Andrejs Krauklis, Ph.D., MRSC

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PROFILE

I am a passionate scientist, data analyst and a modelling expert. I have a little more than a decade of hands-on work experience in industry, start-ups and academia. My research competence and interests are multidisciplinary, involving chemistry, physics, materials science, data science and modelling, and environmental science and engineering. I have experience in both R&D and managerial roles. I am a highly analytical individual, according to SINTEF Professional Profiling, particularly fond of analyzing and systematizing data, obtaining correlations, and drawing conclusions. I have developed multiple novel modelling software tools.

Keywords: Quantitative Structure-Property Relationships (QSPR), Modelling, Material-Environment Interactions (MEI), Polymers & Composites, Environment & Sustainability.

WORK EXPERIENCE

2021 - 2023 **Principal Investigator & Researcher | University of Latvia (Riga, Latvia).**

- *Developed a multiscale modelling software that predicts material-environment interactions and performance of materials affected by environmental ageing.*
- *Obtained multiple research funding grants.*
- *Developed and taught an original master course on QSPR/QSAR Modelling for Polymers.*
- *Led multiple industrial projects as a Laboratory Head of Materize.*

2019 - 2020 **Scientist and Project Manager | SINTEF Industry (Oslo, Norway).**

- *Obtained, managed and executed multiple industrial and scientific projects.*
- *Provided modelling, research and engineering solutions to large and small industrial partners.*
- *Impacted CSR Europe's Blueprint on Circularity of Composite Materials with provided solutions.*

2016 - 2019 **Ph.D. Researcher | NTNU & DNV-GL (Trondheim, Norway).**

- *Identified molecular mechanisms and kinetics of environmental ageing for polymers and FRPs.*
- *Developed a modelling framework for long-term property prediction of polymer composites.*
- *Provided results to the JIP Consortium of 20+ international industrial partners (General Electric, Statoil, Petrobras, Petronas, Nexans, Airborne, etc.), strongly reducing the testing time and costs.*
- *Impacted the marine composites standard DNV-OS-C501 by the certification authority DNV-GL.*
- *Designed and built a unique stress-corrosion testing unit.*
- *Taught Fatigue Design master course.*
- *Supervised multiple students.*

2016 - 2016 **R&D Chemical Engineer | Baltic3D (Riga, Latvia).**

- *Optimized 3D printing parameters and sustainable chemical composition of recycled polypropylene blends via data analysis, thus solving rPP's warping and shrinkage problem.*
- *Arranged collaborations with national and international research partners and investors.*

2014 - 2016 **Research Assistant | NeoZeo & Bioenergy Consulting (Latvia & Sweden).**

- *Developed a Pressure Swing Adsorption (PSA) process model in gPROMS.*
- *Scaled up a lab-scale VPSA unit into a pilot via data collection, analysis, and ChE modelling.*
- *Installed VPSA pilot at a biogas farm Vecsiljāņi, and later at SLU (Uppsala, Sweden).*
- *Developed an efficient data analysis software for biogas upgrading.*
- *Created PID tuning software for optimized control of valves, flow and temperature in the VPSA unit, maximizing the quality and yield of the biogas product.*

2012 - 2016 **Research Trainee | Stockholm University & Riga TU (Latvia & Sweden).**

- *Developed a mathematical model for the diffusion-driven synthesis of biomaterial HAp, enabling the scale-up of the wet precipitation synthesis of HAp via in-depth statistical analysis.*
- *Synthesized and characterized porous sorbents. Developed a novel modified zeolite with ca. 100 times improved sorption capacity for efficient water remediation from toxic arsenic compounds.*

EDUCATION

- **Additional** Data Science and Programming (R, SQL, Python) by MIT, Progmeistars, Microsoft, and IBM. Tech Transfer & SPIN sales training by FIT-4-NMP. Horizon 2020 training by TNO & YEAR.
- **2016 - 2019** Ph.D. in Materials Science & Engineering at NTNU (Norway).
- **2014 - 2016** M.Sc.ing (with distinction) in Chemical Engineering at Riga Technical University (Latvia).
- **2015** ERASMUS in Materials and Environmental Chemistry at Stockholm University (Sweden).
- **2010 - 2014** B.Sc.ing (with distinction) in Chemical Engineering at Riga Technical University (Latvia).

SKILLS

- **Language** English (C; IELTS Academic 8.0.), Latvian (C), Russian (C), and Norwegian (B).
- **Computer** Modelling, QSPR/QSAR, Data Analysis, Data Visualization, Machine Learning, Python, SQL, R, gPROMS, VBA, LaTeX, MatLab, ChemDraw, MS-Office, AutoCAD Inventor, Siemens LOGO, PID tuning, Jumo PCC/PCA3000.
- **Laboratory** FTIR, NMR, Titration, SEM, EDX, Microscopy, ICP-MS, FAAS, XRD, TGA, DSC, GC-MS, BET, Synthesis, Distillation, Filtration, Extraction, Stress-Strain, Fatigue, DMTA, Creep, VARTM, Extrusion, Compounding, Roll Mills, Hydraulic Press, Pumps and Compressors, Sorption and Diffusion, Working with Gas, Accelerated Ageing, 3D Printing.
- **Management & Business** Funding Acquisition, Recruitment of Business Partners, Start-up Experience, Project Management, Scientific Communication, Industrial R&D, Managing Teams (On-site and Remotely), TTO/SPIN Sales, Teamwork, Initiative, Independent Work.

MEMBERSHIPS & AWARDS

Awarded member of the Royal Society of Chemistry (MRSC), Latvian Clay Science Society, and Association of Latvian Young Scientists. Received a letter of gratitude from Prime Minister of Republic of Latvia. Received a scientific paper award at University of Latvia in 2022. Expert for the European Commission (EX2019D354794) in Brussels, Belgium.

SELECTED PEER-REVIEWED PUBLICATIONS (46 IN TOTAL)

I. Krauklis, A.E.; Echtermeyer, A.T. Mechanism of Yellowing: Carbonyl Formation during Hygrothermal Aging in a Common Amine Epoxy. *Polymers* **2018**, 10(9), 1017-1031. Cited: 130.

II. Krauklis, A.E.; Karl, C.W.; Gagani, A.I.; Jørgensen, J.K. Composite Material Recycling Technology—State-of-the-Art and Sustainable Development for the 2020s. *Journal of Composites Science* **2021**, 5, 28. (Editor's Choice) Cited: 144.

III. Krauklis, A.E.; Karl, C.W.; Rocha, I.B.C.M.; Burlakovs, J.; Ozola-Davidane, R.; Gagani, A.I.; Starkova, O. Modelling of Environmental Ageing of Polymers and Polymer Composites—Modular and Multiscale Methods. *Polymers* **2022**, 14, 216. Cited: 25.

SELECTED CONFERENCE TALKS (23 IN TOTAL)

I. Krauklis A.E, Echtermeyer A.T. *Dissolving Cylinder Zero-Order Kinetic Model for Predicting* Hygrothermal *Aging of Glass Fiber Bundles and Fiber-Reinforced Composites*. International Glass Fiber Symposium. Aachen, **Germany 2018**.

II. Krauklis A.E, Gagani A.I., Echtermeyer A.T. *Hygrothermal Aging of Fiber-Reinforced* Composites*: Introduction to Phenomenological Perspective and Mass Balance Approach*. International Conference on Composite Structures. Bologna, **Italy 2018**.

III. Echtermeyer A.T., Gagani A.I., Krauklis A.E. *Long-term degradation of composite laminates in offshore applications described by a multi-scale approach*. 36th International Conference on Ocean, Offshore and Arctic Engineering Conference. Trondheim, **Norway 2017**.

REFERENCES

Dr. Ramin Moslemian, Principal Specialist and Project Manager at DNV-GL in Norway & France. *ramin.moslemian@dnvgl.com*

Prof. Niklas Hedin, Prof. in Materials & Environmental Chem., Stockholm University & NeoZeo. *niklas.hedin@mmk.su.se*

Prof. Maris Klavins, Head of Department of Environmental Studies, University of Latvia. *maris.klavins@lu.lv*

Prof. Bodo Fiedler, Professor in Polymers & Composites, TU Hamburg (TUHH). *fiedler@tuhh.de*

Prof. Andreas T. Echtermeyer, Professor in Polymers & Composites, NTNU. *andreas.echtermeyer@ntnu.no*

Dr. Benjamin Alcock, Senior project manager at SINTEF Industry. *ben.alcock@sintef.no*

Dr. Olesja Starkova, Senior researcher at LU MMI. *olesja.starkova@lu.lv*