

PROFESSIONAL CURRICULUM VITAE

1. PERSONAL DETAILS, QUALIFICATIONS

1.1. Personal details

Name Prof. Dr. Maria BERKES MAROS
Birth name: Maria Berkes
Place/date of birth: Miskolc, 13 April 1958
Address: 3516 Miskolc, Lehár F. u 35.
Institution: Bánki Donát Faculty of Mechanical Engineering and Safety Engineering, Faculty Research Organisation Centre
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1.2. Studies (higher education and postgraduate)

1976–1981: University of Heavy Industry (University of Miskolc), Faculty of Mechanical Engineering
1991–1994: Engineer-Physicist in Materials Science, KLTE, University of Debrecen/Miskolc
1993–1996: Completion of doctoral studies

1.3. Diplomas, academic degrees

1981 Certified Mechanical Engineer, Certificate No.: 120/1981.
1981 Certified Russian-Hungarian Technical Translator, Certificate number: 120/1981.
1994 Certified Materials Science Engineer and Physicist, Certificate No.: 241/1994.
1997 Doctor universitatis, Certificate No.: 1028/1997.
1998 PhD degree Certificate number: 140/1998.
2018 Dr. habil. Certificate number: 172/2018

1.4. Documented language proficiency

English: state intermediate level C, Certificate number: Á 052165/1985.
Russian: state advanced level C, Certificate number: 120/1981.

1.5. Workplaces, positions

1981–1985 Research Institute for Combustion Technology (TÜKI), Miskolc, research assistant,
1985–2023 Technical University for Heavy Industry, becoming University of Miskolc (UM) from 1990, staff member of the Department of Mechanical Technology (between 1985 and 2000), becoming Department of Structural Integrity at the Institute of Materials Science and Technology (MST) from 2000, <http://www.met.uni-miskolc.hu/>
Positions:
– 1985-1990 Assistant lecturer
– 1990-1998 Research Fellow
– 1999-2001 Assistant professor
– 2001-2017 Associate Professor
– 2018-2019 Habilitated Associate Professor
– 2019 Full professor.
2023– Óbuda University, Bánki Donát Faculty of Mechanical and Safety Engineering, Faculty Research Organisation Centre, Full Professor;
bgk.uni-obuda.hu/kari-kutatasszervezo-kozpont/

2. RESEARCH

Scientific discipline: Engineering and Technology
Branch of science: Materials Sciences and Technologies
Topics: Materials science, materials testing, modelling
44 years of scientific research experience in national and international cooperations and independent research projects, development, and supervision of research projects.

2.1. Main research areas:

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|-----------|--|
| 1981–1986 | Design and operation of combustion equipment |
| 1986–1997 | Methods for estimating the service life of low-cycle fatigue;
The role of thermally activated processes in the low-cycle fatigue of metallic materials |
| 1998 | Multi-scale characterisation of the mechanical and tribological behaviour of technical ceramics, investigation and modelling of damage processes in Si ₃ N ₄ -based ceramics under various loading conditions; |
| 2012 | Development of automotive component and tool materials; investigation of correlation between macroscopic and local (meso- and micro-level) characteristics of heterogeneous and gradient material structures; |
| 2015 | Development of wear-resistant hard and superhard coatings to increase the tribological performance of automotive tool materials, development of coating technologies, and optimisation of manufacturing technologies. |

2.2. Technical skills and competences

- Several decades of research and higher education experience in various topics of materials science and technology;
- Destructive and non-destructive mechanical material testing on metals, ceramics, polymers, and composite materials; optical and scanning electron microscope examination of microstructures;
- Analysis of the relationship between material structure and properties by examining their nano-, micro-, and macro-level characteristics;
- Analysis and modelling of damage processes during quasi-static, dynamic, and tribological loading of technical ceramics, composites, and coatings;
- Tribological characterisation (scratching, wearing) of polymers, ceramics, metals, and their composites;
- Development of superhard coatings (DLC, WC, TiN, CrN, etc.) for improving the wear resistance of tool materials;
- Characterisation of the residual stress state of surface layers (metals and non-metallic materials) using indirect measurement methods;
- Estimation of the service life of metallic materials under low-cycle fatigue.

3. TEACHING EXPERIENCE AND COMPETENCIES

40 years of experience in higher education, high-level skills in lecturing in Hungarian and English in undergraduate-, postgraduate and doctoral courses, both face-to-face and online; supervision of student research projects (theses, diploma projects, TDK, PhD, grant applications), training and mentoring the next generation of researchers, development of curriculum, teaching materials, and the teaching methodology;

I have developed more than 25 subjects independently or contributed to their further development as a lecturer in Hungarian and/or English in undergraduate, postgraduate, and doctoral programs at the UM, and I have also taught an additional 12 subjects. I have been involved in 13 large-scale educational development projects and continue to participate in the development of subject topics and teaching materials, as well as the preparation of teaching aids. I am the co-author of two Hungarian-language university textbooks, two higher education lecture notes, and 12 educational notes and aids, including six English-language notes.

Currently, I am a lecturer for 2 MSc and 3 PhD courses in different fields of Materials Science at Óbuda University, teaching courses in both English and Hungarian.

3.1. The most important subjects I have developed

Teaching in Hungarian

- **Undergraduate programmes:** Materials Science, Materials Science for Vehicle Engineers, The World of Materials, Non-metallic Materials and Technologies, Materials Science, Materials Informatics, Special Alloys, Mechanical Testing, Materials Science for the Automotive Industry
- **PhD programme:** Fundamentals of Materials Science, Modern Surface Testing, Technical Ceramics, Technical Polymers

Teaching in English (for fee-paying foreign students and for Hungarian students)

- **Undergraduate programme:** Nonmetallic materials, Materials testing, Metallography, Materials science, Specialty alloys, Mechanical Testing
- **PhD programme:** Fundamentals of Materials Sciences, Advanced Surface Testing Techniques, Engineering Ceramics, Engineering Polymers

3.2. Participation in doctoral schools, PhD supervision

- *István Sályi Doctoral School of Mechanical Engineering:*

- 2001–2024 lecturer of doctoral subjects
- 2002– supervisor,
- 2018–2023 internal member of the doctoral school,
- 2023– external member of the Doctoral Committee
- **Óbuda University Doctoral School of Materials Science and Technology**
 - 2023– Member of the doctoral council, core member of the Doctoral Committee, thesis supervisor, and lecturer of 3 subjects.

To date, I have supervised the PhD research of nine doctoral students, four of whom have obtained their PhD degrees and five of whom have obtained their absoltorium. I have published approximately 150 joint professional papers with my PhD candidates.

4. RESEARCH METRICS

Total publications: 230

- Scientific publications: 211
 - Journal articles: 47 (44 peer-reviewed)
 - In foreign languages: 36 (26 peer-reviewed)
 - In Hungarian: 12 (11 peer-reviewed)
 - Conference articles: 70 (22 peer-reviewed)
 - In foreign languages: 44
 - In Hungarian: 30
 - Books / Book chapters: 7
 - Other (studies, research reports, miscellaneous): 64
- Educational works: 19
 - University textbooks: 12 (6 in foreign languages)
 - Lecture notes, teaching aids: 7

Independent citations: 283.

5. NATIONAL AND INTERNATIONAL PROFESSIONAL EXPERIENCE, RECOGNITION

- Contribution to the design of the testing equipment system of the newly organised Composite Laboratory, and to the development of its public procurement plan and infrastructure and architectural plans at Óbuda University.
- Establishment of a Tribology and Surface Testing Professional Workshop at the Institute of Materials Science and Technology of the Hungarian University of Technology and Economics; management of the work of a working group with a variable number of members, joint research in the field of tribology and surface technologies.
- Leader of approximately 13 independent R&D projects and sub-projects, implementer of a further 22 domestic and international R&D projects (TEMPUS PHARE, OTKA, TÁMOP, MKM-PFP, LEONARDO, HEFOP, TIOP, EFOP, GINOP, etc.)
- Delivered professional presentations in Hungarian and English at more than 50 domestic and 30 international conferences
- International research with foreign partner institutions in the framework of educational and research cooperation – *University of Birmingham, National Physical Laboratory, England, Aerospace Materials Technology Testhouse Research Centre (Austria), Berlin Technical University, ESIS Technical Committee 6, Institute für Struktur- und Funktionskeramik Montanuniversität, Leoben, IMR, Slovak Academy of Science, Košice, Cambridge University, GRANTA Design, England, IWM, Freiburg, Friedrich-Alexander-Universität, Erlangen-Nürnberg, etc.)*
- Organiser, invited speaker, and section chair at domestic and international conferences
- Lecturer for domestic and prestigious international professional journals (Tribology International, Journal of the European Ceramic Society, Applied Physics, Engineering Fracture Mechanics, Key Engineering Materials, Materials Science Forum, MDPI Ceramics, etc.) and research grants (OTKA, NKTH)
- Participation in doctoral proceedings (complex examinations, defences) as a member of doctoral committees

6. RESEARCH AND MOBILITY SCHOLARSHIPS

- 1998-2001: János Bolyai Postdoctoral Scholarship (BO/00682/98)
Topic: "Modern methods for estimating the lifetime of small cycle fatigue";
- 2003 János Bolyai Postdoctoral Scholarship (BO/00123/03), Topic: "Investigation and modelling of the tribomechanical behaviour of Si3N4-based ceramics";

2003 Széchenyi Professorial Scholarship (Awarded simultaneously with the Bolyai Scholarship, but declined due to the simultaneity)
 Between 1996 and 2015, I participated in 7 study trips abroad with research scholarships awarded by other domestic and international competitions – British Council, European Training Foundation, (Tempus), Mecenatúra, OTKA, MÖB, Campus Hungary

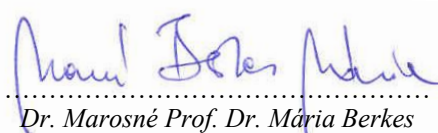
7. MEMBERSHIP IN NATIONAL AND INTERNATIONAL PROFESSIONAL ASSOCIATIONS

1986-2006 GTE, Mechanical Engineering Scientific Association, member;
 1992 Member of the Hungarian branch of ASM (American Society for Materials);
 1998 MAB (Miskolc Academic Committee) Metallurgical Committee, Materials Science Working Committee, member;
 1999 ASM Miskolc Student Chapter, Advisory Committee, member;
 1999 Hungarian Materials Science Association, member;
 2000 Bolyai János Academic Club, founding member;
 2003 MAB Mechanical Engineering Committee, Materials Science and Technology Working Committee (WC), Materials Science Subcommittee, member;
 2003 ESIS (European Structural Integrity Society) TC6 (Technical Committee 6, member of the Ceramics Technical Committee;
 2005 Member of the Hungarian Academy of Sciences, Rsz: 16625
 2014 Member of the MTA MAB Mechanical Engineering and Information Technology Committee, Materials Science and Technology Working Committee;
 2017 Member of the Materials Science Committee, Ceramics and Silicates Working Group of the Hungarian Academy of Sciences.
 2018 MTA MAB Materials Science Committee. Corrosion Protection and Surface Technology MB member.
 2022 TRIBOLOGY working group founder and supervisor at the MAE (Hungarian Association for Material Testing specialist) "Scientific Public Workspace"

8. AWARDS, RECOGNITIONS

2002 Certificate of Recognition from the Board of Trustees of the János Bolyai Research Scholarship of the MTA (Hungarian Academy of Sciences)
 2007 MTA Bolyai Plaque
 2008 UM Faculty Commemorative Medal
 2009 Jury commendation of the Mechanical Engineering and Metallurgy Committee (GEK) of the National Scientific Research Fund (OTKA) for the results of the research project no. T046467
 2012 UM Meritorious Teacher
 2013 UM Excellent Supervisor
 2000-2023 21 certificates of recognition for supervising TDK (Scientific Student Association) student works that achieved top rankings at institutional and national conferences.

Miskolc, 1 October 2025



Dr. Marosné Prof. Dr. Mária Berkes
 University Professor
 Óbuda University, Faculty Research Organisation Centre