



University of Miskolc,  
Hungary



**MultiScience - XXXIV. microCAD  
International Multidisciplinary  
Scientific Conference  
23-24. September 2021**

**ONLINE  
PROGRAMME**

## ORGANIZING COMMITTEE OF THE CONFERENCE

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<b>Chairman:</b>	<b>Péter SZŰCS</b>	Vice-Rector for General and Scientific Affairs
<b>Members:</b>	<b>Péter Norbert SZABÓ</b>	Vice-Dean of the Faculty of Earth Science and Engineering
	<b>Tamás KÉKESI</b>	full professor, Faculty of Materials and Metallurgical Engineering
	<b>Gabriella Bogнар VADASZNE</b>	Vice-Dean of the Faculty of Mechanical Engineering and Informatics
	<b>Zoltán VARGA</b>	Vice-Dean of the Faculty of Law
	<b>Zoltán MUSINSZKI</b>	Vice-Dean of the Faculty of Economics
	<b>Renáta KRISTON</b>	Vice-Dean of the Faculty of Arts

The organiser of the Conference is the **UNIVERSITY OF MISKOLC**

**Address of the Organizing Committee:**  
*University of Miskolc, Rector's Office*  
*H-3515 Miskolc-Egyetemváros*  
*Phone: (+36-46) 565-111*  
*e-mail: [microcad@uni-miskolc.hu](mailto:microcad@uni-miskolc.hu)*  
*<http://multiscience.uni-miskolc.hu>*

## DETAILED PROGRAMME

of the MultiScience - XXXIV. microCAD International Multidisciplinary Scientific Conference  
University of Miskolc, 23-24 September, 2021

### 23 September (Thursday) 2021

#### PLENARY SESSION

VENUE: <https://meet.google.com/mym-ibjw-hma>



- 10<sup>00</sup> – 10<sup>10</sup>      **Opening address and remarks**  
*Prof. Dr. Péter SZŰCS Vice-Rector of the University of Miskolc*
- 10<sup>10</sup> – 10<sup>45</sup>      **Dr.h.c.prof.Ing. Michal CEHLÁR,PhD** *Dean of the Technical University of Kosice, Slovakia*  
*Critical Raw Materials as a Part of Sustainable Development*
- 10<sup>45</sup> – 11<sup>20</sup>      **Prof. Dr. Zita HORVÁTH** *Rector of the University of Miskolc, Hungary*  
*Third Mission Activity of the University of Miskolc*
- 11<sup>20</sup> – 11<sup>25</sup>      *Short film about the University of Miskolc*
- 11<sup>25</sup> – 13<sup>00</sup>      *Break*
- 13<sup>00</sup> – 18<sup>00</sup>      **Presentations in the parallel sessions**

### 24 September (Friday) 2021

- 9<sup>00</sup> - 13<sup>00</sup>      **Presentations in session**

# SUSTAINABLE NATURAL RESOURCES MANAGEMENT I.

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## VENUE:

[https://teams.microsoft.com/l/meetup-join/19%3ameeting\\_MjFhYmEzOWUtMTlkYy00NTNkLThmNDEtMjQ4MzAzYmM3MDYx%40thread.v2/0?context=%7b%22Tid%22%3a%22c43201f8-7cd8-4144-9080-ec5947253558%22%2c%22Oid%22%3a%22fe7dbfa3-9c18-4877-b245-c8c7ae496d77%22%7d](https://teams.microsoft.com/l/meetup-join/19%3ameeting_MjFhYmEzOWUtMTlkYy00NTNkLThmNDEtMjQ4MzAzYmM3MDYx%40thread.v2/0?context=%7b%22Tid%22%3a%22c43201f8-7cd8-4144-9080-ec5947253558%22%2c%22Oid%22%3a%22fe7dbfa3-9c18-4877-b245-c8c7ae496d77%22%7d)

**Chairman:** Károly JÁRMAI *full professor*

**Secretary:** Raghawendra P. S. SISODIA *PhD Student*

**Date:** 23 September, 2021

- 12.50      **Opening speech by the Session Chair**
- 13.00      **Yannick Harrel** University of Petrosani, Romania  
*Electromobility in the Automotive Industry: A Technological and Geopolitical Shift*
- 13.15      **Imre Marada, János Bihari** University of Miskolc, Hungary  
*Design of a New Type of Drive Units for the Analysis of Small Plastic Gears*
- 13.30      **Mikihito Hirohata<sup>1</sup>, Tomonori Nakahara<sup>1</sup>, Károly Jármai<sup>2</sup>** Osaka University, Japan<sup>1</sup>, University of Miskolc, Hungary<sup>2</sup>  
*Life Cycle Cost Analysis on Anti-corrosion Coatings for Steel Bridges in Japan*
- 13.45      **Elke Glistau<sup>1</sup>, Sebastian Trojahn<sup>1</sup>, Ágota Banyainé Tóth<sup>2</sup>** Otto von Guericke University Magdeburg, Germany<sup>1</sup>, University Miskolc, Hungary<sup>2</sup>  
*Logistic 4.0: Smart Infrastructure*
- 14.00      **Stephan Trautsch, Heike Mrech, Karl-Heinrich Grote, Christiane Beyer** Otto-von-Guericke-University Magdeburg, Germany  
*Direct and Flexible Mesh Contour Coupling for Airfoil Optimisation*
- 14.15      **Jesús Miguel Sánchez Gil, Tom-Robin Teschner, László Könözy** Cranfield University, Great Britain  
*Implementation of the Fractional-Step, Artificial Compressibility with Pressure Projection (FSAC-PP) Method into Openfoam for Unsteady Flows*
- 14.30      *Break*
- 14.45      **István Tüske, György Hegedüs** University of Miskolc, Hungary  
*Analysis of Machine Tools with Parallel Kinematics*
- 15.00      **József Túri** University of Miskolc, Hungary  
*Some Remark of Random Graphs*
- 15.15      **Ákos József Lengyel, István Ecsedi, Attila Baksa, Dávid Gönczi** University of Miskolc, Hungary  
*Bounds for the Electrical Resistance for Homogeneous Conducting Body of Rotation*
- 15.30      **Ákos József Lengyel, István Ecsedi, Attila Baksa, Dávid Gönczi** Hungary  
*Saint-Venant's Torsion of Thin-Walled Nonhomogeneous Open Elliptical Cross Section*

- 15.45 **Nóra Kucska, Zsolt Gulácsi** University of Debrecen, Hungary  
*Flat-Band Conditions Influenced by Spin-Orbit Interaction in the Presence of External Magnetic Field*
- 16.00 **Hazim Albedran, Ali Habeeb Askar, Jármai Károly, Endre Kovács** University of Miskolc, Hungary  
*Interpolated Spline Method for a Thermal Distribution of a Pipe with a Turbulent Heat Flow*
- 16.15 *Break*
- 16.30 **Ali Habeeb Askar, Hazim Albedran, Endre Kovács, Károly Jármai** University of Miskolc, Hungary  
*Optimal Representation of a Temperature Distribution on a Tube at Constant Heat Flux*
- 16.45 **Miklós Béres, Tamás Jenyó, János Majár, Béla Paripás** University of Miskolc, Hungary  
*Measurement of Vibrations of the A/2 Building at the University of Miskolc by LASER Interferometric Methods*
- 17.00 **Zsolt Hegyes, Máté Petrik, Gábor Szepesi** University of Miskolc, Hungary  
*Particle Separation of a Modified Feed Nozzle Hydrocyclone under Different Operating Parameters*
- 17.15 **Issa Omle, Endre Kovács** University of Miskolc, Hungary  
*New Explicit Algorithm Based on the Asymmetric Hopscotch Structure to Solve the Heat Conduction Equation*
- 17.30 **Levente Tugyi, Zoltán Siménfalvi, Gábor L. Szepesi** University of Miskolc, Hungary  
*Experimental and Theoretical Investigation of Actone Evaporation*
- 17.45 **Blanka Orosz, Máté Petrik, Gábor Szepesi** University of Miskolc, Hungary  
*The Alteration of the Operating Parameters of the Aerocyclone Depending on the Geometry of the Vortex Finder*
- 18.00 *Summary*

# SOCIAL AND CULTURAL VALUES, RESOURCES AND SOCIAL INNOVATIONS

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**VENUE:** [meet.google.com/kjr-ntpn-wqp](https://meet.google.com/kjr-ntpn-wqp)

**Chairwoman:** Réka PUSZTAHELYI *associate professor*

**Secretary:** Ibolya STEFÁN *research fellow*

**Date:** 23 September, 2021

- 13.00 **Zoltán Rác** University of Miskolc, Hungary  
*Solutions to Balance the Sub-substance Situation in the Field of Collective Labor Law and Social Dialogue*
- 13.15 **Zoltán Eperjesi Wekerle** Business School, Hungary  
*Climate Finance of the Multilateral Development Banks*
- 13.30 **Gábor Mélypataki** University of Miskolc, Hungary  
*The Role of CSR in the Protection of the Employees*
- 13.45 **Alexandra Kulcsár** University of Miskolc, Hungary  
*Corporate Social Responsibility Through the Example of Wanhua-BorsodChem Zrt.*
- 14.00 **Virág Havasi** University of Miskolc, Hungary  
*Against the Odds-successful Enterprises in the Abaúj Region*
- 14.15 **Doğa Başar Sarıpek, Gökçe Cerev, Bora Yenihan** Kocaeli University, Turkey  
*Social Innovation as a Policy Response to Restructure the Welfare State*
- 14.30 *Break*
- 14.45 **Andrea Jánosi** University of Miskolc, Hungary  
*Taking Account of Convictions Handed Down in EU Member States in the Course of New Criminal Proceedings – the Hungarian Legislation*
- 15.00 **Szilvia Váradi** University of Szeged, Hungary  
*Data Protection vs Using Emerging Technologies: How to Fight Against COVID-19 While Staying Legally Compliant?*
- 15.15 **Eszter Czibrik** University of Miskolc, Hungary  
*The Impact of COVID-19 on the Practice of the Hungarian Administrative Procedural Law*
- 15.30 **Anna Zámponi** University of Miskolc, Hungary  
*The Impact of the Development of Digitalization on Proof in Civil Procedures*
- 15.45 **Ibolya Stefán** University of Miskolc, Hungary  
*Challenges of Consumer Protection Regarding Artificial Intelligence*
- 16.00 **Réka Pusztahelyi** University of Miskolc, Hungary  
*Towards a European AI Liability System*
- 16.15 *Summary*

## SUSTAINABLE NATURAL RESOURCES MANAGEMENT II.

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**VENUE:** <https://global.gotomeeting.com/join/361116021> (Access Code: 361-116-021)

**Chairman:** Norbert Péter SZABÓ *full professor*

**Secretary:** István Balázs ILLÉS *department engineer*

**Date:** 24 September, 2021

- 9.00 Ildikó Bölkény, Gábor Hegyi, Angéla Váradi Szarka University of Miskolc, Hungary  
*Possibilities of Measuring Hydrogen in Natural Gas*
- 9.15 Zoltán Eke, István Havasi University of Miskolc, Hungary  
*Municipal Waste Collection Planning Issues*
- 9.30 Al-Hamzawi Mortda Mohammed Sahib University of Miskolc, Hungary  
*Optimization of Weight and Elastic Properties for Unidirectional Glass Fiber Reinforced Composites*
- 9.45 Iosif Andras, Andrei Andras, Ciprian Danciu University of Petroșani, Romania  
*Rock Excavation Efficiency Improvement by Microwave Treatment*
- 10.00 Nicola Aurelian, Nan Marin Silviu, Iosif Kovacs, Vitan Daniel Cosmin University of Petrosani, Romania  
*Researches Regarding the Modernizing of Hydro-Technical Designing Through Assisted Designing*
- 10.15 Marianna Vadászi, Ildikó Bölkény, Domonkos Horváth University of Miskolc, Hungary  
*Hydration of Natural Gas Hydrogen Mixture Test Equipment*
- 10.30 Ildikó Fóris, Gábor Mucsi University of Miskolc, Hungary  
*Effect of Alternative Foaming Agents for Fabrication of Glass Foam*
- 10.45 László Tamás, Ádám Rácz University of Miskolc, Hungary  
*Comparison of Particle Size Distribution of Corundum Produced by Industrial Ball Mill and Material Bed Compression*
- 11.00 Laura Veres, Attila Házy, Luca Kozák University of Miskolc, Hungary  
*Application of Artificial Intelligence in Settlement Development Modeling*
- 11.15 *Break*
- 11.30 Abdelrahman Moataz, Norbert Péter Szabó, Mihály Dobróka University of Miskolc, Hungary  
*Petrophysical Parameters Estimation using Levenberg-Marquardt and Singular Value Decomposition Inversion Schemes*
- 11.45 Alina Schramm<sup>1</sup>, Volker Recksiek<sup>2</sup>, Dudczig Steffen<sup>1</sup>, Cristiane Scharf<sup>1</sup>, Christos Aneziris<sup>1</sup>  
Technical University Bergakademie Freiberg<sup>1</sup>, Helmholtz Institute Freiberg for Resource Technology<sup>2</sup>  
*Immersion Tests of Various Coated Ceramic Foam Filters in an AZ91 Magnesium Alloy Melt*
- 12.00 Alaaldeen Abdallah Mohammed Abd Elkarim, Alaaldeen Abdallah, Zsolt Veres, Arnold Rónaföldi, András Roósz University of Miskolc, Hungary  
*Effect of Solidification Rate on the Micro- and Mesostructure of Columnar to Equiaxed Transition*

- 12.15 **Hawkar Muhammed** University of Miskolc, Hungary  
*Surface Protective Layers of Iron Aluminides Developed on Medium Carbon Steel by the Hot-Dip Aluminizing (HDA) Process*
- 12.30 **Fruzsina Fülöp, Mária Maros Berkes** University of Miskolc, Hungary  
*Complex Tribological Characterization of Advanced, Wear Resistant PVD and PACVD Ceramic Coating Systems*
- 12.45 **István Balázs Illés, Tamás Kékesi** University of Miskolc, Hungary  
*The Possibility of Recovering Indium Metal from Acidic Solutions by Electroless Deposition*
- 13.00 **Shiraz Ahmed Siddiqui, Mária Maros Berkes** University of Miskolc, Hungary  
*Investigation of the Tribological behaviour of Diamond-Like Carbon (DLC) Coatings on X42Cr13 Tool Steel using Reciprocating Ball-on-Plate Test*
- 13.15 *Summary*