

Curriculum Vitae – Marko D. Mihovilovic

Marko D. Mihovilovic, Univ.Prof. Dipl.-Ing. Dr.techn.
Dean of the Faculty of Technical Chemistry
Full Professor of Bioorganic Synthetic Chemistry
TU Wien



Dynamic and target-oriented scientific manager with 12+ years of experience in heading academic institutions at various levels with strong capabilities to accompany re-positioning and turn-around processes during phases of change, challenges and crisis. Excellent scientific track record at the chemistry-biology interface in basic and applied research. Past achievements include successful mentoring of pre- and post-graduate students as well as tenure track candidates.

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Decision Making

Teamwork

Leadership

Communication

Motivation

Negotiation

Situation Analysis

Strategy

Implementation

Teacher

Mentor

Enabler

Professional Appointments

Dean of the Faculty of Technical Chemistry (TCH)

TU Wien

2020 - present
Vienna, Austria

- Routine management of approx. 12M€ HR- and 1.5M€ operational budget (variable infrastructure investments).
- Administrative responsibility for approx. 180 FTE global and 160 FTE project personnel, total head count approx. 500.
- Responsible for strategic and operational planning of research, teaching, and administrative tasks.
- Preparing, conducting, and accompanying of appointment processes for top-level academic personnel.

Major achievements

- Successful streamlining of the research portfolio at TCH, resulting in **performance increases** by +50% in third party funding, +20% global personnel, +15% publication performance within 2 years. Currently, TCH hosts the following excellence grants (by TUW definition): 1xERC-CoG, 1xERC-StG, 1xFWF-START, 1xFWF-ZK, 5xCD-L representing a balanced distribution between basic and applied research.
- Successful **management of Covid-crisis** regarding research (all allocated funding secured) and teaching (minimum collateral effects) performance at TCH: Covid-task force and contact tracing initiated V/20; first faculty to return to routine research operations on-site at TUW (VI/20), first to resume uninterrupted on-campus lab-course teaching (VI/20) enabled by working out a detailed safety plan.
- Responsible administration of **appointment processes** (since 2020): 4x \$98 professorships, 8x \$99/4 professorships, 14x tenure track positions representing new assignments of approx. 1/3 of all professors and an increase by approx. 25%.
- Enforcing **female scientist support** endorsed by the FemChem network culminated in 25% female professors (from 5%) within 3 years; appointment of 3 specifically dedicated female scientist tenure track positions in 2021; 3 additional female tenure track assignments secured via the excellence program of TUW.
- Introduction of a **start-up budget system** for tenure track appointments.
- Initiation, design, and implementation of a **trilateral MSc program** (TUW, Uni Wien, BOKU) in Green Chemistry (to start in X/22); key role in the negotiation of the curriculum among three universities involved, completed within <9 months.
- Continuation of a **TCH vision conceptualization process**, roll-out planned for summer 2022.
- Enhancing **management interactions** by expanding leadership team and re-designing leadership retreats.

Full Professor of Bioorganic Synthetic Chemistry

2014 - present

Institute of Applied Synthetic Chemistry (IAS) / TU Wien

Vienna, Austria

- Academic teaching chair for the fields of bioorganic chemistry and organic chemistry.
- Responsibilities in research ranging from project planning, grant acquisition, scientific and administrative project implementation to reporting and dissemination of results (publications, patents, scientific talks).
- Mentoring of students, PhD candidates, postdocs, and career candidates.

Major achievements

- Successful implementation of the field at IAS in teaching and research, covering the **chemistry-biology interface** from biocatalysis via medicinal chemistry to renewables valorization.
- Successful organization of several key-conferences in the area, most prominently Biotrans2015 at Vienna Fair (700+ participants, largest edition of the conference series at that time); co-organization of ESOC2019 (900+ participants) and responsible treasurer.
- Representation of TCH/TUW in several academic boards and societies.

Head of Institute

2013 - 2019

Institute of Applied Synthetic Chemistry (IAS) / TU Wien

Vienna, Austria

- Administrative and operational management of the institute including teaching activities, research infrastructure, and general facilities; average budget-line 350k€ p.a. (excl. investment budgets).
- Administrative responsibility for approx. 80 researchers and 20 staff.

Major achievements

- Successful **turn-around of IAS** resolving a budget crash in 2012/13; re-established resilient budget planning.
- Successful streamlining of research activities, resulting in **performance increase** by +150% in competitive grant budgets and +100% in dissemination activities within 5 years. A highly competitive research environment was established to foster acquisition of several excellence grants (by TUW definition): ERC-CoG, FWF-START, FWF-ZK, CD-Lab.
- Complete **re-design of operational duties** for staff personnel enroute to subsequently introduced service-unit concept; modernization of work processes (early aspects of digital transformation); recruitment of experts for new tasks.
- Development and introduction of a faculty-wide system for chemicals inventory (including process design, personnel & infrastructure adjustments).
- Advisory, first-adopter, and testimonial role in TUW's **organizational change process** to introduce a ternary organization architecture (institute – research area – research group) at TUW.
- Recurring beta-tester and/or pilot faculty for modification in central administrative processes.
- Key-contributor in developing the "three-pillar" system in **publication excellence** at TCH.
- Co-developed and implemented a **personalized recruitment procedure** ("VoR-Phase") for new chemistry students (including general self-assessment, chemistry-related assessment, and counseling interview).

Head of the Research Group Bioorganic Synthetic Chemistry (BSC)

2010 - 2019

Institute of Applied Synthetic Chemistry (IAS) / TU Wien

Vienna, Austria

- Administrative and operational management of the immediate research group, usually fluctuating between 15-25 coworkers (MSc and PhD theses candidates as well as postdocs).
- Responsible for all negotiations and centralized purchasing processes at IAS.

Major achievements

- **Repositioning research portfolio** of the BSC-group from agro-chemistry (prior head: P. Stanetty) towards the chemistry-biology interface (research directions: biocatalysis, medicinal chemistry, renewables valorization).
- Group became one of the **top-performers** within IAS with respect to third-party funding and publication output (quantity and quality) within 3 years.
- **Mentoring** of several high-potential students to subsequently excel in industry (Boehringer, Novartis, Pfizer, etc.), academia (Prague University, Harvard University, etc.), and even consulting (Boston consulting); 2 successful habilitations and 1 in progress.

Full Professor of Bioorganic Chemistry

2008

Institute of Organic Chemistry / JKU Linz

Linz, Austria

Appointment declined after prolonged negotiations

Associate Professor of Bioorganic Chemistry

2004 - 2013

Institute of Applied Synthetic Chemistry (IAS) / TU Wien

Vienna, Austria

Major achievements

- Rapidly achieved **independent research status** within the group of former mentor Prof. Peter Stanetty by securing funds to maintain a permanent research team of approx. 5 coworkers.
- First **international recognition** in the area of biocatalysis by top-tier publications and several invitations to key conferences in the area.

Research / University Assistant

1994 - 2003

Institute of Organic Chemistry, then Applied Synthetic Chemistry (IAS) / TU Wien

Vienna, Austria

- Research duties in organic chemistry involving synthesis, analytics, and documentation.
- Supportive duties in student teaching, mainly supervision in laboratory courses, exam supervision, tutorials.
- Employment interrupted by postdoctoral stays in North America.

Major achievements

- Completion of PhD research.
- Increasingly independent research activities after return from North America aiming at Habilitation.

Educational History

Venia docendi (Habilitation) for Bioorganic Chemistry

2003

Institute of Applied Synthetic Chemistry (IAS) / TU Wien

Vienna, Austria

Accreditation to University-Dozent (equiv. to Assistant Professor); authorization to independent teaching and formal supervision of PhD and MSc students.

Major achievements

- Successfully establishing the utilization of recombinant whole-cell biocatalysts for chiral transformations for the first time in the Vienna area.
- Implementing a research focus on bio-reductive and bio-oxygenative biotransformations.

Postdoctoral Stay

1998

University of Florida / Research group of Prof. J.D. Stewart

Gainesville, FL, USA

Postdoctoral stay as Erwin Schrödinger Fellow of the FWF; research topic: "Designer Yeasts - New Bioreagents in Enantioselective Synthesis".

Major achievement

- Cloning and exploitation of the first *E. coli* based expression system for a Baeyer-Villiger biocatalyst.

Postdoctoral Stay

1997

University of New Brunswick / Research group of Prof. M.M. Kayser

St. John, N.B., Canada

Postdoctoral stay as Erwin Schrödinger Fellow of the FWF; research topic: "Designer Yeasts - New Bioreagents in Enantioselective Synthesis".

Major achievements

- Adopting the methodology of whole-cell based biocatalysis for organic synthesis.
- Inception, drafting, submission, and implementation of the first FWF grant (Schrödinger fellowship).

Military Service

1996/97

Austrian Army

Allentsteig / Lower Austria & Vienna, Austria

Mandatory service with the Austrian Armed Forces; infantry training; administrative support.

PhD Thesis

1994 - 1996

Institute for Organic Chemistry / TU Wien / Research Group of Prof. P. Stanetty

Vienna, Austria

"Synthesis of Azasteroid Partial Structures as Potential Inhibitors of the Ergosterol Biosynthesis".

Major achievement

- First project implementation with genuine research input.

Studies: Technical Chemistry / Organic Chemistry

1988 - 1993

TU Wien

Vienna, Austria

Diploma thesis: "Synthesis of Thieno[2,3-d]thiadiazole Derivatives" under the supervision of Prof. P. Stanetty.

Major achievements

- First synthesis of a novel and biologically active compound for plant defense activation.

Research Interests

- Research at the **chemistry-biology interface**
- Development and utilization of wild-type microorganisms and genetically engineered **whole-cell biocatalysts** as new tools in synthetic chemistry
- Design of multi-step biocatalytic and chemo-enzymatic **reaction cascades**
- Enabling the **green chemistry concept** with respect to sustainability, atom efficiency, and environmentally benign synthetic methods
- Development of new **bioactive compounds** for medicinal chemistry applications in the area of personalized and precision medicine, neurological conditions, and inflammation-related diseases
- Application of concepts of **chemical biology** focusing in particular on photo-pharmacology and photochemical strategies
- Development of platform technologies for **renewables valorization** and **circular economy**

Project Acquisition

Individual & cooperative projects acquired 30
Cumulative third-party funds ~6M€ individual / ~20M€ cooperative

Indicative project acquisitions of strategic relevance:

- Marie-Curie Training Site: Genetically Engineered Microorganisms as Whole-cell Biocatalysts*
European Commission Contract No.: HPMT-CT-2001-00243 (FP5); Proposal No.: MCHF-2001-00281
2002-2006 – consortium coordinator *first Marie-Curie site acquired at TCH*
- Applied Bioscience Technology AB-Tec – Graduate School Program*
TUW PhD school program, 2009-2013 – consortium coordinator *first TU-DK secured at TCH*
- Vienna Doctoral Program of Molecular Pharmacy – Molecular Drug Targets*
FWF PhD school program, 2011-ongoing – key-PI *strategic cooperation with Uni Wien, MUW & IST-A*
- ABC – Applied Biosynthetic Cell Factories*
TUW Emerging Grant (Anschubfinanzierung), 2011-2014 - PI *first emerging grant at TCH*
- Life Science Wissenstransferzentrum (LS-WTZ) “wings4innovation”*
AWS strategic initiative, 2014-2016 – WP leader *initiative triggered wings4innovation/KHAN fund (translational medical life-science center of AWS, Max Planck foundation & EIF, 36M€ budget line)*

Scientific Dissemination

SCI-publications:	224	H-index:	41 / 39 (Scopus / Web of Science)
Patent applications:	13	cumulative citations:	7592 / 7066
Book chapters:	9	highest cited paper:	1173 / 1048
Books:	1	highest impact journal:	42

Invited talks / international conferences and seminars: ~100

for a complete list see:



Indicative key-publications:

- Opportunities and Challenges for Combining Chemo- and Biocatalysis*
Rudroff, F.; Mihovilovic, M.D.; Gröger H.; Snajdrova, R.; Iding, H.; Bornscheuer, U.T.
Nature Catal. **2018**, *1*, 12-22; DOI: /10.1038/s41929-017-0010-4 *journal top-IPF: 42*
- Discovery and Resupply of Bioactive Plant-Derived Natural Products: a Review*
Atanasov, A.G.; Waltenberger, B.; Pferschy-Wenzig, E.-M.; Linder, T.; Wawrosch, C.; Uhrin, P.; Temml, V.; Wang, L.; Schwaiger, S.; Heiss, E.H.; Rollinger, J.M.; Schuster, D.; Breuss, J.M.; Bochkov, V.; Mihovilovic, M.D.; Kopp, B.; Bauer, R.; Dirsch, V.M.; Stuppner, H.
Biotechnol. Adv. **2015**, *33*, 1582-1614 *cited: 1000+ times*
- Family Clustering of Baeyer-Villiger Monooxygenases Based on Protein Sequence and Stereopreference*
Mihovilovic, M.D.; Rudroff, F.; Grötzl, B.; Kapitan, P.; Snajdrova, R.; Ryzd, J.; Mach, R.
Angew. Chem. Int. Ed. **2005**, *44*, 3609-3613. *first independent publication in top-5-journal of the core field*
- Elucidation of a Complex Enzyme Cascade in Green Algae Polysaccharide Degradation*
Reisky, L.; Prechoux, A.; Zühlke, M.-K.; Bäumgen, M.; Robb, C.S.; Gerlach, N.; Roret, T.; Stanetty, C.; Larocque, R.; Michel, G.; Tao, S.; Markert, S.; Unfried, F.; Mihovilovic, M.D.; Trautwein-Schult, A.; Becher, D.; Schweder, T.; Bornscheuer, U.T.; Hehemann, J.-H.
Nature Chem. Biol. **2019**, *15*, 803-812; DOI: 10.1038/s41589-019-0311-9 *strategic collaboration in renewables*

- *Design and Synthesis of Novel Deuterated Ligands Functionally Selective for the γ -Aminobutyric Acid Type A Receptor (GABA_AR) α 6 Subtype with Improved Metabolic Stability and Enhanced Bioavailability*
Knutson, D.E.; Kodali, Divovic, B.; R.; Treven, M.; Stephen, M.R.; Zahn, N.M.; Dobricic, V.; Huber, A.T.; Meirelles, M.A.; Verma, R.S.; Wimmer, L.; Witzigmann, C.; Arnold, L.A.; Chiou, L.-C.; Ernst, M.; Mihovilovic, M.D.; Savic, M.M.; Sieghart, W.; Cook, J.M.
J. Med. Chem. **2018**, *61*, 2422-2446; DOI: 10.1021/acs.jmedchem.7b01664
strategic collaboration in medicinal chemistry (with Vienna University, MedUni Vienna, IST-A)

Mentoring

Direct supervision of completed or ongoing academic theses/projects:

MSc-theses: 43 PhD-theses: 42 Postdocs: 15 Habilitations: 2+1 (ongoing)

Mentoring of graduate students within the research group included several high-potential candidates to subsequently excel in industry (Boehringer, Novartis, Pfizer, etc.), academia (Prague University, Harvard University, etc.), and even consulting (Boston Consulting); 2 successful habilitations and 1 in progress.

Gender balance was pro-actively achieved in particular by emphasizing trans-disciplinary research topics. Work atmosphere within the group fostered diversity-oriented recruiting.

Responsible administration of appointment processes (since 2020)

§98 Professorships: 4 §99/4-Professorships: 8 Tenure Track Appointments: 14

TCH is recognized as a role-model faculty within TUW for its rigorous female scientist support plan. Together with the **FemChem** network substantial activities are triggered to progress in gender balance, equal opportunities, and diversity recruitment. A current focus is put on compatibility of career development and family in order to further improve options for female scientists.

Teaching (selected)

Involvement in several lecture, seminar, and laboratory courses since early university employment; gradual retreat from laboratory teaching upon Habilitation; conceptualization of several new lecture courses to be then *passed on to younger faculty*:

Organic chemistry

BSc-level, since 2012 (~200 exams / year)

Medicinal chemistry

MSc-level, since 2003 (~25 exams / year)

Bioorganic chemistry

MSc-level since 2004 (~25 exams / year)

recurring summer & winter school invitations

Green chemistry

MSc-level, concept & established

Methods in advanced synthesis

MSc-level, concept & established

The craft of scientific writing

MSc/PhD-level, concept & established

Organic chemistry for engineers

BSc-level, redesigned

Laboratory practice

BSc-level, redesigned

Honors in Science and Teaching (selected)

2004 Thieme Journal Award

2009 Uni:Invent Prize (AWS)

2011 Emerging Research Area Award (TUW)

2013 Inventum Award Silber Medal (AT Patent Office)

2013 Techniker-Cercle-Fonds Prototype Award

2015 Uni:Invent Prize (AWS)

2016 Pro Didactica Teaching Award (TCH/TUW)

2017 Best Teaching Award (TUW)

2018 Pro Didactica Teaching Award (TCH/TUW)

2019 Best Teacher Finalist (TUW)

2021 Best Teacher Finalist (TUW)

Scientific Community Services

Memberships:	Austrian Society of Chemists (GÖCh) American Chemical Society (ACS) Austrian Pharmaceutical Society (ÖPhG)
Delegate representations:	GÖCH President of the Working Group Medicinal Chemistry (past) EuCHEMS Division of Life-Sciences – treasurer (current) Division of Organic Chemistry (past) COST Working Groups for Applied Biocatalysis, Green Chemistry (both past)
Advisory Boards:	International Advisory Board at the Institute of Organic Chemistry and Biochemistry / Czech Academy of Sciences Scientific Advisory Board of the Biotrans conference series Steering Board of the Blue Danube Symposia on Heterocyclic Chemistry series International Steering Board of the European Colloquium on Heterocyclic Chemistry
Peer Reviewing:	International Fundings Agencies: 20+ (EC various programs, NSF, OeAD, national agencies) International SCI-Journals: 50+ (e.g. ACIE, Nature portfolio, ACS journals)
Conference Organization:	(co)organizer of 20+ national and international events in various roles; indicative examples: 17 th ICHC 1999 – 1300 delegates, on-site manager 12 th Biotrans 2015 – 700+ delegates, chair 21 st ESOC 2019 – 900+ delegates, treasurer

Management Skills & Trainings

Within approx. 10 years in decisive leadership positions, several trainings were conducted to complement expertise obtained during executive duties implementation:

CAPTain test for leadership positions
Basic executive training at TUW
Leadership strategies / career evolution
Appraisal/feedback processes
Conflict management
Media & crisis communication training
Project acquisition
Project management
Scientific publication and presentation

Management guiding principles

- Define a course (goal), optimize the approach (process)
- Analyze your position, adjust your bearing
- Keep moving to maintain momentum
- See the situation through the eyes of everyone involved
- Collect ideas, identify feasibility, enable implementation, motivate participation

Languages

German *native*
English *full professional proficiency*

Hobbies

Hiking, skiing, mountain biking, tennis, sailing, piano, music concerts; cooking; travelling

Motto:

There are no problems, only challenges – you just have to find the proper solutions!

I do not think there is any thrill that can go through the human heart like that felt by the inventor as he sees some creation of the brain unfolding to success.

Nikola Tesla