

PERSONAL INFORMATION

Family name, First name: Cherevan, Alexey

Affiliation: Technische Universität Wien (TU Wien)

Date of birth: 07.06.1988 | 35 years old

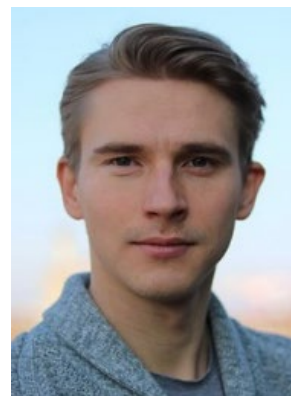
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PROFILE

I received my Master's Degree from Moscow State University (2010) and my Ph.D. from the University of Münster (2014); I then joined the division of Molecular Materials Chemistry (MMC) of the Technische Universität Wien (TU Wien) as a sub-group leader (2018) and a project PI (2019). Most recently, I became a tenure track Asst. Professor (2023) and completed my Habilitation Degree in the field of Materials Chemistry (2024). Throughout the years I gained a unique set of expertise and hands-on experience with molecular (homogeneous) and solid-state (heterogeneous) photocatalysts – including their synthesis, characterization, and activity evaluation – and now work at the crossroad between the two fields. My expertise further includes in-depth fundamental studies on interfacial processes, kinetics, and mechanisms of (photo)catalytic reactions as well as the design of advanced nanostructures for energy conversion applications. My detailed research profile can be found [here](#).

EDUCATION / DEGREES

- 2015 – 2024** Habilitation (Privatdozent) in Materials Chemistry
Technische Universität Wien (TU Wien), Vienna, Austria
Thesis: Photocatalysis for solar fuels: exploring molecular, inorganic, and hybrid photosystems
- 2011 – 2014** Doctor of Natural Sciences (Ph.D.) in Physical Chemistry (16.10.2014)
Westfälische Wilhelms-Universität, Münster, Germany (Advisor Prof. D. Eder)
Thesis: Nanocarbon-inorganic hybrids for photocatalytic water splitting hydrogen production
- 2005 – 2010** Master Degree (MSc) in Chemistry
Moscow State University, Moscow, Russia (Advisor Prof. G. Bondarenko)
Thesis: Metal-carbon nanocomposites based on polyacrylonitrile and Cu and Pd metals for dehydrogenation catalysis

RESEARCH EXPERIENCE

- 2023 – now** Tenure-track Assistant Professor (under qualification agreement, 2023-2025),
TU Wien, Vienna, Austria
- 2015 – 2022** University Assistant, TU Wien, Vienna, Austria
- 2014 – 2015** Postdoctoral Fellow, Westfälische Wilhelms-Universität, Münster, Germany
- 2010 – 2011** Junior Research Assistant, Institute of Petrochemical Synthesis of Russian Academy of Science, Moscow, Russia

RESEARCH VISITS

- 2017** Research stay at Prof. A. Llobet [lab](#), ICIQ, Tarragona, Spain.
- 2016** Research stay at Dr. J. Vilatela [lab](#), IMDEA Materials, Madrid, Spain
- 2012** Research stay at Prof. K. Domen [lab](#), The University of Tokyo, Japan.

AWARDS AND GRANTS

- 2023 – 2027** PI of the FWF **Cluster of Excellence** MECS (2023-2027)
2022 Finalist for the **Best Teacher Award** at TCH, TU Wien, Austria
2021 Chosen for inaugural *ACS Materials Au Rising Star* [collection](#)
2019 – 2024 PI of the **FWF Stand-Alone Project** (P32801) amounting to **379K** Euro
2018/20 Multiple Pro Didactica **teaching awards** at the TU Wien, Austria
2016/18/21 Three Austrian Research Association (ÖFG) “International Communication” **grants**
2015 Nanoscale Horizons **poster prize** at the [MC12](#) conference held in York, UK
2014 Doctoral thesis with the grade “Summa Cum Laude”
2012 Ewald-Wicke **scholarship** for the stay at the University of Tokyo, Japan
2011 – 2014 **Ph.D. scholarship** of Graduate School of Chemistry, Münster Uni (**2011-2014**)

SUPERVISION OF GRADUATE STUDENTS

Supervision of interns, bachelor, and master students, as well as co-supervision of Ph.D. students, have been included in my daily routine in the past 12 years (full list can be found [here](#)). Three of my first Ph.D. students already finished their degree with me and I currently directly mentor 3 Ph.D. students working on my projects:

- 2023 – now** Madeline Weisweiler, FFG-funded
2020 – now Stephen Myakala, FWF-funded, holder of the **Chemical Monthly Fellowship** (2023-2024) and awardee of the **Best Poster Award** at EUROMOF2023.
2020 – now Pablo Ayala, University-funded
2020 – 2024 Dr. Samar Batool, FWF-funded
Ph.D. Thesis “*Metal chalcogen based molecular clusters for light-driven hydrogen evolution reaction*”
2018 – 2023 Dr. Jasmin S. Schubert, University-funded, holder of the **Otto Vogl Prize** (2019) for the [Best Master Thesis in Chemistry](#) from the Austrian Academy of Sciences
Ph.D. Thesis “*Earth-abundant co-catalysts for photocatalytic hydrogen generation*”
2017 – 2023 Dr. Sreejith P. Nandan, holder of the **Christiane Hörbiger Award** (2020) and awardee of the **Best Poster Award** at Nanomat 2019
Ph.D. Thesis “*All-inorganic molecular clusters for photocatalytic water splitting: from homogeneous to heterogenized photosystems*”

TEACHING

I have acquired various teaching experiences throughout the years at the TU Wien. My current position implies a rather heavy teaching involvement and a variety of courses which can be subdivided into lectures (I take part as a sole- or co-lecturer) and labs (I take part as a supervisor, organizer, or student assistant):

- 2024 – now** *Supervisor/Assistant* – 163.206 “Green Chemistry Laboratory Course”
2023 – now *Co-lecturer* – 163.207 “Green Chemistry: Recent Trends and Innovations”
2019 – now *Co-lecturer* – 165.103 “Kinetics and Catalysis”
2018 – 2019 *Co-Organizer/Assistant* – 164.289 “Advanced ceramics and electrochemistry”
2017 – now *Lecturer* – [165.093](#) “Molecule-based and self-assembled materials”
2016 – 2021 *Co-lecturer* – 165.140 “Physicochemical Methods of Materials Characterization”
2018 – now *Co-organizer* – 163.145 “Synthesis Laboratory Course”
2016 – now *Supervisor/Assistant* – 163.145 “Synthesis Laboratory Course”
2016 – now *Co-lecturer* – 163.177 “Fundamentals of Chemistry”

INSTITUTIONAL RESPONSIBILITIES

- 2023 – now** *Core Team Member* of the Social Media Task Force of the TCH Faculty, TU Wien
2023 Organization of the institute-wide Science Days as a part of the Faculty evaluation process, TU Wien

- 2022 – now** *Member of the Studies Commission “PhD studies”, TU Wien*
- 2022 – now** *Board member of the **Young Investigator Academy** of the TCH faculty, TU Wien*
- 2022 – now** *Proposal Review Committee member for the TU Wien ProWriting course, TU Wien*
- 2020 – now** *Member of the faculty council, Department of Technical Chemistry, TU Wien*
- 2019/2020** *Organizer of two Fluorescence/Photoluminescence Workshops jointly conducted by our group and [Picoquant](#), Vienna, Austria*

PUBLIC OUTREACH

- 2022-23/10** *Participation in the [European Researchers' Night](#), Vienna*
- 2022/05** *Participation in the [Langer Nacht der Forschung](#) representing MMC division*
- 2022-23/04** *Participation in the Open Doors Day of the Faculty of Technical Chemistry*
- 2022** *Research news articles in *TUWac Bulletin* ([2022/03](#)), *HydrogenCentral* ([2022/06](#)), *Kurier* (2022/06 [online](#) and in print) and *Terra Mater* ([2022/08](#)).*
- 2020/10** *Speaker at the [TEDx](#) event at TU Wien, available [online](#).*
- 2018/09** *Preparation and realization of the TU Wien contribution to the [“BE OPEN - Science & Society Festival”](#) organized by the Austrian Science Fund, Vienna, Austria*

REVIEWING ACTIVITIES / COMMISSIONS OF TRUST

- 2023** *Evaluator for NRD1 projects, Hungary*
- 2023** *Evaluator for DFG projects, Germany*
- 2022** *Guest editor for an MDPI Catalysts special issue "Towards Single-Site and Single-Atom Photo- and Electrocatalysis"*
- 2021 – now** *Evaluator for OeAD [Scientific & Technological Cooperation](#) projects, Austria (6)*
- 2019** *Ph.D. opponent for Ms. Kamonchanok Roongraung (supervisor S. Chuangchote) – King Mongkut's University of Technology, Thailand. Thesis on “Development of TiO₂ nanofibers for photocatalytic biomass conversion to high-value chemicals”*
- 2018** *Ph.D. opponent for Mr. Alfonso Monreal Bernal (supervisor J. Vilatela) – IMDEA Materials, Madrid, Spain. Thesis on “Energy Harvesting Materials Based on Carbon Nanotube Fibre for Tough Electronics”*
- 2017** *Reviewer of a book proposal for Elsevier. Book “Applications and Future Challenges of Functional Nanomaterials”*

In addition, I am a regular reviewer of *Nature Communications* (2), *Angewandte Chemie* (6), *Advanced Materials* (6), *Advanced Energy Materials* (3), *Advanced Materials Interfaces* (8), *Catalysis Today* (1), *Small* (3), *ACS Applied Materials Interfaces* (3), *ACS Sustainable Chemical Engineering* (1), *ACS Energy Fuels* (2), *Applied Sciences*, *Applied Physics A* (3), *International Journal of Hydrogen Energy* (3), and several MDPI (10) Journals. My [Publons](#) profile provides an overview of my recorded peer-reviewing activities.

SELECTED INVITED TALKS (full list [here](#))

- Highlight talk** "Towards a rational combination of heterogeneous and homogeneous photocatalysis" at the EUROMAT2021 conference.
- Invited TEDx talk** on “Artificial photosynthesis: learning from nature, re-creating in the lab“ at the [TEDx TUWien](#) Event 2020. Available on [Youtube](#).
- Oral Invited** presentation “State-of-the-art, challenges, and prospects of heterogeneous photocatalysis” at the Europe-Korea Conference on Science and Technology 2019 (EKC 2019), Vienna, Austria, 15-19.07.2019.
- Oral Invited** presentation “Non-covalent wiring of CNT-metal oxide hybrid with Ru-based water oxidation catalyst for overall water-splitting” at the 22nd international conference on photochemical conversion and storage of solar energy (**IPS-22**), Hefei, China, 29.07-03.08.2018.

RESEARCH OUTPUT

Overall, in the past 10 years, I have published **>50 papers** (average impact factor >10, most in high-impact journals incl. *Adv.Mat.*, *Nature Comm.*, *EES*, *ACS Catalysis*, *Adv.Funct.Mat.*, *Adv.En.Mat.*, *Appl.Cat.B.*, *JMCA*, etc. incl. **7 high-profile reviews**) and **2 book chapters**. I have given more than **30 oral, invited and highlight** talks at international conferences and also delivered a [TED Talk](#) (>10.000 views online) on *Artificial Photosynthesis*. The Master Thesis of my first student (Jasmin Schubert) was awarded the **Otto Vogl Preis** for the *Best Master Thesis in Chemistry* ([2019](#)) from the Austrian Academy of Sciences.

TEN MOST IMPORTANT PUBLICATIONS

(* indicates me as a corresponding author. A full list of my publications can be found [here](#)):

1. S. Batool, M. Langer, S. Myakala, M. Heiland, D. Eder, C. Streb and **A. Cherevan*** “Thiomolybdate clusters: from homogeneous catalysis to heterogenization and active sites” [Advanced Materials](#) **2024**, 36, 2305730 | DOI: 10.1002/adma.202305730 | [back cover](#)
2. S. Batool, S. P. Nandan, S. N. Myakala, A. Rajagopal, J. S. Schubert, P. Ayala, S. Naghdi, H. Saito, J. Bernardi, C. Streb, **A. Cherevan*** and D. Eder “Surface-anchoring and active sites of $[Mo_3S_{13}]^{2-}$ clusters as co-catalysts for photocatalytic hydrogen evolution” [ACS Catalysis](#) **2022**, 12, 11, 6641-6650 | DOI: 10.1021/acscatal.2c00972 | [front cover](#)
3. S. Nandan, N. Gumerova, J. Schubert, H. Saito, A. Rompel, **A. Cherevan***, D. Eder “Immobilization of a $[Co^{III}Co^{II}(H_2O)W_{11}O_{39}]^{7-}$ polyoxoanion for photocatalytic oxygen evolution reaction” [ACS Materials Au](#) **2022**, 2, 4, 505-515 | DOI: 10.1021/acsmaterialsau.2c00025 | [front cover](#)
4. S. Naghdi, **A. Cherevan**, A. Giesriegl, R.Guillet-Nicolas, S. Biswas, T. Gupta, J. Wang, T. Haunold, B. Bayer, G. Rupprechter, M. Toroker, F. Kleitz and D. Eder “Selective ligand removal to improve accessibility of active sites in hierarchical MOFs for heterogeneous photocatalysis” [Nature Communications](#) **2022**, 13, 282 | DOI: 10.1038/s41467-021-27775-7
5. J. Schubert, L. Kalantari, A. Lechner, A. Giesriegl, S. Nandan, P. Ayala, S. Kashiwaya, M. Sauer, A. Foelske, J. Rosen, P. Blaha, **A. Cherevan*** and D. Eder “Elucidating the formation and active state of Cu co-catalysts for photocatalytic hydrogen evolution” [JMCA](#) **2021**, 9 (38), 21958-21971 | DOI: 10.1039/D1TA05561E
6. **A. Cherevan***, S. Nandan, I. Roger, R. Liu, C. Streb, D. Eder „Polyoxometalates on Functional Substrates: Concepts, Synergies, and Future Perspectives“ [Advanced Science](#) **2020**, 7, 1903511 | DOI: 10.1002/advs.201903511
7. J. Schubert, J. Popovic, G. Haselmann, S. Nandan, J. Wang, A. Giesriegl, **A. Cherevan*** and D. Eder “Immobilization of Co, Mn, Ni, and Fe oxide co-catalysts on TiO_2 for photocatalytic water-splitting reactions” [JMCA](#) **2019**, 7, 18568-18579 1903511 | DOI: 10.1039/C9TA05637H
8. **A. Cherevan***, L. Deilmann, T. Weller, D. Eder and R. Marschall „Mesoporous Semiconductors: A New Model To Assess Accessible Surface Area and Increased Photocatalytic Activity?“ [ACS Applied Energy Materials](#) **2018**, 1 (11), 5787-5799 | DOI: 10.1021/acsaem.8b01123
9. **A. Cherevan*** and D. Eder “Dual Excitation Transient Photocurrent Measurement for Charge Transfer Studies in Nanocarbon Hybrids and Composites” [Advanced Materials Interfaces](#) **2016**, 3, 1600244 | DOI: 10.1002/admi.201600244
10. **A. Cherevan**, P. Gebhardt, C. J. Shearer, M. Matsukawa, K. Domen and D. Eder “Interface Engineering in Nanocarbon– Ta_2O_5 Hybrid Photocatalysts” [Energy & Environmental Science](#) **2014**, 7, 791-796 | DOI: 10.1039/C3EE42558D

BOOK CHAPTERS

1. [A. Cherevan](#), P. Gebhardt, C. Shearer, D. Eder, “Nanocarbon Hybrid Materials”, book chapter in “Carbon Nanomaterials Sourcebook”, [CRC Press](#), **2016**.
2. C. J. Shearer, [A. Cherevan](#), D. Eder, “Application of Functional Hybrids Incorporating Carbon Nanotubes or Graphene”, book chapter in “Carbon Nanotubes and Graphene”, [Elsevier](#), **2014**.

GRANTED THIRD-PARTY FUNDING

Overall, more than **2 Million Euro** funding obtained over the past 5 years as principal investigator (PI) and project leader, including

- 2023/07** FFG Take OFF project “H₂ for aviation” | 2023-2024 | **49.000 €** | PI
- 2023/06** OeAD S&T Cooperation project “Versatile modified TiO₂-based nanostructures for photo-induced H₂ production coupled with microplastic degradation” | 2024-2025 | **7.100 €** | Coordinator
- 2023/03** FWF Cluster of Excellence “Materials for Energy Conversion and Storage” | 2023-2028 | **1.299.805 €** | PI
- 2022/12** OeAD S&T Cooperation project “The Study of Efficient Large Area Flexible Perovskite Solar Modules” | 2022-2025 | **15.000 €** | Coordinator
- 2019/11** FWF Stand-Alone Project P32801 “Surface-Immobilized Molecular Chalcogen-based Metalate Clusters for Photocatalysis” | 2020-2024 | **378.966 €** | PI