

Yan Demidov

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Chemist / Research Scientist

Chemist with 4 years of experience in aerogels, hydrogels, drug delivery systems, and cell culture at the intersection of materials science and biomedicine. Co-author of five peer-reviewed publications in leading international journals (including *ACS Materials Au* and *ACS Applied Materials & Interfaces*).
Presented research at four international conferences on aerogels and biomaterials. Experienced in physicochemical characterization techniques, 3D modelling, and 3D printing. Background in both academic and industrial R&D environments. Seeking a position where I can apply and further develop my expertise in biomaterials, biotechnology, and related fields.

Skilled at building professional scientific networks and connecting colleagues across disciplines. I value open communication, a culture of continuous learning, and knowledge sharing.

FTIR, UV-Vis, NMR, XRD, XPS, SEM; Optical and fluorescence microscopy; BET/BJH surface area analysis; Rheology; CHNS elemental analysis; Chromatographic techniques (TLC, column chromatography, HPLC, GC–MS); Mechanical testing of material.

- Laboratory synthesis
- Cell culture
- Tissue engineering
- 3D modelling and 3D printing
- Drug delivery system development
- Supercritical drying ($scCO_2$)
- Microfluidics
- Handling highly hazardous chemicals
- Data processing and analysis
- Scientific data visualization
- Experimental protocol development
- Materials characterization
- Cross-cultural communication
- Knowledge transfer and mentoring
- Decision-making
- Emotional intelligence
- Adaptability and flexibility
- AI tools for scientific research

University of Cologne, Germany

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10.2019 – 01.2025
Research assistant
Worked in an international English-speaking research team developing biocompatible aerogel materials for regenerative medicine applications. Regularly presented research findings at international conferences and co-authored peer-reviewed publications (including ACS Materials Au and ACS Applied Materials & Interfaces).

Key achievements:

- Designed and conducted a research project on a composite biocompatible microaerogel for localized osteosarcoma therapy and bone tissue regeneration.
- Performed surface modification of hydrogels to introduce new functional properties.
- Optimized a silk fibroin hydrogel formulation for 3D bioprinting applications.
- Contributed to the development of a conductive silk fibroin-based material for piezoresistive pressure sensors.
- Contributed to the development of an aerogel for oil-water separation.
- Experimentally validated the structural, physicochemical, and biological properties of the developed materials, including high porosity, low density, biocompatibility, biodegradability, controlled drug release, and photothermal activity.

University of Santiago de Compostela

www.usc.gal/en/department/pharmacology-pharmacy-and-pharmaceutical-technology
09.2024 – 11.2024
Chemistry Internship
Developed and impregnated of aerogel-based drug delivery systems using supercritical CO_2 for dry powder inhalers targeting pulmonary hypertension treatment.

Henkel, Düsseldorf
04.2018 – 09.2018
R&D Laboratory Technician
Work in the R&D department of a large industrial company. Adapted hot-melt adhesive formulations to alternative raw material suppliers while maintaining product performance.

WorldMarket, Moscow; ACSens, St. Petersburg
2016, 2017
Laboratory Technician
Internships at two flavours and scents manufacturing companies. Performed synthesis and quality control of aromatic oils.

Education

2025. University of Cologne, Germany. M.Sc. in Chemistry. Master's thesis: *Development of Theragenerative System from Modified Silk Fibroin Aerogel with Hydrogen and Heat Releasing Effect*
Specialization: Aerogels; Biomaterials; Bone Tissue Engineering (BTE)
2024. University of Santiago de Compostela, Spain. Research Internship. Aerogel impregnation using supercritical CO_2 ($scCO_2$) for drug delivery via dry powder inhalers.
2022. German Aerospace Center (DLR). International Summer School on Aerogels
2019 Saint Petersburg State Institute of Technology (Technical University). B.Sc. in Chemical Engineering.
Specialization: Synthetic Biologically Active Compounds.
Bachelor's thesis: Synthetic Essential Oils (conducted in collaboration with ACSens – Fragrances and Perfume Compositions)

Languages
Russian, Native; **English**, Professional proficiency (IELTS C1); **German**, B1

Publications
1. Vaseghi, A., Sadeghizadeh, M., Herb, M., Grumme, D., Demidov, Y., Remmler, T., & Maleki, H. H. (2024). 3D Printing of Biocompatible and Antibacterial Silica–Silk–Chitosan-Based Hybrid Aerogel Scaffolds Loaded with Propolis. *ACS Applied Bio Materials.*
2. Pektas, H. K., Demidov, Y., Ahvan, A., Abie, N., Georgieva, V. S., Chen, S., ... & Maleki, H. (2023). MXene Integrated Silk Fibroin-Based Self-Assembly-Driven 3D-Printed Theragenerative Scaffolds for Remotely Photothermal Anti-Osteosarcoma Ablation and Bone Regeneration. *ACS Materials Au*, 3(6), 711-726.
3. Ng, P., Pinho, A. R., Gomes, M. C., Demidov, Y., Krakor, E., Grume, D., ... & Maleki, H. (2022). Fabrication of Antibacterial, Osteo-Inductor 3D Printed Aerogel-Based Scaffolds by Incorporation of Drug Laden Hollow Mesoporous Silica Microparticles into the Self-Assembled Silk Fibroin Biopolymer. *Macromolecular Bioscience*, *22*(4), 2100442.
4. Karamat-Ullah, N., Demidov, Y., Schramm, M., Grumme, D., Auer, J., Bohr, C., ... & Maleki, H. (2021). 3D printing of antibacterial, biocompatible, and biomimetic hybrid aerogel-based scaffolds with hierarchical porosities via integrating antibacterial peptide-modified silk fibroin with silica nanostructure. *ACS Biomaterials Science & Engineering*, 7(9), 4545-4556.
5. Bandar Abadi, M., Weissing, R., Wilhelm, M., Demidov, Y., Auer, J., Ghazanfari, S., ... & Maleki, H. (2021). Nacre-mimetic, mechanically flexible, and electrically conductive silk fibroin-MXene composite foams as piezoresistive pressure sensors. *ACS Applied Materials & Interfaces*, 13(29), 34996-35007.

Conference Presentations
1. 7th International Seminar on Aerogels (18–20 September, 2024)
2. CMMC Annual Retreat 2024 (29 February – 1 March, 2024)
3. 3rd International Conference on Aerogels for Biomedical and Environmental Applications (5–7 July, 2023)
4. CMMC Annual Retreat 2023 (2–3 March, 2023)