



European Materials Research Society

2025 Spring Meeting

May 26 – 30 | Strasbourg Convention Centre

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SYMPOSIUM G

Flexible, stretchable and printable electronic materials for sustainable healthcare, sensing and actuation, energy applications and interconnections

Oral sessions : ETOILE A – FIRST FLOOR

Poster sessions : ETOILE – FIRST FLOOR

Symposium Organizers:

Esther GARCIA-TUNON, University of Liverpool, UK

Jang-Ung PARK, Yonsei University, South Korea

Monika RAI, Hasselt University, Institute for Materials Research (IMO-IMOMEC), Belgium

Shweta AGARWALA, Aarhus University, Dept. of Electrical & Computer Engineering, Germany

Tobias KRAUS (Main organizer), INM – Leibniz-Institute for New Materials, Germany

Wim DEFERME (Main organizer), Hasselt University, Institute for Materials Research (IMO-IMOMEC), Belgium

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Monday May 26

G01 Emerging printing and coating technologies: 2D-4D printing, device integration, interconnection 1

Chairperson(s): MOLINA-LOPEZ FRANCISCO

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08:30	584	New materials for 2D,3D and 4D printing of electronics and optoelectronic devices MAGDASSI Shlomo (Invited)
09:00	566	Textile Microfluidics Enables Advanced Wearable Molecular Diagnostics HAMEDI Max
09:15	697	Fully screen printed stretchable liquid metal multilayer circuits using green solvents and scalable water-spraying sintering SHANG Jin
09:30	753	Flexible (transparent) sustainable electrodes for printed micro supercapacitors SWAMINATHAN Parasuraman
09:45	782	Multifunctional 3D-DLP Printable Conductive Porous Materials for Soft Robotics BLIAH Ouriel

Monday May 26

G02 Emerging printing and coating technologies: 2D-4D printing, device integration, interconnection 1.1

Chairperson(s): ROTH Stephan

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10:30	437	Printed Electronics – Possibilities to Combine Digitalization with Sustainability KOSEL Jürgen (Invited)
11:00	876	Rheological indicators for successful direct ink writing formulations: a case study on carbon-based materials AGRAWAL Rishav
11:15	1975	Binder Jet 3D Printed Ceramic Substrate for 5G Patch Antenna RANE Sunit
11:30	2019	Inkjet Printed Perovskite LEDs: Approaches, Limitations, and Perspectives CIRERA Albert
11:45	2386	Development of Sustainable Piezoelectric Inks for Direct Ink Writing Technologies: Role of Ink Viscosity and Printing Parameters on the Quality of Printed Designs Delcourt Mathilde

Monday May 26

G03 Emerging printing and coating technologies: 2D-4D printing, device integration, interconnection 1.2

Chairperson(s): BARG Suelen

[View session abstracts](#)

13:45	2524	From Droplets to Nanoelectronics: Revolutionizing Large-Area Ultra-Thin Film Fabrication SHANIVARASANTHE NITHYANANDA KUMAR Rachith (Invited)
14:15	1861	Biodegradable conductive hydrogels for 3D-printed and wearable electronics MOTADAYEN Mahboubeh
14:30	1831	Development of Molecularly Imprinted Polymer (MIP)-Based Sensors for Biomarker Detection Using Aerosol Jet Printing Technology PERINGATH Anjana Ramesh
14:45	1318	Spray-Coated Cu Nanosheets Electrode with Hierarchical Porous Structure for Triboelectric Nanogenerator Applications KIM Dae-Hong
15:00	1219	Fabrication of multi-scale porous structures for hydrogen evolution: DIW of strontium titanate pH-responsive emulsion gels ZHIDONG Luo
15:15	2334	Direct Ink Write Printed Silver Nanowire-Based Flexible Transparent Humidity Sensors SUMAN Swati
15:30	424	Stretchable Electronics with integrated Components fabricated with an Optimized Direct Ink Writing Technique for Liquid Metal KRACK Maximilian
15:45	2058	Embedded 3D Printing of Electrofluids HAUTZ Niclas

Monday May 26

GP01 Poster session

Chairperson(s): nan

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16:30	01_1007	Realizing High Conductivity in Liquid Metal-Polymer Composites with a Low Percolation Threshold and Without Sintering WANG Yugin
16:30	02_1013	Three-dimensional Printing of Electrically Driven Lighting by Direct Ink PYO Jaeyeon
16:30	03_1140	Investigation of surface effect on heat induced diffusion process in silver nanowires DAMERCHI Elyad

16:30	04_1320	Single-crystalline organic semiconductor films and their applications in field-effect transistors and circuits PENG Boyu	16:30	22_371	Chronic wound monitoring smart bandages with integrated body part curvature sensing VILLARREAL Renan
16:30	05_1359	Laser-assisted and UV-lithography-based patterning of vertically aligned carbon nanotubes over flexible polycarbonate polymers and silicon substrate YADAV Sahil Kumar	16:30	23_401	Development of micro-level flexible thermoelectric devices based on printing and sintering technology HOU Lu-Cheng
16:30	06_137	Graphene/WPU-Based Sensor Coatings for Real-Time Structural Health Monitoring VIJAYAN PILLAI Vishnu	16:30	24_444	Disruptive Innovation Defines the Future, Flexible Electronics Enables Ultra-High Value-Added Industries HUANG Wei
16:30	07_1387	High Ozone Sensitivity and Spontaneous Recovery of Solution-processed IGZO-TFTs Doped with Alkali Hydroxide SASAJIMA Hiroharu	16:30	25_463	Titanium Nitride and Carbide gradient heterostructure for stable and efficient Hydrogen evolution reaction BAE Gi Nam
16:30	08_1454	Fabrication and Optimization of 2D Material-Based Raindrop Triboelectric Nanogenerators GHASEMI Foad	16:30	26_575	Engineering (6,5) Carbon Nanotube Films for Advanced Optoelectronic Devices: Ultrasonic Spray Coating and Post-Processing Approaches AHADZADEH Shabnam
16:30	09_1490	Design of Smart Sequential Releasing using Liquid Crystals OH Kwang-Suk	16:30	27_579	Structural design of PEDOT:PSS toward fabricating multi-stimuli-responsive soft actuator YOUSEFIAN Hatef
16:30	10_1492	Liquid Crystal-Based Sensors for Selective Detection of Ethylene Gas PARK Seoyeon	16:30	28_695	Wearable Printed Sensors for Non-Invasive Penile Tumescence Monitoring HARISH Sivakumar
16:30	11_1567	Production of Fine Ti6Al4V Powders Using Electrical Discharge Machining (EDM) for Additive Manufacturing and Powder Metallurgy Applications GOIPOV Bunyod	16:30	29_807	3D ZnO Hexagonal Prism-Decorated 2D MXene-Based High-Performance Flexible Symmetric Supercapacitor JANGRA Sahil
16:30	12_1588	Flexible Temperature Sensing Systems for Thermal Field Perception ZHANG Hongjian	16:30	30_889	Sustainable Soft Sensor Design by Machine Learning Tools YANG Haitao
16:30	13_1733	Development of a Reference-Free Electrochemical Sensor for Continuous Sweat Electrolyte Monitoring Using Ion-Selective Membranes and Microfluidic Integration Natarajan Thiyagarajan	16:30	31_896	Enhanced Organic Light Emitting Diodes by Micropatterned Polymer Liquid Crystal Composite CHOI Yoonseuk
16:30	14_1755	EMI Shielding and Shape Memory capabilities of Dual-curing GNP/epoxy composites with high electrical and thermal conductivity VÁZQUEZ-LÓPEZ Antonio	16:30	32_958	Facile Estimation of PEDOT Doping Level and Crystalline Morphology from Raman Spectra YU Tzu-Yi
16:30	15_1772	Use of polyaniline (PANI) for the detection and identification of bacteria in human whole blood by electrochemistry SOULIGOUX-BABIN Thibaut	16:30	33_995	Nano-Structured Semiconductor Thin-Films for High-Performance Electrolyte-Gated Transistors BAEG Kang-Jun
16:30	19_239	Stretchable Hydrovoltaic Cells Based on Carbon Nanotube Fibers Immersed in Water Son Wonkyeong			
16:30	20_260	Gelatin Exfoliation Process: Enhances the Potential for Functional Components on Electronic Skin WU Shiuan			
16:30	21_270	Structural design of PEDOT:PSS toward fabricating multi-stimuli-responsive soft actuator YOUSEFIAN Hatef			

Tuesday May 27

G05 Materials innovation: multifunctional inks, additives, fillers, and nature-inspired materials 2

Chairperson(s): MAGDASSI Shlomo

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08:30	2066	Microfluidics of liquid metals KALANTAR-ZADEH Kourosh (Invited)
09:00	614	Graphene composite layers-based flexible pressure sensors with high sensitivity and wide linear sensing range LUO Feng
09:15	45	Soft, and Reversible Anisotropic Conductive Adhesive for Vertical Interconnect of Textile Electronics SANGGIL Lee
09:30	2367	Ultra-Intelligent Electronic Skin: Pioneering Future Health Care BULATHSINGHALA Rameesh
09:45	1829	Silk-Enhanced Triboelectric Nanogenerator with ZIF-67: A sustainable Approach for High-Performance Energy Harvesting CHAKRABORTY Sayan

Tuesday May 27

G07 Materials innovation: multifunctional inks, additives, fillers, and nature-inspired materials 2.2

Chairperson(s): DEFERME Wim

[View session abstracts](#)

08:30	3054	Quantum Dot Light-emitting Electrochemical Cells (QLECs) based on Cd-free Quantum Dots NANNEN Ekaterina (Invited)
13:45	974	Organic thermoelectrics for skin heat harvesting: materials, device design, and skin coupling considerations MOLINA-LOPEZ Francisco (Invited)
14:15	3049	Reversible polymer network blends as self-healing encapsulants for liquid metal electronics with barriers against oxygen and water Brancart Joost
14:45	1354	Ultrasoft and Fast Self-healing Poly(Ionic Liquid) Electrode for Dielectric Elastomer Actuators WANG Hui
15:00	1295	High Performance Inkjet printed Biodegradable MoS ₂ Transistors on Paper Substrate NEHRU Devabharathi

15:15	1280	Hybrid metal-carbon ink for printed and stretchable temperature sensors LAY Makara
15:30	231	Laser-induced graphene coated wearable smart textile electrodes for biopotentials signal monitoring C M Vidhya
15:45	1245	Flexible and Sustainable Chemiresistive Sensors for Room-Temperature Detection of Ammonia Using Chitosan and Laser-Induced Graphene TAMIRU MENGISTU Mintesinot

Tuesday May 27

G06 Materials innovation: multifunctional inks, additives, fillers, and nature-inspired materials 2.1

Chairperson(s): KOSEL Jürgen

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10:30	692	Materials for soft electronics TIWARI Naveen (Invited)
11:00	2831	Device Integration of Gold Nanoparticle and MXene Nanocomposites: Sensing Physiological Signals and Volatile Organic Compounds SCHLICHE Hendrik
11:15	3056	Smart Textile Wound Dressings for the Real-Time Monitoring of the Healing Status FRABONI Beatrice
11:30	1905	Low-temperature resistant metal-organic framework reinforced functional hydrogel nanocomposite for supercapacitor applications PAL Aparajita
11:45	2083	Development of High-Voltage MOSFETs Utilizing Silicone-Based Dielectric Elastomers for Enhanced Power Electronics PERRI Carmen

Tuesday May 27

G08 Materials innovation: multifunctional inks, additives, fillers, and nature-inspired materials 2.3

Chairperson(s): KRAUS Tobias

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16:30	831	MXene-based Colloidal Processing of Advanced Materials BARG Suelen (Invited)
17:15	46	Hyperspectral camera for spatially resolved inline monitoring of slot die coated photovoltaic MAMMERI Abdelouadoud

17:30	78	On-demand sintering of gold nanoparticles via controlled removal of o-nitrobenzyl thiol ligands for printed electronics IM Jisun
17:45	179	A Flexible Organo-Magnetic Single-Layer Composite Film with Built-In Multi-Stimuli Responsivity BARDEA Amos
18:00	2336	Microarchitected Hierarchically Porous PLA/5/CNT Nanocomposite Electrodes Enabled via 3D Printing for Li-Ion Batteries GUPTA Vinay
18:15	3085	Electrospun Graphene Derivatives-Polymer Nanocomposites: Flexible Electrodes for Next-Generation Supercapacitors LICEA-JIMÉNEZ Liliana

Wednesday May 28

G09 Materials innovation: multifunctional inks, additives, fillers, and nature-inspired materials 2.4

Chairperson(s): TIWARI Naveen

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08:30	1058	Hybrid, Bio-Based Materials for Flexible Electronics and Actuators ROTH Stephan (Invited)
09:00	35	Multifunctional Skin-Conformal Electronic Tattoos: Advanced Nanofiber-Based Platforms for Integrated Energy Harvesting, Structural Health Monitoring, Charge Storage, and Human-Machine Interface Applications PRATAP Ajay
09:15	763	Transient fiber electrode for eco-friendly digital apparel BAE Jae-Young
09:30	338	High-Performance Dielectric Elastomers: Pioneering Future Applications OPRIS Dorina M.
09:45	339	Electrochemical Performance of Asymmetric MXene and Laser-Induced Graphene Supercapacitors in Aqueous, Organic, and Ionic Liquid Electrolytes GUPTA Sanju

Wednesday May 28

G10 Materials innovation: multifunctional inks, additives, fillers, and nature-inspired materials 2.5

Chairperson(s): NANNEN Ekaterina

[View session abstracts](#)

10:30	2718	Mechanophore coatings and conjugation to sense mechanical strain from proteins to metals GROLMAN Joshua (Invited)
11:00	820	A Novel Silk Fibroin Composite for Application in Resistive Pressure Sensing D'angelo Pasquale
11:15	2513	Enhancing reliability of graphene biosensors for monitoring loop-mediated isothermal amplification and biomarker detection JARAMILLO CALDERON Diego Fernando
11:30	2536	Electrospun PEDOT:PSS/PEO Nanofibers: Advancing Flexible Ecofriendly Electronics SLEJKO Emanuele Alberto
11:45	1515	Selective Torsional Actuation of Chiral Liquid Crystal Elastomer CHO Eunsu

Wednesday May 28

G11 Materials innovation: multifunctional inks, additives, fillers, and nature-inspired materials 2.6

Chairperson(s): SHANIVARASANTHE NITHYANANDA KUMAR RACHITH

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13:45	939	Highly Conductive Inks and Filaments for Printed Soft Electronics WILLENBACHER Norbert (Invited)
14:15	2148	The mechanical and rheological properties of polydimethylsiloxane elastomers prepared by a hydrosilylation reaction. ALREFAI Abdulraheem Abdullah S
14:30	2185	Mechanically sustainable soft thermoelectric platforms for body heat harvesting and sensing JANG Doojoon
14:45	2309	Gold-polythiophene hybrid nanoparticles for printed, flexible electrochemical biosensor BHATTI Muniba Shahzad
15:00	1085	Synthesis And Optimization Of Conductive Inks For Screen Printing Stretchable Self-Healing Sensors LOZANO BETANCUR Valentina
15:15	1497	Design of Arsenic(III) Sensor Using Orientational Coupling between Liquid Crystals and L-Cysteine KIM Hyein

Thursday May 29

G12 Characterizations and applications 3

Chairperson(s): RAI Monika

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08:30	2506	The Nanoscale Photovoltaics Laboratory on a Tip WEBER Stefan (Invited)
09:00	1200	Organic photovoltaic modules with all printed layers for indoor applications FREDJ Donia
09:15	1847	The Distance-Dependent Electric Field Theory for Sliding Mode Triboelectric Nanogenerators BULATHSINGHALA Rameesh
09:30	1653	Perovskite/polymer pellets for flexible and stable radiation detectors BORDONI Camilla
09:45	1290	Flexible and Printable Thermoelectric Materials and Devices for Body Heat Energy Harvesting PAKDEL Amir

Thursday May 29

G13 Characterizations and applications 3.1

Chairperson(s): AGARWALA Shweta

[View session abstracts](#)

10:30	2913	Stretchable Interconnects on Elastomeric materials: Fabrication techniques and Design Optimization L Oppili Prasad (Invited)
11:00	549	Stretchable Electronics for Sustainable Agriculture: Advanced Sensors for Real-Time Fruit Growth Monitoring ULLAH Asad
11:15	1887	Biocompatible flexible hybrid inorganic-organic X-ray detectors RYAN Rucchi
11:30	2030	Confinement effects in piezoresistive polymer composite films LIU Lingyu
11:45	474	Characterisation and modeling of joule heating in liquid metal based stretchable electronics under uniaxial strain PURNAL Lennert

Thursday May 29

G14 Characterizations and applications 3.2

Chairperson(s): GARCIA-TUNON Esther

[View session abstracts](#)

13:45	1232	Electrofluids: conductive suspensions as electronic components GONZALEZ-GARCIA Lola (Invited)
14:15	2700	Temperature-Strain-Pressure Multimodal Sensor Based on Copper(I) Iodide Nanoparticles Embedded Highly Stretchable Thermoelectric Fiber for Wearable Electronics YOON Kukro
14:30	2719	Fully printed smart anti-counterfeit tag with on-chip power sources PRIYADARSINI Sushree
14:45	2951	Wearable and self-powered flexible optoelectronic device for photodynamic therapy LI Peng
15:00	2997	Upscaling of Flexible Starch-Based Textile Batteries for Wearable Electronics GELLNER Sandra
15:15	982	Biopolymer-templated Hierarchical 3D-Structured Gold Nanoparticle/Graphene Oxide Hybrid Materials for Surface-Enhanced Raman Scattering GUO Yingjian
15:30	859	Graphene on thin PEEK thermoplastic for neuronal electronic Fournier Tom
15:45	673	Piezoelectric Performance of BaTiO ₃ /PVDF-TrFE Nanocomposite Fibers: Alignment Effects on Sensing and Energy Harvesting JAISWAL Jyoti

Thursday May 29

GP04 Poster session

[View session abstracts](#)

16:30	01_1832	Flexible and Self-Powered Vibrational Sensor Based on Electrospun PVDF-ZnO Piezoelectric Nanogenerators for Structural Health Monitoring RAMESH Anagha M
16:30	02_1882	Facile electrospinning of ferroelectric P(VDF-TrFE) fibres using a non-toxic solvent SARAFF Shaashwat
16:30	03_1883	Low-vapor-pressure conductive liquid-based high-temperature stable triboelectric energy harvesting Debele Nebiyou Tadesse

16:30	04_1906	Resistive switching for nonvolatile memory devices revealed by a perylene-based columnar liquid crystal Bechtold Ivan	16:30	19_2623	Electrochemical sensor applications of SWCNT-based nanocomposite for environmental monitoring PARK J
16:30	05_1910	Buckled crack-based sensor with high compliance for detecting small force variations LEE Gunhee	16:30	20_2743	Electrospun Collagen Engineered with Polypyrrole and Molybdenum Disulfide Composite for Fish Skin-Derived Supercapacitors YIM Jin-Heong
16:30	06_1919	Versatile, Flexible and Self-Healing E-Skin Sensors Based on Conjugated Polymer Nanocomposites for Wearable Applications CHENG Yu-Wei	16:30	21_2746	Wearable Self-Healing Ionic Hydrogel Sensors: A Capacitive Approach for Human Motion Detection Lee Gyeongyeong
16:30	07_1934	A multilayer multi-material 3D printed flexible heating pads for multifaceted customized applications RANE Sunit	16:30	22_2803	Respiratory Monitoring Mask Charged by CO ₂ -spraying Electret Technology Cao Kun
16:30	08_2056	Advanced Soil Moisture Sensor for Real-Time Agricultural Applications Kaipamangalath Aswathi	16:30	23_2864	Realization of Pyroelectric Energy Harvesters Using Flexible KNN-PVDF Based Composites for Wearable Sensors SHARMA Babita
16:30	09_2086	Spontaneously Dewetting-Induced Voronoi Network on Organic Electronic Film KIM Yuri	16:30	24_2886	Optimizing Triboelectric Nanogenerators with 3D-Printed Materials for Compact Energy Harvesting Systems Demircio lu Onur
16:30	10_2108	EC-SERS Biochips via Electrochemically Deposited Gold Nano-Islands on Laser-Scribed Graphene for Uremic Toxin Detection Wang Kuan-Syun	16:30	25_2985	Integration of Quantum Dots into Flexible Electroluminescent Textiles DEMMER Julia
16:30	11_2119	High-Performance Flexible Aramid Films for Wearable Electronics and Sensing Applications RYU Yeonhae	16:30	26_3068	Magnetic La _{0.7} Sr _{0.3} MnO ₃ membranes synthesized by etching a Sr ₃ Al ₂ O ₆ sacrificial layer using an intermediary manganite protection layer MEZHOUD Moussa
16:30	12_2131	Printed Mxene-MoWS ₂ Asymmetric Micro-Supercapacitors for Flexible Energy Storage MANDAL Animesh	16:30	27_3076	Plasmon-enhanced flexible biosensor platform based on chiral gold hedgehogs for capturing and detecting exosomes Engin Er
16:30	13_2308	Effect of hydrogen impurity on the mechanical properties of conductive oxide thin-films for flexible electronics BANG Joonho	16:30	28_3089	Multiapproach for Structural Colour Modulation in Electrodeposited Cellulose Nanocrystals Films GASPAR Diana
16:30	14_2340	Investigating Screen Printing Inks for Thermoformed Circuit Layers in Smart 3D Products REENAERS Dieter	16:30	29_3145	“Green” piezoelectric flexible micro/nanocomposites for converting mechanical load into light and electric power NEDILKO Serhii
16:30	15_2392	Flexible Zin ion batteries to power healthcare wearable sensors DENG Siyuan	16:30	30_3190	Printing Flexible Batteries and Integrated Devices Guan C.
16:30	16_2430	Direct deposited emulsion-templated composites for monitoring of fabric strain CANO CORDERO Raquel	16:30	31_3191	Design and application of leather electronics Huo Fengwei
16:30	17_2467	Augmentation of Energy Harvesting Performance in Flexible PVDF Nanocomposites with Nano-Ag Decorated MoS ₂ Nanosheets PRATIHAR Shewli	16:30	32_3192	Flexible Sensing Electronics Towards Extreme Environment Application Wang Xuewen
16:30	18_2568	Doping-Induced Schottky Barrier Modulation in Conjugated Polymer-Wrapped Carbon Nanotubes for Highly Conductive Platforms IM Jaemin			

Friday May 30

G16 Characterizations and applications 3.3

Chairperson(s): WEBER Stefan

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09:00	524	Ultraflexible Skin-Integrated Electronics for Real-Time and Multimodal Health Monitoring XU Xiaomin
09:15	507	All-printed, Organic, Thermoelectric Generators CHOPPLET Loup
09:30	393	Perovskite photovoltaics, light-emitting diodes and X-ray detectors for flexible electronics HUANG Wei
09:45	156	Printable Thermogalvanic Modules CANDIOTTO DE OLIVEIRA Pedro

Friday May 30

G17 Characterizations and applications 3.4

Chairperson(s): L Oppili prasad

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10:30	2067	Graphene-based sensors for wearable glucose monitoring LOPES Vicente (Invited)
11:00	128	Robust flexible batteries manufactured using advanced 3D printing technology CHEN Yimin
11:15	2457	Laser-Induced Forward Transfer of Silver Nanoparticle Inks for Stretchable Electronics: Fine Interconnections for Bio-Sensors ZERGIOTI Ioanna
11:30	2487	High Performance Triboelectric Nanogenerator Derived from Surface Modified Polymer Nanocomposite Films for Self-powered Mechanosensor Applications BOSE Navonil
11:45	2417	Screen-printed dielectric electromechanically-active polymers for actuator and sensor applications MOTZKI Paul