International School on Multifunctional Materials for Sensing Applications (MultiSens-2024)

Day 1

Saturday, 09.11.2024

	Speaker	Topic	Parallel Session	Topic
09:00-09:20	Multiple Presenters	Opening		
09:20-09:45	Multiple Presenters	MultiSens school presentation		
09:45-10:30	Multiple Presenters	Presentation AT3e		
10:30-11:00	Coffee break		Forum day	Sensors and innovation exchange forum
11:00-13:15	Debate	Contribution of sensors to digitalization and sustainability		

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Day 2 Sunday, 10.11.2024

	Speaker	Topic
09:00-11:00	Mr. Rafik Ben Ayed	Soft skills training: Agile project management (I)
11:00-11:30	Coffee Break	
11:30-13:45	Mr. Rafik Ben Ayed	Soft skills training: Agile project management (II)

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Day 3

Monday, 11.11.2024

	Speaker	Topic
09:00-09:45	Prof. Ahmed Koubaa	Use of infrared spectroscopy for surface chemistry characterization of wood and wood-based composites
09:45-10:30	Prof. Anas Bouguecha	Bone remodeling and implant materials
10:30-11:00		Coffee Break
11:00-11:45	Prof. Ayoub Hadj Said	Metal-organic frameworks (MOFs) for sensing applications: An overview
11:45-12:30	Prof. Zied Driss	Control and development of hydroponic greenhouse systems
12:30-13:15	Prof. Olfa Kanoun	Flexible polymer-carbon nanocomposite sensors for next-generation sensing

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Ahmed Koubaa is a professor at the Université du Québec en Abitibi-Témiscamingue and holds the Canada Research Chair in Wood Valorization, Characterization and Transformation since 2004. He holds bachelor's (1989) and master's (1991) degrees in wood science from Université Laval, and a Ph.D. degree in paper engineering (1996) from Université du Québec à Trois-Rivières.

He has over 30 years' experience in research on wood materials and wood-based composites. His research activities focus on wood quality characterization and the valorization of wood industry residues to produce biomaterials and bioenergy, with a view to mitigating the effects of climate change and reducing greenhouse gas emissions. It has an extensive network of national and international collaborations. He is a member of several research groups and consortia in Quebec, Canada and internationally.

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Prof. Anas Bouguecha is a prominent researcher and professor in engineering mechanics, currently a full professor at the National School of Engineers of Sfax, Tunisia. Previously affiliated with Leibniz University Hannover, his expertise lies in material processing, finite element analysis, and metal forming.

Prof. Bouguecha's work centers on the modeling and simulation of material deformation, significantly advancing sheet-bulk metal forming. He has contributed to numerous influential publications and projects focused on optimizing production methods and improving manufacturing technologies.

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Dr Ayoub HAJ SAID is Professor of Physical Chemistry and the Scientific Director of the Center for Research on Microelectronics and Nanotechnology (CRMN) of Sousse. His expertise deals with applied electrochemistry and material science. His research interests include synthesizing conjugated polymers and different nanomaterials (nanofibers, nanoporous materials, nanocomposites…) for optoelectronic applications and sensor development. Pr Ayoub HAJ SAID is the coordinator of the "Project for Research and Innovation on Micro and Nanotechnology for Sensors" (PRIMiNaS, Horizon Europe Project - ref 101079485).

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Prof. Zied Driss is Full Professor in the Department of Mechanical Engineering at National School of Engineers of Sfax (ENIS). He received his Engineering Diploma in 2001, his Master Degree in 2003, his PhD in 2008 and his HDR in 2013 in Mechanical Engineering from ENIS at University of Sfax, Tunisia.

He is interested on the development of numerical and experimental techniques for solving problems in mechanical engineering and energy applications. Also, his research has been focused on the interaction between Computational Fluid Dynamics (CFD) and Computational Structure Dynamics (CSD) codes. As a result of his research, he is principal or co-principal investigator on more than 250 papers in peer-reviewed journals, more than 500 communications to international conferences, 30 books and 100 books chapters. Also, he is the main inventors of 15 patents. Currently, Prof. Driss is a Team Leader in the Laboratory of Electromechanical Systems (LASEM), an Editorial Board Member and reviewer for different international journals, an Editor for different books, a General Chair of two bi-annual international conferences and an active member in different national and international associations.

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Prof. Dr.-Ing. Olfa Kanoun (Senior Member, IEEE) is a Full Professor of Measurement and Sensor Technology at Chemnitz University of Technology, Germany. She received her Ph.D. from the University of Bundeswehr, Munich, Germany, in 2001 and her diploma in electrical engineering and information technology from the Technical University of Munich, Germany, in 1995. She focuses on sensors, measurement systems, and measurement methods in her research. Since 2001 she has been developing new sensors and measurement solutions based on impedance spectroscopy in battery diagnosis, bio-impedance spectroscopy, inductive sensors, capacitive sensors, conductivity sensors, and material testing. She has deep expertise in energy harvesting and transmission and has developed, for many years, successfully flexible nanocomposite sensors for force, temperature, and humidity measurements. As a senior IEEE member, she volunteers for the Instrumentation and Measurement Society and for IEEE. In 2004 she founded an IEEE IM Chapter, and in 2019, she initiated the IMS Technical Committee TC-2 on Impedance Spectroscopy. Her main research areas are impedance spectroscopy, impedimetric sensors, energy harvesting, wireless sensors, and micro and nanosensors., and in 2014, she initiated a student branch at TU Chemnitz. She was co-chair of the Technical Committee on nanotechnology in instrumentation and measurement (TC 34). In 2001 she was cofounder of the international multi-conference on systems, signals, and devices (SSD), and in 2008 she initiated the annual International Workshop on Impedance Spectroscopy (IWIS). In 2015, she was awarded by the Tunisian ministry of social affairs for her scientific excellence and outstanding achievements
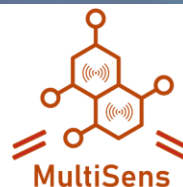
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Day 4

Tuesday, 12.11.2024

	Speaker	Topic
09:00-09:45	Dr. Mohamed Sahbi Loukil	Integrating sensor technology in composite hydrogen tanks: A new frontier for aerospace
09:45-10:30	Prof. Ahmed S. G. Khalil	Functional polymeric membranes and sponges for high performance wastewater treatment
10:30-11:00		Coffee Break
11:00-11:45	Prof. Igor Pašti	Carbon materials: Structure, characterization, and applications
11:45-12:30	Ass. Prof. Carlo Trigona	Rethinking electronic systems with nature-based solutions for a sustainable future
12:30-13:15	Dr. Rim Barioul	Signal processing from sensor to artificial intelligence

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Dr. Mohamed Loukil is Senior Associate Professor at Linköping University in Sweden, with 12 years of experience on research and development related to polymer composites. His area of expertise is damage characterization of composite materials for aerospace applications using Destructive and Non-Destructive Testing methods. He has coordinated several project proposals for national and European calls. Dr. Loukil has a docent degree (HDR) from Linköping University, and he has a double PhD degree in Composite Materials from Luleå University of Technology in Sweden and from University of Lorraine in France.

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Prof. Ahmed S. G. Khalil is a Full Professor of Materials Science and the head of the Environmental and Smart Technology Research Group (ESTG). Prof. Khalil received his PhD in Physics and Materials Science in 2008 from the Max Planck Institute for Coal Research in Germany. He earned his B.Sc. and M.Sc. in Physics from Cairo University in 1999 and 2003, respectively. Prof. Khalil was a Postdoctoral Associate (2008-2010) at the University of Duisburg-Essen (Germany), a visiting scientist (2010-2011) at IBM Research labs in Zurich (Switzerland), and the University of California, Berkeley, USA (2013). Prof. Khalil's research interests focus on the development of functional nanostructures and membranes for various applications in water purification, wastewater treatment, energy storage, and biotechnology. Prof. Khalil has authored more than 90 papers published in reputable international journals. Over the last 8 years, Prof. Khalil has successfully attracted more than €8 million from national and international funding organizations for his research and teaching activities. These activities have been carried out in close collaboration with more than 60 academic and industrial partners worldwide. Since 2016, Prof. Khalil has been an elected member of the Arab-German Academy of Sciences and Humanities (AGYA) in Germany. In 2023, Prof. Khalil founded EvoSmarTec GmbH, an innovative startup specializing in developing cutting-edge solutions that integrate advanced materials, artificial intelligence, IoT, and sustainable technologies to create smarter, more efficient living and working environments, especially for developing countries.

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Igor Pašti is a full professor at the University of Belgrade – Faculty of Physical Chemistry, where he teaches Electrochemistry and several courses focused on Physical Chemistry of Materials. He obtained a BSc in Physical Chemistry in 2007 and a PhD in 2009 at Belgrade University. His research is focused on the design and development of novel materials for electrochemical and environmental applications, focusing on catalysis and interfacial phenomena. He published over 180 peer-reviewed papers in international scientific journals, three patents, and three university textbooks, collecting over 4500 citations.

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Professor Trigona received his M.S. in Automation Engineering and Control of Complex Systems (cum laude) in 2006, followed by a Ph.D. in Electronic, Automation, and Control of Complex Systems in 2010 from the same university. His post-doctoral research included positions at University Montpellier in France (2010-2011), University of Catania (2011-2017), and Chemnitz University of Technology in Germany (2017-2018). He then served as an Assistant Professor (2018-2020) and a tenure-track Professor (2020-2023) at DIEEI, University of Catania.

Professor Trigona has received several awards for his research endeavors, notably the 2020 IEEE-I&M Outstanding Young Engineer Award for his exceptional contributions to advancing I&M concepts in sensors and transducers for energy harvesting, and the 2023 IEEE-I&M Best Application Award for his innovative sensors that incorporate the response of plants to a wide range of environmental factors, becoming low, environmentally friendly, biodegradable instruments. Currently he is Director's Delegate of research at DIEEI.

Regarding his research profile, he has co-authored more than 250 scientific publications with over 3000 citations. These contributions span chapters in books, papers in international journals, proceedings of international conferences, trademarks, and patents. His research interests encompass sensors, transducers, MEMS, fluxgate magnetometers, energy harvesting, as well as innovative areas such as green and biodegradable sensors and transducers based on living organisms.

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Rim Barioul received the Ph.D. degree in cooperation between the University of Sfax in Tunisia and Technische Universität Chemnitz in Germany (TUC) in 2021 and the diploma of industrial informatics engineering in 2015 from the National School of Electronics and Telecommunications of Sfax (ENET´com), Tunisia. Since 2021, she is a research assistant at TUC. Her research interests include Machine Learning, Swarm Intelligence for feature selection, Embedded systems, and Gesture recognition.

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Day 5 **Wednesday, 13.11.2024**

	Speaker	Topic
09:00-11:00	Mr. Nizar Guidara	Industrial training: Automotive bus systems and networks architecture
11:00-11:30	Coffee Break	
11:30-13:45	Mr. Nizar Guidara	Industrial training: Automotive bus systems and networks architecture

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