



European Materials Research Society

# 2024 Spring Meeting

May 27 - 31 / Strasbourg Convention Centre

## SYMPOSIUM R

Progress in unconventional electronics  
and sustainable flexible sensing technologies

*Symposium Organizers:*

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Institute of Ion Beam Physics and Materials Research, Germany

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University of Modena and Reggio Emilia, Italy

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**Monday May 27**  
**R01\_Oral session**

**ROME - GROUND FLOOR**

<b>08:45</b>	<b>2453</b>	<b>INV</b>	Organic Electrochemical Transistors: Basics and applications for neuromorphics	<b>LEO Karl</b>
<b>09:15</b>	<b>2711</b>		Nature-inspired, edible organic semiconductors	<b>SCACCABAROZZI Alberto</b>
<b>09:30</b>	<b>1963</b>		A Corn-based conductive glue as multi-functional tool for Edible Electronics: interconnecting devices and food monitoring	<b>CONTRERAS-PEREDA Noemi</b>
<b>09:45</b>	<b>816</b>		Gold nanowire-based stretchable conductors for neural interfacing	<b>SEUFERT Laura</b>

**Monday May 27**  
**R02\_Oral session**

**ROME - GROUND FLOOR**

<b>10:30</b>	<b>675</b>	<b>INV</b>	Flexible Magnetoelectric Ceramic Nanoarchitectures for Advanced Small-Scale Robotics and Nanoelectromechanical Systems	<b>PANÉ Salvador</b>
<b>11:00</b>	<b>191</b>		Biodegradable Printed Magnetoresistive Sensors	<b>GUO Lin</b>
<b>11:15</b>	<b>148</b>		Fabrication of Layer Engineered MXene based Resistance Pressure Sensors for Healthcare Monitoring	<b>BYUN Jeong Eun</b>
<b>11:30</b>	<b>158</b>		Hybrid fluorescent protein-polymer derivatives for stable deep-red lighting devices	<b>FERRARA Sara</b>
<b>11:45</b>	<b>136</b>		A Universal Biocompatible and Multifunctional Solid Electrolyte for Organic Electrochemical Transistors (OECTs)	<b>TANG Cindy</b>

**Monday May 27**  
**R03\_Oral session**

**ROME - GROUND FLOOR**

<b>13:30</b>	<b>433</b>	<b>INV</b>	Emerging Semiconductors Meet Flexible Forms in New Applications: Exploring Security, Multi-valued Computing, and Hazard Monitoring	<b>YOO Hocheon</b>
<b>14:00</b>	<b>2085</b>	<b>INV</b>	Skin Compliant Piezoelectric Transducers for Healthcare	<b>DE VITTORIO Massimo</b>
<b>14:30</b>	<b>1057</b>		Two-dimensional hexagonal germanium oxide: a novel wide band gap semiconductor for Next-Gen electronics	<b>ZHANG Bao Yue</b>
<b>14:45</b>	<b>1026</b>		Understanding Liquid Metal Deposition with Automated Spray Deposition: Towards large-area Stretchable Electronics	<b>KRACK Maximilian</b>
<b>15:00</b>	<b>1023</b>		NiO-based chemiresistive sensor for monitoring fish spoilage	<b>MAHATA Bidesh</b>
<b>15:15</b>	<b>974</b>		Memristive switching in mixed-halide perovskite transistors	<b>ROGDAKIS Konstantinos</b>
<b>15:45</b>	<b>865</b>		On fatigue of wearable strain sensors based on electrospun TPU fibers and viscoelastic self-healing materials	<b>MILKIN Pavel</b>

**Monday May 27**  
**RP01\_Poster session**

**ETOILE - FIRST FLOOR**

<b>16:30</b>	<b>01_1050</b>	<b>120</b>	01_1050 Formaldehyde Selectivity and Thermal Behavior of $\beta$ -Ga <sub>2</sub> O <sub>3</sub> Nanostructures	<b>GIRI Soumen</b>
<b>16:30</b>	<b>02_1156</b>	<b>120</b>	02_1156 Development of Amorphous Chalcogenide-Based Ovonic Threshold Switching Selector for Neuromorphic Computing Applications	<b>SEO Hyun Kyu</b>
<b>16:30</b>	<b>03_1163</b>	<b>120</b>	03_1163 Photothermal Ionic Semiconducting Elastomer Enabling Multifunctional Logic gate	<b>Kim Yeonji</b>
<b>16:30</b>	<b>04_1490</b>	<b>120</b>	04_1490 Resistive switching characteristics of Cu nanoparticles-embedded SiO <sub>x</sub> -based MIM devices	<b>JANA Biswajit</b>

16:30	05_1502	120	05_1502 Combining Reduced Graphene Oxide (rGO) Electrolytic Transistors, Molecularly Imprinted Polymer Receptors and Machine Learning to Detect Small Molecules	FURLAN DE OLIVEIRA Rafael
16:30	06_1548	120	06_1548 Biodegradable substrates for sensors: A fully aerosol-jet printed transparent humidity sensor.	BEZERRA Emily
16:30	07_1760	120	07_1760 From Nature to Electronic Devices: semi-purification of edible raw materials and molecular structures fine-tuning for the obtainment of benign organic semiconductors	Fratepietro Annapia
16:30	08_2017	120	08_2017 Designing a Mechanically Robust, Stretchable Hydrogel for Advanced Sensing and Actuation Capabilities	GHOSH Ashis
16:30	09_2255	120	09_2255 Engineering a Freeze-thaw induced metal co-ordinated Hydrogel as flexible strain sensor with exceptional mechanical performance	PANDIT Sangita
16:30	10_2449	120	10_2449 A self-healing, stretchable and conductive film for wearable human motion sensing	Chen Wenqing
16:30	11_2461	120	11_2461 Investigating Mechanically Interlocking Molecules with the btp [2,6-bis(1,2,3-triazole-4-yl)pyridine] Motif	O'shea Niamh
16:30	13_2500	120	13_2500 Printed flexible pH sensors	SALEM Ahmed H. M.
16:30	14_2551	120	14_2551 Copper nanowire based stretchable sensorised gloves for human machine interaction applications	Ren Qichao
16:30	15_2554	120	15_2554 Noble method of Wafer-lossless Inline-TEM Sample preparation technique for green fab	KIM Jooyub
16:30	16_2617	120	16_2617 Dielectric spectroscopy of biobased carbon inks	WEI William
16:30	17_2763	120	17_2763 Bi-Polar Dielectric Electroadhesive Pads for Enhanced Wall-Climbing Robotic Mobility	KIM Jihoon
16:30	18_2943	120	18_2943 Feline-eye-inspired artificial vision system for targeted imaging under various light environments	KIM Minsu
16:30	19_297	120	19_297 Recyclable Strain Sensors Based on Silver Nanowire Percolation Networks	SHI Shengwei
16:30	20_2973	120	20_2973 Low-cost, green colorimetric sensor array for the assessment of temperature, humidity and gases in greenhouses	CARAMIZOIU Stefan

16:30	21_2980	120	21_2980 All-Fiber Electric Field Sensing Using Cobalt-Doped Bismuth Ferrite Nanoparticles in a Three-Mirror Fabry-Perot Configuration	Sharma Isha
16:30	22_3024	120	22_3024 Greenhouse CO2 monitoring system using graphene-based sensor	CARAMIZOIU Stefan
16:30	23_3025	120	23_3025 3D Printed Integrating Sphere Coated With BaSo4 for Multispectral Analysis	CARAMIZOIU Stefan
16:30	24_3028	120	24_3028 Opto-electronically stimulated synaptic devices based on low-dimensional lead-free halide perovskites	Vishwanath Sujaya Kumar
16:30	25_340	120	25_340 Mechanical Analysis of Amorphous NiTi Thin Film for Stretchable Display Electrodes: Nanoindentation vs. Tensile Testing	PARK Ah-Young
16:30	26_379	120	26_379 A Leaf-Patchable Reflectance Meter for In Situ Continuous Monitoring of Chlorophyll Content	ZHANG Kaiyi
16:30	12_2476	120	Tuning the optical and photoluminescence properties of monolayer molybdenum sulfide thin film prepared by electrochemical deposition: Roles of deposition voltage and time.	AJAYEOBA Yetunde

**Tuesday May 28**  
**R04\_Oral session**  
**ROME - GROUND FLOOR**

<b>08:45</b>	<b>2719</b>	<b>INV</b>	Reinventing Electronics for a Sustainable World	<b>ALKHALIL Feras</b>
<b>09:15</b>	<b>2847</b>		Integration of Piezoelectric Energy Harvesting into Printable and Wearable Devices	<b>MISHRA Hari Krishna</b>
<b>09:30</b>	<b>2845</b>		Tuning of Valley Splitting and Magnetic Anisotropy in Monolayer VSe <sub>2</sub> Using Uniaxial Strain and Electric Field: A First-Principles Study	<b>ZUBAIR Ahmed</b>
<b>09:45</b>	<b>2808</b>		Development of Textile-Integrated Capacitive Sensors for Contact Pressure Estimation Using Additive Manufacturing Approaches	<b>FAPANNI Tiziano</b>

**Tuesday May 28**  
**R05\_Oral session**  
**ROME - GROUND FLOOR**

<b>10:30</b>	<b>2699</b>	<b>INV</b>	Revolutionizing Plastic Electronics: Smartkem's Breakthrough in Low-Temperature Industry Standard p-TYPE OTFT in Advancing Future Circuit Technology on Plastic	<b>ROBERTS George</b>
<b>11:00</b>	<b>1970</b>		Controllable aggregation of conjugated polymers and their applications in monolayer integrated circuits	<b>LI Mengmeng</b>
<b>11:15</b>	<b>1943</b>		Optimizing Biomaterial Applications through Surface-Functionalized PANi-PVDF Films	<b>CAN Musa Mutlu</b>
<b>11:30</b>	<b>1902</b>		High Quality Hafnium Oxide Films without Post-Annealing for Device Applications	<b>TEWARI Amit</b>
<b>11:45</b>	<b>720</b>		Exploring the Potential of Liquid Interfacial Electrical Phenomena in Sustainable Electronics	<b>ZHANG Ruotong</b>

**Tuesday May 28**  
**R06\_Oral session**

**ROME - GROUND FLOOR**

<b>13:30</b>	<b>129</b>	<b>INV</b>	About Self-Healing Conductive Materials	<b>IONOV Leonid</b>
<b>14:00</b>	<b>3063</b>	<b>INV</b>	Sustainable magnetic materials for flexible sensing and actuators	<b>GUTFLEISCH Oliver</b>
<b>14:30</b>	<b>1576</b>		Flexible Polyvinyl alcohol-based Humidity Sensors to Prevent Corrosion of Insulated Pipes	<b>FAUCHE Rémy</b>
<b>14:45</b>	<b>1800</b>		Pioneering Real-Time Cure Monitoring of Thermoset based Composite Structures through Smart Paper Sensor Integration	<b>KHALIFA Mohammed</b>
<b>15:00</b>	<b>1846</b>		Terahertz Spectroscopy Investigation of Piezoelectric Enhancement in Uniaxially Stretched Poly-L-lactic Acid for Biomedical Applications	<b>MERHI Youssif</b>
<b>15:15</b>	<b>2604</b>		Positive bias stress study unravelling the utility of inkjet-printed indium-rich oxide TFTs towards high power ON-state operation	<b>PRIYADARSINI Sushree Sangita</b>
<b>15:30</b>	<b>3105</b>	<b>INV</b>	Additive and digital manufacturing of transient electronics	<b>BRIAND Danick</b>

**Tuesday May 28**  
**R07\_Oral session**

**ROME - GROUND FLOOR**

<b>16:30</b>	<b>1129</b>	<b>INV</b>	Sustainable Soft Electronic and Robotic Systems: From Biodegradable Gels to Mycelium-Based Electronic Skins	<b>KALTENBRUNNER Martin</b>
<b>17:00</b>	<b>1355</b>	<b>INV</b>	Layered Transition Metal Dichalcogenides for High-Performance Flexible Electronic Devices	<b>DAUS Alwin</b>
<b>17:30</b>	<b>2083</b>		Nanostructured sensors integrated surgical gloves in microsurgery for intraoperative force measurement	<b>KALKAL Ashish</b>
<b>17:45</b>	<b>2041</b>		Tuning cellulose nanofibers for sustainable environmental sensors	<b>RIVADENEYRA Almudena</b>

<b>18:00</b>	<b>1051</b>	Exploring Strain and Curvature Effects on Current-Induced Domain Wall Motion Dynamics in Three-Dimensional Magnetic Heterostructures	<b>FEDOROV Pavel</b>
<b>18:15</b>	<b>2953</b>	Purely electrical detection of electrolyte concentration through microfluidic impedance spectroscopy	<b>WADE Tom</b>



**Wednesday May 29**  
**R08\_Oral session**  
**ROME - GROUND FLOOR**

<b>08:45</b>	<b>1471</b>	<b>INV</b>	Physical reservoir computing based on a nano-ionic solid electrolyte FET	<b>DE SOUZA Maria Merlyne</b>
<b>09:15</b>	<b>2306</b>		Investigating interconnect reliability in liquid metal based stretchable electronics: A focus on enhancing adhesion at the rigid-stretchable interface	<b>PURNAL Lennert</b>
<b>09:30</b>	<b>2355</b>		Record-High Electron Mobility (300 cm <sup>2</sup> /Vs) GeSn Formed on Flexible Substrates	<b>NOZAWA Koki</b>
<b>09:45</b>	<b>2346</b>		Spray-lithography of graphene/perovskite paper-based photodetectors for sustainable electronics	<b>AKHAVAN Shahab</b>

**Wednesday May 29**  
**R09\_Oral session**  
**ROME - GROUND FLOOR**

<b>10:30</b>	<b>575</b>	<b>INV</b>	Enabling Sustainability in Electronics through Material Innovation	<b>AGARWALA Shweta</b>
<b>11:15</b>	<b>1553</b>		Soft magnetic shape morphable microrobots with remote communication capabilities	<b>GAO Quan</b>
<b>11:30</b>	<b>1568</b>		Dynamically Morphing Origami Tessellations for Microelectronic Applications	<b>MERCES Leandro</b>
<b>11:45</b>	<b>1500</b>		Label-free Electrochemical Interleukin-6 Sensor Exploiting rGO-MXene Nanocomposite	<b>GUPTA Rohit</b>

**Wednesday May 29**  
**R10\_Oral session**  
**ROME - GROUND FLOOR**

<b>13:30</b>	<b>2654</b>	<b>INV</b>	Edible Transistors and Power Sources for Future Edible Electronic Systems	<b>CAIRONI Mario</b>
<b>14:00</b>	<b>613</b>	<b>INV</b>	Microelectronic morphogenesis: From microrobots to microelectronic life	<b>SCHMIDT Oliver</b>

<b>14:30</b>	<b>130</b>	Effects of Coffee Grounds in Modified Natural Rubber Thin Film on Resistive Switching Memory Characteristics	<b>CHEONG Kuan Yew</b>
<b>14:45</b>	<b>1691</b>	Rational fabrication of bio-based single-ion conductive flexible IPN organohydrogel for physiological temperature sensing	<b>KUMAR Gaurav</b>
<b>15:00</b>	<b>2484</b>	Synergistic Interface Integration in Multi-Layered Systems for a Resilient and Adaptive Electronic Skin	<b>YANG Junlong</b>
<b>15:15</b>	<b>125</b>	Augmenting Multi-Factor Verification via Physically Unclonable Functions in PVDF-HFP Phase-Contingent a-IGZO Thin-Film Transistors	<b>HAN Youngmin</b>

**Thursday May 30**  
**R11\_Oral session**

**ROME - GROUND FLOOR**

<b>08:45</b>	<b>760</b>	<b>INV</b>	Spintronic Logic and Memory Devices using 2D Quantum Materials	<b>DASH Saroj</b>
<b>09:15</b>	<b>1534</b>		A catalogue of green conductive materials for a variety of environmental sensors	<b>TISCHLER Vanessa</b>
<b>09:30</b>	<b>2533</b>		Spin rectification effect in multiferroic metal-organic heterojunctions	<b>BORCA Bogdana</b>
<b>09:45</b>	<b>2517</b>		Optically Transparent Flexible Material based Metasurface Absorbers and Anomalous Reflectors in the Microwave Frequency Range	<b>SARKAR Debdeep</b>

**Thursday May 30**  
**R12\_Oral session**

**ROME - GROUND FLOOR**

<b>10:30</b>	<b>368</b>	<b>INV</b>	Perovskite solar cells and supercapacitors on flexible substrates: a powerful synergy towards self-powered portable and wearable electronics	<b>DE ROSSI Francesca</b>
<b>11:00</b>	<b>2136</b>		Conductive hardening paste for coral's mineral accretion	<b>CORIGLIANO Gabriele</b>
<b>11:15</b>	<b>851</b>		Biobased and Biodegradable Printed Circuit Boards with Tunable Mechanical Properties	<b>CATALDI Pietro</b>
<b>11:30</b>	<b>843</b>		Printed durable and self-healable magnetic field sensors for sustainable magnetoelectronics	<b>XU Rui</b>
<b>11:45</b>	<b>310</b>		Organic semiconductor gas sensor for medicine and water quality	<b>MENG Hsin-Fei</b>

**Thursday May 30**  
**R13\_Oral session**

**ROME - GROUND FLOOR**

<b>13:30</b>	<b>817</b>	<b>INV</b>	Multi-stimuli responsive sensors for electronic skin applications	<b>COCLITE Anna Maria</b>
<b>14:00</b>	<b>620</b>	<b>INV</b>	Transformative Applications of Magnetolectric Sensors: Driving Sustainable Development across Industries	<b>KAUR Davinder</b>
<b>14:30</b>	<b>1139</b>		From disposable to wearable bioelectronics using paper-derived laser induced graphene	<b>PINHEIRO Tomás</b>
<b>14:45</b>	<b>375</b>		Papertronics: Neuromorphic and Security Devices on Papers	<b>CHOI Wangmyung</b>
<b>15:00</b>	<b>63</b>		Green transferring of GMR sensors onto arbitrary substrates with loss-free performance and mechanical robustness for interactive electronics	<b>BEZSMERTNA Olha</b>
<b>15:15</b>	<b>2714</b>		Thin-Film Temperature Sensors on Natural Beeswax Substrates	<b>BHATT Deepa</b>
<b>15:30</b>	<b>200</b>		Sericin Electrodes for biodegradable healthcare devices	<b>VURRO Davide</b>
<b>15:45</b>	<b>393</b>		Nano green printing smart devices	<b>Su Meng</b>

**Thursday May 30**  
**R14\_Oral session**

**ROME - GROUND FLOOR**

<b>16:30</b>	<b>2291</b>	<b>INV</b>	The future of electronics: Flexible, energy-efficient with minimal environmental impact	<b>ATHANASSIOU Athanassia</b>
<b>17:00</b>	<b>2775</b>	<b>INV</b>	Advances in Unconventional Sensing Technologies for Sustainable Applications	<b>PETTI Luisa</b>
<b>17:30</b>	<b>2405</b>		Multiresponsive Alginate/Gelatin organohydrogels with tunable physicochemical properties	<b>TORDI Pietro</b>
<b>17:45</b>	<b>2403</b>		Empirical Modeling of Organic Thin Film Transistors Using a Multi-layer Perceptron	<b>EL NAKOUZI Sami Valentino</b>
<b>18:00</b>	<b>683</b>		Self-supporting, bendable, and highly electrically conductive polycaprolactone/molybdenum composite films for biodegradable electronic sensing devices	<b>JANICIJEVIC Željko</b>

**18:15**

**569**

Tunable conductance anisotropy in metal-organic framework/polymer composites via post-synthetic alignment control

**HONG Taegyun**

