CURRICULUM VITAE DR. PATRICIA JOVIČEVIĆ-KLUG

PERSONAL INFORMATION

Date, place of birth: 24.02.1991, Ljubljana
Family status: married

Professional address
Max Planck Institute for Sustainable Materials
Max-Planck-Str. 1
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https://www.mpie.de/4945605/surface-science-for-future-materials

BRIEF PROFILE

- Group leader of Surface Science for Future Materials Group
- Working within Materials Science, Catalysis and Materials testing
- Teaching experience at University of Bochum, IMPRS SusMet and Heinrich Heine University
- Ph.D. in Nanosciences and Nanotechnologies
- Start-up validation SustainH2able Solutions within Max-Planck-Society
- Research pillars: Geochemistry and bioextraction (REEs extraction and recycling), Thermochemical Catalysis, Material testing, Cryogenics, Spectroscopy, Functional and Energy Materials, Surface-bulk interactions, Surface science, Atom Force Microscopy, Advanced materials measurement at synchrotron and Neutron centres, Sustainable reduction of ores/oxides to metals and industrial waste

PROFESSIONAL EXPERIENCE

Head of Surface Science for Future Materials Group 01/02/2024-present
Max-Planck-Institut für Nachhaltige Materialen GmbH
(Max-Planck-Institut für Eisenforschung GmbH) Düsseldorf, Germany
Running Projects:

- EU Project: CryoFusion
- Assessment of Hydrogen Plasma Processed Red Mud for Environmental Remediation from Toxic Metals and Metalloids
- Low-Temperature Conditioning of Functional Materials
- Functional Magnetic Materials: Pioneering the Energy Sector
- Cryogenic Treatment of Biomaterials
- Cryogenic Processing of Biomaterials for Biomedical Applications: Bridging Sustainable Metallurgy and Medicine through Cryogenics
- **Thermochemical catalysis of metal oxides (2 patents)**

Announced Projects:

- Bacterial growth studies with rare earth element traces in red mud (with HHU)
- Kombucha Magnets (with HHU

Start-up SustainH2able Solutions (2025-present)

Current number of people within the group: 8 members

Marie Skłodowska-Curie Actions PostDoc Fellow 01/09/2024-present
Max-Planck-Institut für Nachhaltige Materialen GmbH
(Max-Planck-Institut für Eisenforschung GmbH) Düsseldorf, Germany

Groups: **Corrosion and Surface Science for Future Materials (Group Leader)**
Host: **PD Dr. Michael Rohwerder**
Awarded project: **CryoFusion**

- Advanced magnetic measurement at University of Darmstadt, National Research Council of Italy (CNR), CNRS Neel Grenoble, Elettra.
- XRD advanced measurements with Senai, Belo Horizonte, Brazil
- Magnetic testing MOKE and VSM in collaboration with University of Kiel and University of Darmstadt, kiutra company, Münich, Elettra-MOKE and FERMI beamlines (Dr. Carlo Brondin and Dr. Antonio Caretta)
- Synchrotron measurements with SPEM at ESCAMicroscopy beamline at Elettra, Basovizza, Italy (September/October 2024).
- Residual stress measurements and corrosion testing SKPFM and SKP, using SEM (EDX/EBSD)/XRD.
- International collaboration on the project: Elettra, ANSTO, PSI, KIT, KI, University of Sydney, CAU zu Kiel, Nanocenter, IJS, kiutra, SENAI, CNR, HHU, THGA, TUB, DLR, BAM, InnoRenew.
- **Patent in processing of materials, submitted in September 2024.**

Guest Researcher 11/05/2025-17/05/2025
ESCAmicroscopy beamline at Elettra and CNR, Italy
Department: **ESCA, SPEM, MOKE**
Advisor: **Dr. Luca Gregoratti, Dr. Matteo Amati, Dr. Carlo Brondin, Dr. Antonio Carreta**

- Martensitic stainless steels measurements for future energy applications in fusion. Identification and correlation of local chemistry changes to microstructural changes. In-situ investigation of treatment effect on microstructure.
- Ammonia in-situ measurements for oxide development and hydrogen source.
- Magnetic measurements of steel samples with MOKE.

Guest Researcher 28/09/2024-05/10/2024
ESCAmicroscopy beamline at Elettra and CNR, Italy
Department: **ESCA, SPEM, MOKE**
Advisor: **Dr. Luca Gregoratti, Dr. Matteo Amati, Dr. Carlo Brodnin, Dr. Antonio Carreta**

- Martensitic stainless steels measurements for future energy applications in fusion. Identification and correlation of local chemistry changes to microstructural changes. In-situ investigation of treatment effect on microstructure.
- Magnetic measurements of steel sample with MOKE.

Alexander von Humboldt PostDoc Fellow 01/02/2023-31/08/2024
Max-Planck-Institut für Nachhaltige Materialen GmbH
Max-Planck-Institut für Eisenforschung GmbH, Düsseldorf, Germany
Group: **Corrosion**
Advisor: **PD Dr. Michael Rohwerder**
Awarded project: **Cryogenic treatment of Metallic Materials used in Energy Sector-Fusion**

- Magnetic testing of natural Ni-Fe alloys and comparing them with artificial ones in collaboration with University of Glasgow, Scotland, UK.
- Magnetic testing MOKE and VSM in collaboration with University of Kiel, Germany and kiutra company, Münich.
- Synchrotron measurements with SPEM at ESCAMicroscopy beamline at Elettra, Basovizza, Italy (October/November 2023).
- Residual stress measurements and corrosion testing SKPFM and SKP, using SEM (EDX/EBSD)/XRD.

- Measurements using a wide range of wavelengths with small-angle neutron scattering instruments (Quokka-SANS) at ANSTO, Australia (2023).
- Measurements using a high-intensity powder diffractometer (Wombat) at ANSTO; Australia (2023).
- International collaboration on the project: Elettra, ANSTO, PSI, KIT, KI, University of Sydney, CAU zu Kiel, Nanocenter, IJS, kiutra.

Guest Researcher 16/11/2023-17/11/2023
University of Kiel and Institute of Materials Science, Kiel, Germany
Department: **Nanoscale Magnetic Materials**
Advisor: **Prof. Dr.-Ing. Jeffrey McCord**

- MOKE measurements of different ferrous alloys and meteorites.

Guest Researcher 29/10/2023-06/11/2023
ESCAmicroscopy beamline at Elettra, Italy
Department: **ESCA, SPEM**
Advisor: **Dr. Luca Gregoratti and Dr. Matteo Amati**

- Eurofer measurements for future energy applications in fusion. Identification and correlation of local chemistry changes to microstructural changes. In-situ investigation of treatment effect on microstructure.

Guest Researcher 08/06/2023-11/06/2023
University of Kiel and Institute of Materials Science, Kiel, Germany
Department: **Nanoscale Magnetic Materials**
Advisor: **Prof. Dr.-Ing. Jeffrey McCord**

- MOKE and VSM measurements of different ferrous alloys and meteorites.

Guest Researcher 11/04/2023-05/05/2023
ANSTO (Australian Nuclear Science and Technology Organisation)
Department: Quokka-SANS and WOMBAT-XRD
Advisor: **Dr. Charlie Wu and Dr. James Hester**

- Ferrous and non-ferrous alloys measurements. For ferrous alloys also in-situ exposure to magnetic field under cryogenic conditions.

Guest Researcher 11/04/2023-05/05/2023
University of Sydney, Australia
Department: **Faculty of Engineering and Australian Centre for Microscopy and Microanalysis**
Advisor: **Dr. Levi Tegg and Prof. Dr. Julie M. Cairney**

- Measurements with APT, SEM and XRD for the purpose of measurements at ANSTO. The materials were ferrous and non-ferrous alloys.

Guest Researcher 01/01/2022-31/01/2023
Max-Planck-Institut für Eisenforschung GmbH, Düsseldorf, Germany
Group: **Corrosion**
Advisor: **PD Dr. Michael Rohwerder**

- Residual stress measurements and corrosion testing SKPFM and SKP, using SEM (EDX/EBSD)/XRD.
- Synchrotron measurements with SPEM at ESCAmicroscopy beamline at Elettra, Basovizza, Italy (November 2022).
- Spatial resolved measurements of residual stress with neutron diffractometer at Paul-Scherrer Institute (PSI), Switzerland at POLDI beamline (October 2022).

PostDoc Research Assistant 01/10/2022-31/12/2022
Institute of Metals and Technology, Ljubljana, Slovenia
Department: **Department of Chemistry and Physics of Materials**
Head of Department: **Prof. Matjaž Godec**

- Microstructural analysis: SEM, XRD and XPS.
- MOKE and VSM measurements.
- Data analysation and interpretation of data.

Erasmus PhD Student Training 01/01/2022-31/08/2022
Max-Planck-Institut für Eisenforschung GmbH, Düsseldorf, Germany
Group: **Corrosion**
Advisor: **PD Dr. Michael Rohwerder**

- Deep cryogenic treatment application for improving corrosion resistance of steel. Chemical and microstructural analysis with XRD, XPS, SEM (EDX, ESBD), TEM (SAED, EDX), residual stress measurements, corrosion testing SKPFM and SKP.
- Synchrotron measurements with SPEM at ESCAmicroscopy beamline at Elettra, Basovizza, Italy (February 2022).

Doctoral (PhD) Candidate 01/10/2018-30/09/2022
Institute of Metals and Technology, Ljubljana, Slovenia
Department: **Metallic Materials and Technology**
Advisor: **Prof. Bojan Podgornik**

- Deep cryogenic treatment of ferrous (high-speed steel, cold and hot work steel, stainless steel, bearing steel and structural steel) and non-ferrous alloys (Al-alloy, Ti-alloy and Ni-alloy) with emphasis on ferrous alloys for application in various industries.
- Chemical and microstructural analysis with ICP-OES, XRF, XRD, XPS, ToF-SIMS (collaboration IJS, Slovenia) and D-SIMS (collaboration with LIST, Luxemburg), SEM (EDX, ESBD), (HR/S)TEM (SAED, EDX-collaboration with KI, Slovenia), APT (collaboration with University of Sydney, Australia), fractography and residual stress measurements. Mechanical testing (hardness, fracture and impact toughness, compressive strength and strain hardening exponent, tensile strength, fatigue (collaboration wth Faculty of Engineering, Ljubljana, Slovenia), corrosion testing (SKPFM, SKP, Raman spectroscopy, hydrogen embrittlement, electrochemical testing-collaboration with ZAG, Slovenia), tribological testing (dynamic impact wear, galling, abrasive and adhesive wear) and magnetic testing (MOKE and VSM-collaboration with University of Kiel, Germany).
- Thermodynamic modelling and Taguchi designed statistical experiments, parametric and non-parametric statistics.
- Synchrotron measurements with SPEM at ESCAmisroscopy beamline at Elettra, Italy (May 2021 and February 2022).
- Small angle neutron scattering instrument at Budapest Neutron Centre (BNC), Hungary at YS-SANS beamline (November 2021).
- Summer School: Synchrotron Radiation "Gilberto Vlaic": Fundamentals, Methods and Application, Synchrotron Basovizza; Italy (September 2021).

Guest Researcher 21/04/2022-24/04/2022
University of Kiel and Institute of Materials Science, Kiel, Germany
Department: **Nanoscale Magnetic Materials**
Advisor: **Prof. Jeffrey McCord**

- MOKE and VSM measurements of ferrous alloys.

Guest Researcher 24/02/2022-28/02/2022

ESCAmisroscopy beamline at Elettra, Italy
Department: **ESCA, SPEM**
Advisor: **Dr. Luca Gregoratti and Dr. Matteo Amati**

- High-alloyed ferrous alloy measurements.

Guest Researcher 17/11/2021-19/11/2021
Budapest Neutron Centre (BNC), Hungary
Department. **SANS**
Advisor: **Dr. Laszlo Almasy**

- High-alloyed ferrous alloy measurements.

Guest Researcher 25/05/2021-31/05/2021
ESCAmisroscopy beamline at Elettra, Italy
Department: **ESCA, SPEM**
Advisor: **Dr. Luca Gregoratti and Dr. Matteo Amati**

- High-alloyed ferrous alloy measurements.

Guest Researcher 10/12/2019-24/12/2019
University of Kiel and Institute of Materials Science, Kiel, Germany
Department: **Nanoscale Magnetic Materials**
Advisor: **Prof. Jeffrey McCord**

- MOKE and VSM measurements of ferrous alloys.

Graduate Researcher 01/10/2017-30/09/2018
University of Kiel, Faculty of Mathematics and Natural Sciences, Kiel, Germany
Department: **Plant Nutrition and Soil Science**
Advisors: **Prof. Karl H. Mühling and Dr. Britta Pitann**

- Measurements of emissions of greenhouse gasses, such aa CH_4, CO_2, N_2O, NH_4 and NO_3.
- Isotope measurements of stable isotopes of nitrogen and carbon.
- Measurements with gas chromatography, IRMS, ICP-OES and XRD.

Graduate Researcher 01/01/2018-30/06/2018
Internship Naturfreunde, Kiel, Germany

- Science and green energy promotion for society.
- Preparation of scientific seminar and events for general public.

Graduate Researcher 06/05/2017-13/05/2017
Intensive study programme Erasmus+: Social Entrepreneurship for Local Change, Arnhem, Netherland

- Project management and preparation of project (funding, promotion etc.).

Graduate Researcher 01/01/2015-30/06/2015
GEOMAR Helmholtz Centre for Ocean Research Kiel, Kiel, Germany
Department: **Paleo-Oceanography**
Group: **Chemical Paleoceanography**
Advisors: **Prof. Martin Frank**

- Measurements of radiogenic isotopes of Sm-Nd and St in seawater and sediments.
- Measurements with liquid chromatography, Nu-Plasma. ICP-OES and XRD.
- Dating and measurements of ice and snow samples.

Graduate Researcher 01/10/2014-31/12/2014

Akademie der Wissenschaften und der Literatur, Mainz and GEOMAR Helmholtz Centre for Ocean Research Kiel, Kiel, Germany
Department: **Paleo-Oceanography**
Group: **Chemical Paleoceanography**
Advisors: **Prof. Martin Frank**

- Dating and measurements of ice and snow samples.
- Data processing and modelling.

Graduate Researcher 01/08/2014-31/08/2014
University of Kiel, GEOMAR Helmholtz Centre for Ocean Research Kiel, Kiel, Germany
Department: **Research expedition by Alkor scientific cruise**
Group: **Mapping of Baltic Sea and collection of data and samples**
Advisors: **Dr. Klaus Schwarzer and Dr. Klaus Ricklefs**

- Mapping of Baltic Sea and collection of data and samples data processing.
- Submarine mapping and modelling.

Graduate Student 01/10/2013-30/09/2014
Erasmus+ program Master Degree

QUALIFICATIONS

Head of Surface Science for Future Materials Group 01/02/2024-present
Max-Planck-Institut für Nachhaltige Materialen GmbH
(Max-Planck-Institut für Eisenforschung GmbH) Düsseldorf, Germany
Running Projects:

- EU Project: CryoFusion
- Assessment of Hydrogen Plasma Processed Red Mud for Environmental Remediation from Toxic Metals and Metalloids
- Low-Temperature Conditioning of Functional Materials
- Functional Magnetic Materials: Pioneering the Energy Sector
- Cryogenic Treatment of Biomaterials
- Cryogenic Processing of Biomaterials for Biomedical Applications: Bridging Sustainable Metallurgy and Medicine through Cryogenics
- **Thermochemical Catalysis of Metal Oxides**

Announced Projects:

- Bacterial growth studies with rare earth element traces in red mud (with HHU)
- Kombucha Magnets (with HHU and University of Bochum)

Current number of people within the group: 8 members

Ph.D. in Nanosciences and Nanotechnologies 01/10/2018-09/09/2022
International Postgraduate School Jožef Stefan, Ljubljana Slovenia and Institute of Metals and Technology, Ljubljana, Slovenia
Thesis: Mechanisms and effect of deep cryogenic treatment on steel properties
Supervisor: Prof. Dr. Bojan Podgornik

International Master in Sustainability, Society and Environment 01/10/2015-30/09/2018
University of Kiel, Faculty of Mathematics and Natural Sciences
Module: Isotopic Biogeochemistry
Thesis: Greenhouse gases CH_4, CO_2, N_2O and its emissions to the atmosphere from soil in controlled environment with emphasis on N_2O
Supervisors: Prof. Dr. Karl H. Mühling and Dr. Britta Pitann

International Master in Marine Geosciences 01/10/2013-30/09/2015
University of Kiel, Faculty of Mathematics and Natural Sciences and GEOMAR Helmholtz Centre for Ocean Research Kiel
Module: Isotopic Geochemistry
Thesis: Factors controlling radiogenic neodymium isotope composition of seawater and sediments in the Mozambique channel
Supervisors: Prof. Dr. Martin Frank and Dr. Ed. C. Hathorne

Bachelor Degree in Geology 01/10/2010-18/09/2015
University of Ljubljana, Faculty Natural Sciences and Engineering
Module: Geochemistry
Thesis: Heavy metal content in some children's sandpits in Ljubljana and surroundings
Supervisor: Prof. Dr. Nina Zupančič

AWARDS, FELLOWSHIPS, GRANTS

IMPRS SusMet Grant for mentoring Ph.D. project (201,600€): *Cryogenic Processing of Biomaterials for Biomedical Applications: Bridging Sustainable Metallurgy and Medicine through Cryogenics* July 2025-July 2028

Marie Skłodowska-Curie Actions PostDoc Fellowships (189,687.36 €) September 2024-August 2026

First Cover Page *for Article Thermal Kinetics and Nitriding Effect of Ammonia-Based Direct Reduction of Iron Oxides in ACS ACS Sustainable Chemistry & Engineering* June 2024

Travel Grant CALIPSOplus for Researchers (1000 €) October/November 2023
Award for Distinguished Women in Cryogenics and Superconductivity by Cryogenic Society of America May 2023
Award Women Engineers You Should Know by SWE April 2023

Editor's Choice Award selected by editorial board of Coatings MDPI March 2023
for the paper Comparison of K340 Steel Microstructure and Mechanical Properties Using Shallow and Deep Cryogenic Treatment

Alexander von Humboldt Award PostDoc Fellowship (83280 €) February 2023-August 2024

Travel Grant CALIPSOplus for Researchers (1000 €) November 2022

Erasmus Mundus Grant for Training and Mobility of PhD (3600 €) January 2022-August 2022
Awarded to do training at Max-Planck-Institut für Eisenforschung GmbH in department of Interface Chemistry and Surface Engineering, group of Corrosion. Practical training in corrosion group for analyzation, interpretation and modelling of surface changes.

Best Paper of the Month award selected by editorial board of Materials MDPI April 2022
for the paper Revealing the Pb Whisker Growth Mechanism from Al-Alloy Surface and Morphological Dependency on Material Stress and Growth Environment

Travel Grant CALIPSOplus Researchers (1000 €) May 2021

Young Researcher ARRS Grant (104 000 €) October 2018-September 2022
Awarded by National Slovenian Research agency for promising young researchers.

Best Poster Award at SSE June 2017

Erasmus+ Programme Grant for Intensive Study Programme Arnhem 2017 (2000 €) May 2017
Awarded for intensive study programme at VHL Larenstein, Arhem, Netherland.

Thyssenkrup Grant for Travel (250 €) June 2015
Awarded by Thyssenkrup for research collaboration with industry.

Steel University Grant for Travel (4500 €) February 2015
Awarded by Steel University for 1st place in the in the 9th Steel making challenge in the region of Europe, CIS, Africa and Middle East, January 2015.

Steel University Award (800 €) February 2015
Awarded by Steel University for 2nd place in World final 9th Steel making challenge.

Erasmus+ Programme Grant for Exchange (6000 €) October 2013-September 2014
Awarded for studying abroad at University of Kiel.

Zois Grant (8000 €) September 2006-September 2013
Awarded for exceptional students for undergraduate and postgraduate studies by Zois grant.

Grant for Mobility within EU (2000 €) August 2012
Travel grant for inclusion of young people in international volunteering projects at Institution ABIONA.

Grant for Mobility within EU (25 800 €) July 2012
Grant for supporting international youth exchange projects and their organization at Institution ABIONA.

MAIN COOPERATION PARTNERS

International partners (only 5 selected):

- Synchrotron Elettra and FERMI, Italy
  - Advanced material testing of ferrous and non-ferrous alloys, oxides (ceramics)
- Paul Scherrer Institute (PSI), Switzerland
  - Advanced material testing of ferrous alloys
- University of Sydney, Australia of ferrous and non-ferrous alloys
  - Advanced material testing
- InnoRenew CoE, Slovenia
  - Advanced material testing with biodegradable coatings for architecture and biomaterials
- Australian Nuclear Science and Technology Organisation (ANSTO), Australia
  - Advanced material testing of ferrous and non-ferrous alloys

National partners (only 5 selected):

- Zollverein - UNESCO, Germany
  - Collaboration on geochemical testing and remediation of waste/soil
- Karlsruhe Institute of Technology (KIT), Germany
  - Collaboration on materials used for energy sector
- Heinrich Heine University Düsseldorf, Germany
  - Collaboration on different projects and teaching seminars
- University of Kiel, Germany
  - Collaboration on different projects
- Forschungszentrum Jülich, Germany

- Advanced material testing

ORGANISATION OF INTERNATIONAL CONFERENCE, MEMBERSHIP AND EDITOR EXPERIENCES

Evaluator of Projects for Nexus Funding
Carl-Zeiss Foundation for Nexus Project Funding Scheme 2025

Committees
Presidential committee of Max Planck Society for Equal Opportunities 2024-2025

Organisation of international conferences

- Co-Chair of Sustainable Reprocessing of End-of-Life Materials and Side Streams, MSE 2026
- C-Chair of Material Processing and Protection in Medicine, MSE 2026
- Unlocking Value: Critical Raw Materials from Waste and E-Waste WEEE E-waste International Day 2025
- Main-organizer and supporter of Women in Science Week 2024, 2025, 2026
- Organizer of International Conferences AMPT 2020, IPSSC and CMBE 2019, 2020 and 2021

Guest editor and editor

- Guest editor: Frontier in Discover Materials – Collection *Sustainable and Green Synthesis of Functional and/or Energy Materials* (2025-current)
- Guest editor: Corrosion and Material Degradation-*Special Issue: Effects of Cryogenic Treatment on the Corrosion and Materials Degradation* (2024-2025).
- Guest editor: Coatings-*Special Issue Surface Science of Degradation and Surface Protection* (2024-2025).
- Guest editor: Coatings-*Special Issue dedicated to Women in Science Week 2024* (2023-2024).
- Guest editor: Coatings-*Special issue: Mechanical, Corrosive, and Tribological Degradation of Metal Coatings and Modified Metallic Surfaces* (2021-2023).
- 3x Editor at IPSSC and CMBE conference for book of abstracts (May 2019, May 2020 and May 2021).

Reviews for journals

- Nature Materials
- Journal of Materials Research and Technology
- Coatings
- Applied Sciences
- International Journal of the Korean Society of Precision Engineering
- International Journal of Advanced Manufacturing tTchnology
- Journal of Engineering and Applied Science (Cairo)
- Lubricants
- Materials science & engineering
- Materials
- Metals
- Micromachines
- Molecules
- Nature communications
- Processes
- Sensors
- Steel research international
- Cogent Engineering
- International Journal of Precision Engineering and Manufacturing

- Scientific reports
- Materials Chemistry and Physics
- Advances in Materials and Processing Technologies
- International Materials Reviews
- Metallurgical Research & Technology

Review for conferences

- SWE 2024 & 2025
- IPSSC 2020 & 2021 & 2022

MEMBERSHIPS

- Deutsche Gesellschaft für Materialkunde (DGM)
- German Committee Research with Neutrons
- Society of Women Engineers (SWE)
- Member of IEEE Women in Engineering (IEEE WIE)
- Canadian Women in Science and Technology (SCWIST)
- Swiss Neutron Science Society (PSI)
- Women in Materials Engineering Committee, European Platform Women in Science (EPWS)
- International Association of Women (IAW)
- Cryogenic Society of Europe

PUBLICATIONS

ORCID: https://orcid.org/0000-0002-3758-9897
Total number: 51
h-index: 17
Total IF: 23 (since 2020)
Citations: 830

1. Jovičević-Klug, M.*, Klapproth, D.*, **Jovičević-Klug, P.*** (2025): Sustainable hydrogen-based thermochemical catalytic elemental extraction from electronic wastes. *in preparation*.
2. **Jovičević-Klug, P.*,** Tegg, L.*, Jovičević-Klug, M.*, Capek, J., Amati, M., Polatidis, E., Gregoratti, L., Cairney, J.M., Rohwerder, M. (2025): Cryogenically Engineered Structural Materials for the Energy Sector: An In-Operando Testing Approach, *in preparation.*
3. Röhrig Martins da Silva, M., Gitti Tortoretto Fim, R., Jovičević-Klug, M., Brondin, C. A., Miłosz, Z., Caretta, A., Amati, M., Gregoratti, L., Nunes De Faria, R., **Jovičević-Klug, P.*** (2025): Multi-property modification of rare earth based permanent magnets through cryogenic treatment. *in preparation*.
4. Gitti Tortoretto Fim, R., Chimed, N., **Jovičević-Klug, P**., Radulov, I. A., Diehl, O., Gassmann, J., D. Raabe, Schwarz, T. M., Jovičević-Klug, M.* (2025): Magnet waste recycling with hydrogen plasma. *in preparation*.
5. Chimed, N., Gitti Tortoretto Fim, R., **Jovičević-Klug, P**., Radulov, I. A., Diehl, O., Gassmann, J., D. Raabe, Schwarz, T. M., Jovičević-Klug, M.* (2025): Magnet waste recycling with hydrogen plasma. *in preparation*.
6. Mitzia, A.*, Jovičević-Klug, M., L. Daumann, **Jovičević-Klug, P.*** (2025) Plasma-processed red mud residue for soil remediation: addressing soil contamination with industrial waste treatment. *in preparation*.
7. Savovici, A., Ratzker, B., Zhou, X., Zaefferer, S., Ruffino, M., Radulov, I., **Jovičević-Klug, P**., Katnagllu, S., Hamzehei, A., Watermeyer, A., Vogel, A., Neugebauer, J., Jovičević-Klug, M., Freysoldt, C., Raabe, D.* (2025): Domain Boundaries in a Metallic Distortive Polar Metal, *submitted.*
8. Reker, B., Gleba, J., Jovičević-Klug, M., **Jovičević-Klug, P.,** Klapproth, D., Westermann, S., (2025): Critical raw materials extraction and purification from mining water with plasma reduction. *in preparation*.
9. **Jovičević-Klug, P.*,** Bienvenue, B., Klapproth, D., Bumby, C., Raabe, D., Jovičević-Klug, M.* (2025): Hydrogen plasma reduction of ironsand for green multi-metal extraction. In: Nature, submitted.

10. Woods, E.V.*, Chen, X., Wei, S., Zhang, Y., Kwiatkowski da Silva, A., El-Zoka, A.A., Prabhakar, J.M, Schwarz, T.M., Kang, Y., Aota, L.S., Singh, M.P., Angenendt, K., Özgun, Ö., Jovičević-Klug, M., **Jovičević-Klug, P.,** Broß, C., Liu, J., de Kloe, J., Dehm, G., Zaefferer, S., J., Joshi, Y.*, Gault, B*, (2025): Vacuum Dealloyed Brass as Li-Metal Battery Current Collector: effect of Zinc and Porosity. In: Acta Materialia, *under review*.
11. Woods, E. V.*, Chen, X., Zhang, Y., Prabhakar, J.M., **Jovičević-Klug, P.,** Jovičević-Klug, M., Singh, M.P., Zhao, Y., Zhang, S., Zaefferer, S., Liu, J., Joshi, Y.*, Gault, B*, (2025): Electrochemically-driven formation of Intermetallic Cu_3ZnLi_2 alters Li-transport in nanostructured bimetallic battery anode. In: Advance Science, *submitted*.
12. Jovičević-Klug, M. Kasdorf Giesbrecht, C., Ambrožič, B., Gossing, F., Brondin, C.A., Milosc, Z., Woods, E. V., Amati, M., Ebbinghaus, P., Schwab, C., Finsterbusch, M., Gregoratti, L, McCord, J., Rohwerder, M., **Jovičević-Klug, P.*,** (2025): Journey into the Magnetic and Spectroscopic Realm of Iron-Nickel Meteorites. In: Discover Materials, *under review.*
13. Jovičević-Klug, M., Brondin, C., Caretta, A., Bonnekoh, C., Gossing, F., Vogel, A., Rieth, M., McCord, J., Rohwerder, M., **Jovičević-Klug, P.*** (2025): Suppression of Cr nanoclusters and enrichments in Fe-Cr based alloys with cryogenic processing for future energy sector. In: JMRT; 36, 9262-9273.
14. Tegg, L., Ostergaard, H., Jovičević-Klug, M.*, **Jovičević-Klug, P.,** Wu, C., Cairney, J.M*. (2025): In-situ SANS for the kinetic analysis of ß precipitation in an Al-Mg-Si alloy following deep cryogenic treatment. In: Journal of Alloys and Compunds, 1025, 180371.
15. **Jovičević-Klug, P.***Giesbrecht, C., Prabhakar, M.J., Schwarz, T.M., Bonnekoh, C., Gault, B., Rieth, M., Rohwerder, M. (2025): Analysing EUROFER97 Oxide Build Up: A Nanoscale Perspective. In: Corrosion Science, 245, 112691.
16. **Jovičević-Klug, P.*,** Prabhakar, M.J., Kasdorf Giesbrecht. C., Schwarz, T.M., Bonnekoh, C., Rieth, M., Rohwerder, M. (2024): Hydrogen diffusion and trapping in a cryogenic processed high-Cr ferrous alloy. In: npj Materials Degradation, 978, 104.
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18. Jovičević-Klug, M.*, Ma, Y., **Jovičević-Klug, P**., Prabhakar, M.J., Rohwerder, M., Raabe, D. (2024): Cover: Thermal Kinetics and Nitriding Effect of Ammonia-Based Direct Reduction of Iron Oxides. In: ACS Sustainable Chemistry & Engineering,12(26), 9882-9896.
19. Jovičević-Klug, M.*, Ma, Y., **Jovičević-Klug, P**., Prabhakar, M.J., Rohwerder, M., Raabe, D. (2024): Thermal Kinetics and Nitriding Effect of Ammonia-Based Direct Reduction of Iron Oxides. In: ACS Sustainable Chemistry & Engineering,12(26), 9882-9896.
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21. **Jovičević-Klug, P*,** Rohwerder, M. (2023): Chapter Cryogenic Treatments in Energy Sector. Scholarly Community Encyclopaedia.
22. **Jovičević-Klug, P.*,** Rohwerder, M. (2023): Review of Sustainable new technology for the improvement of metallic materials for future energy applications. In: Coatings, 13(11), 1822.
23. Amati, M., Susi, T., **Jovičević-Klug, P.,** Jovičević-Klug, M., Kosmala, T., Granozzi, G., Agnoli, S., Yang, P., Zhang, Y., Scardamaglia, M., Gregoratti, L.* (2023): Scanning photoelectron spectromicroscopy: from static to operando studies of functional materials. In: Journal of Electron Spectroscopy and Related Phenomena, 265, 147336.
24. **Jovičević-Klug, P*** (2023): Chapter and video Deep Cryogenic Treatment of Metals. Scholarly Community Encyclopaedia.
25. **Jovičević-Klug, P.***, Jovičević-Klug, M., Rohwerder, M., Godec, M. Podgornik, B. (2023): Complex Interdependency of Microstructure, Mechanical Properties, Fatigue Resistance, and Residual Stress of Austenitic Stainless Steels AISI 304. In: Materials, 16(7), 2638.
26. **Jovičević-Klug, P.***, Jovičević-Klug, M*., Thormählen, L, Seidler, D., McCord, J., Rohwerder, M., Podgornik, B. (2023): Austenite reversion suppression with deep cryogenic treatment: A novel pathway

towards 3rd generation advanced high-strength steels, In: Materials Science and Engineering: A, 872, 145033.

27. **Jovičević-Klug, P.***, Jovičević-Klug, M., Tegg, L., Seidler, D., Thormählen, L., Parmar, R., Amati, M., Gregoratti, L., Cairney, J., McCord, J., Rohwerder, M., Podgornik, B. (2022): Correlative surface and bulk analysis of deep cryogenic treatment influence on high-alloyed ferrous alloy. In: Journal of Materials Research and Technology 11-12, 4799-4810.
28. Jovičević-Klug, M., Tegg, L., **Jovičević-Klug, P***., Dražić, G., Almasy, L., Lim, B., Cairney, J., Podgornik, B. (2022): Multiscale Modification of Aluminum Alloys with Deep Cryogenic Treatment for Advanced Properties. In: Journal of Materials Research and Technology, 21(9), 3062-3073.
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32. Jovičević-Klug, M.*, **Jovičević-Klug, P***. (2022): Chapter Extraordinary Pb whisker growth from Bi-Mg-Pb pools in aluminum alloy 2026. Scholarly Community Encyclopaedia.
33. **Jovičević-Klug, P.*,** Guštin, A., Jovičević-Klug, M., Šetina Batič, B., Lebar, A., Podgornik, B. (2022): coupled role of alloying and manufacturing on deep cryogenic treatment performance on high-alloyed ferrous alloys. In: Journal of Materials Research and Technology, 18, pp. 3184-3197.
34. Jovičević-Klug, M.*, Verbovšek, T., **Jovičević-Klug, P.*,** Šetina Batič, B., Ambrožič, B., Dražić, G., Podgornik B. (2022): Revealing the Pb whisker growth mechanism from Al-alloy surface and morphological dependency on material stress and growth environment. In: Materials, 15(7), 2574.
35. **Jovičević-Klug, P.*,** Jovičević-Klug, M., Podgornik, B. (2022): Unravelling the role of nitrogen in surface chemistry and oxidation evolution of deep cryogenic treated high-alloyed ferrous alloy. In: Coatings, 12(2), 213.
36. Jovičević-Klug, M., Rezar, R., **Jovičević-Klug, P.*,** Podgornik B. (2022): Influence of deep cryogenic treatment on natural and artificial aging of Al-Mg-Si alloy EN AW6026. In: Journal of alloys and compounds, 899, 163323.
37. **Jovičević-Klug, P.*,** Puš, G., Jovičević-Klug, M., Žužek, B., Podgornik, B. (2022): Influence of heat treatment parameters on effectiveness of deep cryogenic treatment on properties of high-speed steels. In: Materials Science & Engineering. A, Structural materials: Properties, Microstructure and Processing, 829, 142157.
38. **Jovičević-Klug, P.***, Sedlaček, M., Jovičević-Klug, M., Podgornik, B. (2021): Effect of deep cryogenic treatment on wear and galling properties of high-speed steels. In: Materials, 14(24), 7561.
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40. **Jovičević-Klug, P.*,** Kranjec, T., Jovičević-Klug, M., Kosec, T., Podgornik, B (2021): Influence of the deep cryogenic treatment on AISI 52100 and AISI D3 steel's corrosion resistance. In: Materials, 14(21), 6357.
41. Jovičević-Klug, M.*, **Jovičević-Klug, P.,** Podgornik, B. (2021): Modification of steel corrosion resistance in seawater with deep cryogenic treatment. In: The proceedings of the 60th annual conference of metallurgists. August 2021, Westmount (Canada): The metallurgy and materials society of the Canadian institute of mining, metallurgy and petroleum. cop., pp. 231-234.
42. **Jovičević-Klug, P.*,** Kranjec, T., Jovičević-Klug, M., Podgornik, B. (2021): Modification of steel corrosion resistance in seawater with deep cryogenic treatment. In: The proceedings of the 60th annual conference of metallurgists. August 2021, Westmount (Canada): The metallurgy and materials society of the Canadian institute of mining, metallurgy and petroleum. cop., pp. 897-900.
    Jovičević-Klug, P.*, Jovičević-Klug, M., Sever, T., Feizpour, D., Podgornik, B (2021): Impact of steel type, composition and heat treatment parameters on effectiveness of deep cryogenic treatment. In: Journal of Materials Research and Technology, 14, pp. 1007-1020

43. Jovičević-Klug, M.*, **Jovičević-Klug, P.,** Sever, T., Feizpour, D., Podgornik, B. (2021): Extraordinary nanocrystalline Pb whisker growth from Bi-Mg-Pb Pools in aluminum alloy 6026 moderated through oriented attachment. In: Nanomaterials, 11(7), 1842.
44. **Jovičević-Klug, P.*,** Lipovšek, N., Jovičević-Klug, M., Podgornik, B (2021): Optimized preparation of deep cryogenic treated steel and Al-alloy samples for optimal microstructure imaging results. In: Materials Today Communications, 27, 102211.
45. **Jovičević-Klug, P.*,** Jenko, M., Jovičević-Klug, M., Šetina, B., Kovač, J., Podgornik, B. (2021): Effect of deep cryogenic treatment on surface chemistry and microstructure of selected high-speed steels. In: Applied Surface Science, 548, 149257.
46. Jovičević-Klug, M.*, **Jovičević-Klug, P**., McCord, J., Podgornik, B. (2021): Investigation of microstructural attributes of steel surfaces through magneto-optical Kerr effect. In: Journal of Materials Research and Technology, 11, pp. 1245-1259.
47. **Jovičević-Klug, P.*,** Jovičević-Klug, M., Podgornik, B. (2020): Effectiveness of deep cryogenic treatment on carbide precipitation. In: Journal of Materials Research and Technology, 9(6), pp. 13014-13026.
48. **Jovičević-Klug, P.*,** Podgornik, B. (2020): Comparative study of conventional and deep cryogenic treatment of AISI M3:2 (EN 1.3395) high-speed steel. In: Journal of Materials Research and Technology, 9(6), pp. 13118-13127.
49. **Jovičević-Klug, P.*,** Podgornik, B. (2020): Chapter Deep cryogenic treatment. In: Scholarly Community Encyclopaedia.
50. **Jovičević-Klug, P.*,** Podgornik, B. (2020): Review on the effect of deep cryogenic treatment of metallic materials in automotive applications. In: Metals, 10(4), 434.
51. **Jovičević-Klug, P.*,** Podgornik, B. (2019): Deep cryogenic treatment of metallic materials in automotive applications. In: The proceedings of the Heat treatment and surface engineering for automotive applications. June 2019, Bardolino (Italy): Associazione Italiana di Metallurgia.

PRESENTATIONS AND POSTERS

1. **Jovičević-Klug, P**., Gitti Tortoretto Fim, R., Röhrig Martins da Silva, M., Klapproth, D., Reker, B., Bumby, C., Jovičević-Klug, M.* (2025) (*presentation*): Sustainable recycling pathways of rare-earth based end-of-life permanent magnets via hydrogen-enabled plasma processing, SuCiMat 2025, Saabrücken, Germany.
2. Gitti Tortoretto Fim, R., Röhrig Martins da Silva, M., **Jovičević-Klug, P**., Chimed, N., Klapproth, D., Radulov, I. A., Diehl, O., Gassmann, J., Jovičević-Klug, M.* (2025) (*presentation*): Sustainable recycling pathways of rare-earth based end-of-life permanent magnets via hydrogen-enabled plasma processing, SuCiMat 2025, Saabrücken, Germany.
3. Röhrig Martins da Silva, M.*, Prabhakar, M.J., Gitti Tortoretto Fim, R., Rohwerder, M., Nunes De Faria, R., **Jovičević-Klug, P**., Jovičević-Klug, M. (2025) (*poster*): Exploring magnetic properties and corrosion resistance in recycled and cryogenically treated Nd-Fe-B permanent magnets, WIEM2025, Jülich, Germany.
4. **Jovičević-Klug, P**.*, Jovičević-Klug, M., Rohwerder, M. (2025) (*poster*): Atom force microscopy -a glimpse beyond surface, WIEM2025, Jülich, Germany.
5. Mitzia, A.*, Jovičević-Klug, M., Raabe, D., **Jovičević-Klug, P**. (2025) (*presentation*): Red mud residue after plasma reduction for soil remediation: a full circle of reuse combining two environmental goals in one, Sardinia 2025, 20th International symposium on waste management, resource recovery and sustainable landfilling, Forte Village, Italy.
6. Birgani, S.*, Daumann, L., Fisher, A., Ramachandramoorthy, R., Rohwerder, M., **Jovičević-Klug, P**. (2025) (*poster*): Deep Cryogenic Processing of Biomaterials for Biomedical Applications: Bridging Sustainable Metallurgy and Medicine through Cryogenics, IMPRS SusMet retreat 2025, Düsseldorf, Germany.
7. Reker, B.*, Jovičević-Klug, M, **Jovičević-Klug, P**., Westermann, S., (*presentation*): Metallgewinnung aus Grubenwasserschlämmen durch Plasmareduktion – ein Beitrag zum CRMA?, kasel25, Kasel, Germany
8. **Jovičević-Klug, P.*,** Jovičević-Klug, M., Amati, M., Tegg, L., Gregoratti, L., Cairney, J.M., Rohwerder, M. (2025) (*poster*): Cryogenic Technology: A New Era in Energy Materials, MC2025, Karlsruhe, Germany.
9. **Jovičević-Klug, P.*,** Jovičević-Klug, M., Ambrožič, B., Kasdorf Giesbrecht, C., Milosc,Z., Woods, E., Amati, M., Gregoratti, L., Vogel, A., Schwab, C., Rohwerder, M. (2025) (*presentation*): Exploring Extraterrestrial Materials with Surface Techniques, MC2025, Karlsruhe, Germany.

10. **Jovičević-Klug, P. *** (2025) (*invited lecture*): Cryogenic Technology: A New Era in Energy Materials, KIT, Karlsruhe, Germany.
11. **Jovičević-Klug, P. *** (2025) (*invited lecture*): Journey into the Magnetic and Spectroscopic Realm of Iron-Nickel Meteorites for Future Applications in Functional Materials, KIT, Karlsruhe, Germany.
12. **Jovičević-Klug, P.*,** Jovičević-Klug, M., Tegg, L., Hester, J.R., Gitti Tortoretto Fim, R., Gossing, F., Brondin, C.A., Carettta, A., Cairney, J.M., McCord, J., Rohwerder, M. (2025) (*poster*): Magnetic properties of cryogenically treated ferrous alloy for future energy sector, JEMS 2025, Darmstadt, Germany.
13. Gitti Tortoretto Fim, R.*, Jovičević-Klug, M., Raabe, D., **Jovičević-Klug, P.** (2025) (*poster*): Multi-property modification of rare earth based permanent magnets through cryogenic treatment, JEMS 2025, Darmstadt, Germany.
14. Gitti Tortoretto Fim, R.*, Jovičević-Klug, M., Raabe, D., **Jovičević-Klug, P.** (2025) (*poster*): Potential of Cryogenic Treatment Applications on Rare Earth based Functional Magnetic Materials, REPM 2025, Tsukuba, Japan.
15. **Jovičević-Klug, P.*,** Jovičević-Klug, M., Kasdorf Giesbrecht, C., Prabhakar, J.M., Rohwerder, M. (2025) (*presentation*): The Future of Sustainable Materials in Energy Production, 4th Materials Science Colloquium, Lech am Arlberg, Austria.
16. Abou Saleh, J., Fischer, A., **Jovičević-Klug, P.***. (2025) (*poster*): Biomaterials: Engineering the Future of Medicine, MPISusMat, Düsseldorf, Germany.
17. **Jovičević-Klug, P.*,** Jovičević-Klug, M., Ambrožič, B., Kasdorf Giesbrecht, C., Vogel, A., Rohwerder, M. (2024) (*poster)*: Exploring Extraterrestrial Materials with Surface Techniques, Applied Sciences, online.
18. **Jovičević-Klug, P.***(2024) (*invited presentation*): The potential of cryogenic treatment and surface science for (bio)materials used in different sectors, InnoRenew CoE, Izola, Slovenia.
19. Tegg, L.*, Ostergaard, H. E., Jovičević-Klug, M., **Jovičević-Klug, P.,** We, C.M.*, Cairney, J. (2024) (*presentatio*n): In-situ SANS of precipitation in an Al-Mg-Si alloy following deep cryogenic treatment, SAS, Taipei, Taiwan.
20. **Jovičević-Klug, P.*,** Vogel, A., Kasdorf Giesbrecht, C., Ebbinghaus, P, Jovičević-Klug, M. (2024) (*poster*): Exploring Extraterrestrial Materials with Surface Techniques, MPIE, Düsseldorf, Germany.
21. **Jovičević-Klug, P.***. (2024) (*poster*): Exploring the World of Surface Science, MPIE, Düsseldorf, Germany.
22. **Jovičević-Klug, P.*,** Prabhakar, M., Kasdorf Giesbrecht, C., Rohwerder, M. (2024) (*presentatio*n): Hydrogen permeation in correlation to microstructural changes and residual stress induced by cryogenic processing of stainless steel, EUROCORR, Paris, France.
23. **Jovičević-Klug, P.*,** Bonnekoh, C., Jovičević-Klug, M., Milosc, Z., Amati, M., Gregoratti, L., Rieth, M., Rohwerder, M. (2024) (*presentatio*n): Designing high Cr-alloy Eurofer with advanced properties by cryogenic processing for fusion, ICEC29/ICMC, Geneva, Switzerland.
24. **Jovičević-Klug, P.*,** Rohwerder, M. (2024) (*presentatio*n): Emerging New Cryogenic Technology for Materials in Future Energy, SWE, Munich, Germany.
25. **Jovičević-Klug, P.*,** Jovičević-Klug, M., Rohwerder, M. (2023) (*presentatio*n): The potential of cryogenic treatment for materials used in the current and future energy sector, Elettra, Basovizza, Italy.
26. Jovičević-Klug, M.*, Ma, Y., Prabhakar, M., **Jovičević-Klug, P**., Breitbach, B., Rohwerder, M., Raabe, D. (2023) (*presentation*): Ammonia based direct reduction: Prospects, challenges and open questions, Elettra, Basovizza, Italy.
27. Tegg, L*., McCarroll, I.E., **Jovičević-Klug, P.,** Jovičević-Klug, M., Yen, H.W., Cairney, J. (2023) (*poster*): Nano-scale characterization of Metals and Alloys, APT&M, Leuven, Belgium.
28. **Jovičević-Klug, P.*,** Rohwerder, M. (2023) (*presentation*): Testing modified alternative martensitic stainless steel for fusion applications, Eurocorr, Brussels, Belgium.
29. Jovičević-Klug, M*, **Jovičević-Klug, P**, Podgornik, B. (2023): The curious incidence of Pb whiskers growth from aluminum alloy surface (*invited presentation*), University of Sydney, Sydney, Australia.
30. **Jovičević-Klug, P.*,** Jovičević-Klug, M. (2023): Deep cryogenic Treatment of Metallic Materials *(invited presentation*), University of Sydney, Sydney, Australia.
31. **Jovičević-Klug, P*.,** Rohwerder, M. (2023): Potential of Cryogenic Treatment Applications on Materials used in Energy Sector (*poster*), CSE, GSI, Darmstadt, Germany.
32. **Jovičević-Klug, P.***Podgornik, B. (2022): Deep cryogenic treatment of AISI H11, AISI H13 and AISI H21 hot work tool steels (*poster*). IFHTSE, Salzburg, Austria.

33. Podgornik, B.*, **Jovičević-Klug, P**., Ekar, J., Kovač, J. (2022): Deep cryogenic treatment of AISI H11, AISI H13 and AISI H21 hot work tool steels (*presentation*). IFHTSE, Salzburg, Austria.
34. Podgornik, B.*, **Jovičević-Klug, P**., Jovičević-Klug, M. (2022): Altering tribological properties of tools steel through deep cryo-genic treatment utilization (*presentation*). ASMET, Örebro, Sweden.
35. Sever, T., Jovičević-Klug, M.*, **Jovičević-Klug, P**., Feizpour, D., Podgornik, B. (2022): Extraordinary nanocrystalline Pb whisker growth from Bi-Mg-Pb pools in aluminium Al-6026 (*poster*). SM, Ankaran, Slovenia.
36. **Jovičević-Klug, P.*,** Jovičević-Klug, M., Podgornik, B. (2021): Potential in deep cryogenic treatment of non-ferrous alloys (*poster*). CSE, virtual, Netherland.
37. **Jovičević-Klug, P.*,** Jovičević-Klug, M., Podgornik, B. (2021): Deep cryogenic treatment of AISI 431 and AISI 52100 steels (*presentation*). CEC/ICMC, virtual, Cern, Swistzerland.
38. **Jovičević-Klug, P.*,** Podgornik, B. (2021): Importance of deep cryogenic treatment in present, emerging and future industries (*presentation*). IPSSC&CMBE, virtual, Slovenia.
39. Jovičević-Klug, M.*, **Jovičević-Klug, P**., Podgornik, B. (2021): Microstructural and residual stress evaluation of bulk martensitic steels with micrometer-sized grains through magneto-optical Kerr effect (*presentation*). INTERMAG, virtual, Lyon, France.
40. Jovičević-Klug, M.*, **Jovičević-Klug, P**., Podgornik, B. (2021): Extraordinary Pb whisker growth from Bi-Mg-Pb pools in aluminum alloy 6026 (*presentation*). CMSC, virtual, Toronto, Canada.
41. **Jovičević-Klug, P.*,** Jovičević-Klug, M., Podgornik, B. (2021): Novel method for surface chemistry dynamics analysis of HSS steel induced by deep cryogenic treatment (*presentation*). CMSC, virtual, Toronto, Canada.
42. **Jovičević-Klug, P.*,** Jovičević-Klug, M., Podgornik, B. (2021): Applicability of deep cryogenic treatment in emerging industries (*presentation*). TMS, virtual, Florida-USA.
43. Jovičević-Klug, M.*, **Jovičević-Klug, P.,** Podgornik, B. (2021): Utilization of magneto-optical Kerr effect microscopy for microstructural characterization of steels (*presentation*). TMS, virtual, Florida-USA.
44. Jovičević-Klug, M.*, **Jovičević-Klug, P.,** Podgornik, B. (2021): Deep cryogenic treatment as the next processing step in the steel industry (*presentation*). COM METSOC, virtual, Westmount, Canada.
45. **Jovičević-Klug, P.*,** Kranjec, T., Jovičević-Klug, M., Podgornik, B. (2021): Modification of steel corrosion resistance in seawater with deep cryogenic treatment (*presentation*). COM METSOC, virtual, Westmount, Canada.
46. **Jovičević-Klug, P.*,** Jovičević-Klug, M., Thormählen, L., McCord, J., Podgornik, B. (2020): Analysis of microstructural attributes of bulk martensitic steel surfaces with micrometersized grains through magneto-optical Kerr effect (*presentation*). JEMS, virtual, Lisboan, Portugal.
47. **Jovičević-Klug, P.*,** Podgornik, B. (2020): Systematic development of deep cryogenic treatment of steels as the next processing step in emerging industries (*presentation*). IMAT, virtual, Ohio-USA.
48. **Jovičević-Klug, P.*,** Podgornik, B. (2020): Deep cryogenic treatment as the next processing step in steel industry (*presentation*). IPSSC&CMBE, virtual, Slovenia.
49. **Jovičević-Klug, P.*,** Podgornik, B. (2019): Deep cryogenic treatment of high-speed steels (*poster*). ICMT, Portorož, Slovenia.
50. **Jovičević-Klug, P.*,** Podgornik, B. (2019): Deep cryogenic treatment of high-speed steels M2, M3:2 and M35 (*presentation*). ICMT, Portorož, Slovenia.
51. **Jovičević-Klug, P.*,** Podgornik, B. (2019): Deep cryogenic treatment of high-speed steels (*presentation*). IFHTSE, Moscow, Russia.
52. **Jovičević-Klug, P.*,** Podgornik, B. (2019): Deep cryogenic treatment of metallic materials in automotive applications: a review (*presentation*). ECHT, Bardolino, Italy.
53. **Jovičević-Klug, P.*,** Podgornik, B. (2019): Deep cryogenic treatment of metallic materials (*presentation*). IPSSC&CMBE, Planica, Slovenia.
54. **Jovičević-Klug, P.*,** Hathorne, E., Frank, M. (2018): Radiogenic isotope composition determination: a form of nanoscience used around the globe (*presentation*). ICMT, Portorož, Slovenia.
55. **Jovičević-Klug, P*.,** Magalhaes-Santos, C., Le Bras, E. (2017): GMO (*poster-best poster award*). CAU zu Kiel Conference, Kiel, Germany.

PATENTS

- **2 patents in thermochemical catalysis (submitted in December 2024).**

LANGUAGES

- Slovenian – native speaker
- English - professional working proficiency
- German - professional working proficiency
- Latin – moderate working proficiency
- Spanish – basic working proficiency

TEACHING&MENTORING

Co-supervision of PhD thesis August 2025-present
Title: *Cryogenic Processing of Biomaterials for Biomedical Applications: Bridging Sustainable Metallurgy and Medicine through Cryogenics*
Name: Saro Birgani
University of Bochum, IMPRS
First supervisor: Dr. Patricia Jovičević-Klug
Second supervisor: PD Dr. Michael Rohwerder
Third supervisor: Dr. Rajaprakash Ramachandramoorthy
Fourth supervisor: Prof. Dr. Lena Daumann

Supervision of Postdoc project June 2025-present
Title: *Functional Magnetic Materials: Pioneering the Energy Sector*
Name: Dr. Melissa Röhrig Martins da Silva
Nuclear and Energy Research Institute (IPEN), Brazil
First supervisor: Dr. Patricia Jovičević-Klug

Co-supervision of Bachelor thesis March 2025-present
Title: *Cryogenic Treatment of Biomaterials- CoCr and Mg Alloys*
Name: Jad Abou-Saleh
Hochschule Rhein-Waal
First supervisor: Dr. Patricia Jovičević-Klug
Second supervisor: PD Dr. Michael Rohwerder

Co-supervision of Postdoc project October 2024-present
Title: *Assessment of hydrogen plasma processed red mud for environmental remediation from toxic metals and metalloids*
Name: Dr. Aikaterina Mitzia
Max Planck Institute for Sustainable Materials
First supervisor: Dr. Patricia Jovičević-Klug
Second supervisor: Dr.-Ing. Matic Jovičević-Klug

Co-supervision of Postdoc project September 2024-present
Title: *Low-Temperature Conditioning of Functional Materials*
Name: Dr. Rafael Gitti Tortoretto Fim
Max Planck Institute for Sustainable Materials
First supervisor: Dr. Patricia Jovičević-Klug
Second supervisor: Dr.-Ing. Matic Jovičević-Klug

Seminars and teaching experience

- Cryogenic Treatment of Metals (within PD Dr. Rohwerder Course Materials surfaces and corrosion at University of Bochum)
- Atom Force Microscopy and Spectroscopy (within IMPRS SusMet)
- Sustainable processing and greenhouse gases tracking with stable isotopes (within Sustainability School of HHU)

University didactics and further education

- Racism & Ethnic Diversity – Basic Training
- Basics of Science Communication - How to Communicate Complex Research Topics with a Non-Expert Audience
- Diversity and Inclusion in Research and funding applications
- Unconscious Bias – Unconscious thought patterns-Basic Training
- Supervising Doctoral Researchers
- Empowering the Scientific Mind: Strategies for Mental Health and Wellbeing