



European Materials Research Society

2023 Spring Meeting May 29 | June 2

40th Anniversary

Congress & Exhibition Centre, Strasbourg, France

SYMPOSIUM K

Organic and hybrid transistors and electrochemical transistors: materials and devices

Symposium Organizers:

John LABRAM, University College London, U.K.

Alexandra F. PATERSON, University of Kentucky, USA

Björn LUESSEM, University of Bremen, Germany

Christian NIELSEN, Queen Mary University of London, U.K.

Monday May 29

K01

Bioelectronics and Green Electronics 1

Chairperson(s) : LABRAM John - LUESSEM Bjoern

Berlin (Ground floor)

08:45	609		Inkjet-printed, deep sub-threshold operated integrated circuits for biomedical applications	PRADHAN Jyoti Ranjan
09:00	634		Ultraflexible Organic Active Sensor Matrix for Tactile and Biosignal Monitoring	PRIETL Christine
09:15	2212		Assessing carotenoids as renewable, natural-based materials for organic thin-film transistors	SCACCABAROZZI Alberto
09:30	2766	INV	Scalable manufacturing of soft microelectronics for biomedical applications: materials, devices, and applications	ZHANG Shiming

Monday May 29

K02

Bioelectronics and Green Electronics 2

Chairperson(s) : LUESSEM Bjoern - ZHANG Shiming

Berlin (Ground floor)

10:30	2765	INV	Organic Integrated Bioelectronics and Artificial Neurons for Enhanced Biosensing and Biointerfacing	TORRICELLI Fabrizio
11:00	2347		Copper Phthalocyanine Based Electrochemical Transistors for Future Edible Electronics	LUZIO Alessandro
11:15	257		Circuit implementations of thread-based organic eutectogel gated electrochemical transistors	SONKUSALE Sameer
11:30	1501		Wood Electrochemical Transistor	TRAN Van Chinh
11:45	2163		Bacterial cellulose from Kombucha's SCOBY as multipurpose material for fully edible electronics	FERRARESE Fabrizio Mario

Monday May 29

K03

Bioelectronics and Green Electronics 3

Chairperson(s) : LUESSEM Bjoern - NIELSEN Christian

Berlin (Ground floor)

13:30	2760	INV	Direct Recording of Action Potentials of Cardiomyocytes Through Solution Processed Planar Electrolyte-Gated Field-Effect Transistors	CAIRONI Mario
14:00	1484		Towards a materials design platform aimed at bioelectronics applications	AL YAMAN Yasmina

Monday May 29

K04

Manufacturing and Device Design 1

Chairperson(s) : LABRAM John - PATERSON Alexandra

Berlin (Ground floor)

14:15	125	INV	Development of high-performance Sn based halide perovskite transistors	NOH Yong-Young
14:45	2762	INV	Flexible nanoscale organic thin-film transistors	KLAUK Hagen
15:15	1008		Vacuum-Processable & Photopatternable High-k Polymer Gate Dielectrics for Oxide Thin-Film Transistors	JANG Seongcheol
15:30	177		Rolled-up nanomembrane-based vertical organic field-effect transistors and sensors	NAWAZ Ali
15:45	2617		Local Potential Mapping of Functional Electrolyte-Gated Transistors	TANWAR Shubham

Monday May 29

K_P

Poster session

Etoile (1st floor) - 4.30 p.m to 6.30 p.m

01_471	Temperature effect on the charge transport mechanism in nanocomposite dielectric-based organic field-effect transistors	MALLIK Samik
--------	---	--------------

02_936	Atomistic simulations of an ionic liquid/WSe ₂ interface for next generation nanoelectronics and energy storage applications	ISHISONE Kana
04_2548	A Facile and Easy Way to Enhance the Performance of Organic Phototransistors Using UV Treatment:	SHAHARUKH, Sk.
05_18	Development and optimization of polymer gate dielectrics for reliable and flexible field-effect transistors	PARK Hyunjin
07_657	Ion-Exchange Doping of Single-Walled Carbon Nanotubes	HAWKEY Angus
08_1039	Hysteresis-free MoS ₂ negative capacitance transistors using 5 nm P(VDF-TrFE)-brush ferroelectric layer	CHO Hyunmin
09_1073	Double-bond Contained PVDF-based Fluoropolymer Gate Dielectrics for Low-Voltage Operating Organic Transistors	RYU Soo-Min
10_1139	Fiber-shaped organic ferroelectric transistor memories for wearable artificial synapse applications	KANG Minji
11_1170	Security Key Generation by Circularly Polarized Light Detection based on Chiroptical-Conjugated Polymer Devices	JU Hyunsu
12_1468	Mixed solvents treated poly (methyl methacrylate) (PMMA) gate dielectric based organic field effect transistors (OFETs)	SANGWAN Satayender K.
13_1585	Solution-processed copper (I) thiocyanate (CuSCN) film as a hole injection layer for organic light-emitting diodes (OLED)	JANG Eun-Jeong
15_1682	A Study on Securing Light and Bias Reliability through Surface Control of High Mobility Oxide Transistors	KIM Jong Woo
16_1778	Structural analysis of DPP-based organic thin films for photodetector applications	FYNBO Cecilie C.
17_1948	On the electrical characteristics and reliability of electrolyte-gated transistors based on reduced-graphene oxide aiming sensing applications	FURLAN DE OLIVEIRA Rafael
18_2066	Bioelectronic devices and deep learning imaging for the prediction of KRAS alteration.	CAPUTO Mariapia
19_2244	Molecular imprinted polymer for low-trace food contaminants detection	TRICASE Angelo
20_2390	Single Molecule Transistor and ultrasensitive immunoassay array: a comparison of two technologies	SCANDURRA Cecilia

Tuesday May 30

K05

Device Theory, Transport, and Circuits 1

Chairperson(s) : KANG Keehoon - NIELSEN Christian

Berlin (Ground floor)

10:00	2764	INV	Electrochemical Transistors: A Platform for Exploring Carrier Transport and Ion-Carrier Correlations at High Charge Densities in Organic Semiconductors	FRISBIE Daniel
10:30	144	INV	Simulations-guided device design for high-performance, low-cost organic field-effect transistors	JURCHESCU Oana
11:00	1691		Understanding Scaling Laws of Organic Electrochemical Transistors	SKOWRONS Michael
11:15	2671		Organic magnetoresistance in conjugated polymers	ORGIU Emanuele
11:30	1190		Reconfigurable Physically Unclonable Functions Based on Organic Thin-Film Transistors with Multiscale Polycrystalline Blends	IM Seongil
11:45	1677		Electrical Conductivity of DNA Origami	DEMIR Busra

Tuesday May 30

K06

Device Theory, Transport, and Circuits 2

Chairperson(s) : JURCHESCU Oana - LABRAM John

Berlin (Ground floor)

13:30	2848	INV	Strategic Molecular Doping and Defect Passivation in 2D Ruddlesden-Popper Phase Metal-Halide Perovskites	KANG Keehoon
14:00	1594		Doping Effect of MoO ₃ Encapsulation Layer on DNTT-based Organic Transistors and their Application to Unipolar Inverter Circuits	JEON Yunchae
14:15	879		Solution-Processed Complementary Inverters Using p-type Copper Iodide: Improving Stability with Passivation Layers	LEE Kyumin
14:30	1109		Multivalued Logic Circuits based on Vertically Integrated Organic Transistors	YOO Hocheon

14:45 1327 From Key Generation to Destruction of Physical Unclonable Function Using a-IGZO-based Transistor Doped with PVDF-HFP and Its Randomly-Tunable Electrical Properties Depending on the Phase Transition **LEE Subin**

Tuesday May 30

K07

Materials, Structure, and Additives 1

Chairperson(s) : NIELSEN Christian - PATERSON Alexandra

Berlin (Ground floor)

15:00 2761 INV Development of semiconducting polymers for organic electrochemical transistors **KOUSSEFF Christina**

15:30 2763 INV Mixed conduction in conjugated polymers: structure-property relationships **SALLEO Alberto**

Tuesday May 30

K08

Materials, Structure, and Additives 2

Chairperson(s) : LABRAM John - NIELSEN Christian

Berlin (Ground floor)

16:30 1836 INV New approaches for high-performance organic transistors **LEO Karl**

17:00 385 Controlling polymorphism in zone-cast PDIF-CN2 thin films **HERRMANN Niklas**

17:15 798 Conformational Change of Alkyl Chains at Phase Transitions of Ph-BTBT-C10 **SHIOYA Nobutaka**

17:30 118 Enhancing the thermal conductivity of amorphous polyimide by molecular-scale manipulation **QUACH Thai Quyen**

17:45 436 N-doping of electron transport layers in organic light-emitting diodes studied by combining TOF-SIMS and XPS **GUYOT Claire**

18:00 468 Assessing the crystallization of OLED molecules using mass spectrometry **HIRCHENHAHN Pierre**

18:15 1547 Ultrafast singlet fission dynamics in high quality organic single crystals **MASLENNIKOV Dmitry**

Wednesday May 31

K09

Materials, Structure, and Additives 3

Chairperson(s) : LABRAM John - LUESSEM Bjoern

Berlin (Ground floor)

10:30	2759	INV	High performing conjugated polymers of low-synthetic complexity	HEENEY Martin
11:00	1719		Halogen bonding to boost the charge carrier mobility in NDI-based organic transistors	RUOKO Tero-Petri
11:15	806		Optimizing chain alignment and preserving the pristine structure of single-ether based PBTTT helps improve thermoelectric properties in sequentially doped thin films	BRINKMANN Martin
11:30	886		Combining doping by anion exchange and orientation by high temperature rubbing affords stable and efficient thermoelectric polymer films	GUCHAIT Shubhradip

Wednesday May 31

K10

Manufacturing and Device Design 2

Chairperson(s) : FABIANO Simone - LUESSEM Bjoern

Berlin (Ground floor)

13:30	664	INV	Advanced materials and manufacturing paradigms for emerging electronics	ANTHOPOULOS Thomas
14:00	1740		A n-type, stable electrolyte gated organic transistor based on a printed polymer	VIOLA Fabrizio Antonio
14:15	1248		Toward fast and stable organic electrochemical transistors	ZHANG Silan

Wednesday May 31

K11

Sensors and Neuromorphic Electronics 1

Chairperson(s) : ANTHOPOULOS Thomas - PATERSON Alexandra

Berlin (Ground floor)

14:30	2757	INV	Biorealistic organic electrochemical neurons: materials and challenges	FABIANO Simone
15:00	1761		Two-terminal Organic Electrochemical Diode-based Novel Neuromorphic Operation	HEO Dongmi
15:15	2337		Bio-electronic Sensors for Fast and Selective Detection of <i>Xylella fastidiosa</i>	SARCINA Lucia
15:30	2675		Organic double-gate FET for high-quality chemical sensing	HATAMI Davood
15:45	389		Toxic Water soluble Mercury metal-ions detection by Organic Field Effect Transistors using Pyridine-end oligo p-Phenylenevinylene oligomer as a sensing material	VERMA Shiv Prakash

Wednesday May 31

K12

Sensors and Neuromorphic Electronics 2

Chairperson(s) : LABRAM John - PATERSON Alexandra

Berlin (Ground floor)

16:30	2758	INV	Organic electrochemical diodes for current rectification, digital logic, and neuromorphic devices	YOON Myung-Han
17:00	2140		A flexible optically stimulated synaptic transistor based on rGO-ZnO NRs based hybrid channel	BAG Atanu
17:30	294		Fabrication of photo-transistor using perovskite materials as a gate dielectric	MANDAL Ajoy
17:45	503		Investigating the dielectric properties of Tb ³⁺ doped LaPO ₄ nanoparticle-PMMA composite thin films and its application as organic phototransistor for UV detection	BANERJEE Rajdeep

