource Oriented Sanitation, 10–14 November 2024, Curitiba, Brazil.
- Ndinda, C., Njenga, M., **Kozyatnyk, I.** Exploring biochar and *Moringa oleifera* seed proteins for greywater remediation on small farms, Kenya. 1st Grassland and Rangeland Society of Kenya Annual Conference, 15–18 October 2024, Nairobi, Kenya.
- **Kozyatnyk, I.**, Rebryk, A., Njenga, M. Biomass cooking and air quality: a study on volatile organic compounds via thermal desorption GC-MS. 3rd European Sample Preparation Conference and 2nd Green and Sustainable Analytical Chemistry Conference, 15–18 September 2024, Chania, Crete, Greece.
- Sundberg, C., Tibbetts, H., Zakrisson, L., Njenga, M., Ndinda, C., **Kozyatnyk, I.** Assessing a complex biochar system with circular economy principles. 3rd International Conference on Negative CO₂ Emissions, 18–21 June 2024, Oxford, UK.
- **Kozyatnyk, I.**, Njenga, M. Nature's solution to greywater treatment: combining biochar and *Moringa oleifera* seeds for cleaner water. IWA Water and Development Congress & Exhibition, 10–14 December 2023, Kigali, Rwanda. *Chairing a session on Wastewater strategies and treatment technologies*
- Andersson, S., **Kozyatnyk, I.** Analysis of microbial volatile organic compounds in indoor air. Validation of thermal desorption gas chromatography-mass spectrometry method. XXIII International Science Conference Ecology. Human. Society. 07 December 2023, Kyiv, Ukraine.
- **Kozyatnyk, I.**, Njenga, M. Greywater treatment using biochar and *Moringa oleifera* seed proteins. The Biochar Summit, 12–15 June 2023, Helsingborg, Sweden.

- **Kozyatnyk, I.**, Njenga, M. Development of a protocol for household greywater treatment using biochar and *Moringa oleifera* seeds proteins. The 18th IWA Leading Edge Conference on Water and Wastewater Technologies, 29 May–2 June 2023, Daegu, South Korea.
- **Kozyatnyk, I.**, Njenga, M. Greywater treatment using biochar and *Moringa oleifera* seed proteins. 4th International Conference for Bioresource Technology for Bioenergy, Bioproducts & Environmental Sustainability, 14–17 May 2023, Lake Garda, Italy.

POPULAR SCIENCE ARTICLES/BLOGS

- **Hetman, I.** Riskfyllt att jobba inom second hand / Risky to work in second-hand (on Swedish). <https://www.arbetsochmiljomedicin.se/am/bloggen/inlagg/2026-01-29-riskfyllt-att-jobba-inom-second-hand>
- **Hetman, I.** Terpener inomhus – fräsch doft, dold kemi / Indoor terpenes – fresh scent, hidden chemistry (on Swedish). <https://www.arbetsochmiljomedicin.se/am/bloggen/inlagg/2025-11-13-terpener-inomhus---frasch-doft-dold-kemi>
- **Hetman, I.** Fukt, mögel och missade skoldagar / Moisture, mold, and missed school days (on Swedish). <https://www.arbetsochmiljomedicin.se/am/bloggen/inlagg/2025-09-18-fukt-mogel-och-missade-skoldagar>
- **Kozyatnyk, I.** Vi hittar alla osynliga utsläpp / We find all invisible emissions (on Swedish). <https://www.arbetsochmiljomedicin.se/am/bloggen/inlagg/2025-05-08-vi-hittar-alla-osynliga-utslapp>
- **Kozyatnyk, I.** Är kemikalier i luften en risk för gravida? / Are chemicals in the air a risk for pregnant women? (on Swedish). <https://www.arbetsochmiljomedicin.se/am/bloggen/inlagg/2025-02-20-ar-kemikalier-i-luften-en-risk-for-gravida>
- **Kozyatnyk, I.** Risker med batteritillverkning / Risks with battery manufacturing. (on Swedish). <https://www.arbetsochmiljomedicin.se/am/bloggen/inlagg/2024-10-04-risker-med-batteritillverkning>
- **Kozyatnyk, I.** Gamla människor behöver extra ventilation för en god inomhusluft / Old people need extra ventilation for good indoor air. (on Swedish). <https://www.arbetsochmiljomedicin.se/am/bloggen/inlagg/2024-09-05-gamla-manniskor-behoover-extra-ventilation-for-en-god-inomhusluft>
- **Kozyatnyk, I.** De farliga odörerna omkring oss / The dangerous odors around us. (on Swedish). <https://www.arbetsochmiljomedicin.se/am/bloggen/inlagg/2024-05-30-de-farliga-odorerna-omkring-oss>
- **Kozyatnyk, I.** Doftens kraft i ergonomisk design. The power of fragrance in ergonomic design. (on Swedish). <https://www.arbetsochmiljomedicin.se/am/bloggen/inlagg/2024-04-18-doftens-kraft-i-ergonomisk-design>
- **Kozyatnyk, I.** Mindre hälsofarlig matlagning i Kenya. Less dangerous cooking in Kenya. (on Swedish). <https://www.arbetsochmiljomedicin.se/am/bloggen/inlagg/2024-01-11-mindre-halsofarlig-matlagning-i-kenya>
- **Kozyatnyk, I.** Fröjd och fara med växter i bostaden. Joy and danger with plants in the home. (on Swedish). <https://www.arbetsochmiljomedicin.se/am/bloggen/inlagg/2023-10-26-frojd-och-fara-med-vaxter-i-bostaden>
- **Kozyatnyk, I.** När hemmet luktar mystiskt av fisk. When the home smells mysteriously of fish. (on Swedish). <https://www.arbetsochmiljomedicin.se/am/bloggen/inlagg/2023-08-31-nar-hemmet-luktar-mystiskt-av-fisk>
- **Kozyatnyk, I.** Bra inomhusluft kan skydda oss mot smitta. Good indoor air can protect us against infection. (on Swedish). <https://www.arbetsochmiljomedicin.se/am/bloggen/inlagg/2023-04-27-bra-inomhusluft-kan-skydda-oss-mot-smitta>
- Loftås, S., **Kozyatnyk, I.** Miljöpris för vattenrening i Kenya. Environmental award for water treatment in Kenya. (on Swedish). <https://www.arbetsochmiljomedicin.se/am/bloggen/inlagg/2023-03-02-miljopris-for-vattenrening-i-kenya>

– **Kozyatnyk, I.** Molnet omkring dig. The cloud around you. (on Swedish).

<https://www.arbetsochmiljomedicin.se/am/bloggen/inlagg/2023-02-23-molnet-omkring-dig>