



European Materials Research Society

2023 Spring Meeting May 29 | June 2

40th Anniversary

Congress & Exhibition Centre, Strasbourg, France

SYMPOSIUM R

Diamond for electronics, sensors and detectors V

Symposium Organizers:

Richard B. JACKMAN, University College London, U.K.

Etienne GHEERAERT, University Grenoble, France

Philippe BERGONZO, Seki Diamond Systems, USA

Soumen MANDAL, University of Cardiff, U.K.



Monday May 29

R01

Diamond Devices I

Chairperson(s) : JACKMAN Richard

Madrid 1 (Ground floor)

09:00	845	INV	Advances in diamond MOSFET technologies	TOKUDA Norio
09:30	2466		Vertical pin diodes on large freestanding (100) diamond film	PINAULT-THAURY Marie-Amandine
09:45	1285		Investigate the impact of the nitrogen doped layer on the electrical properties of diamond Schottky barrier diodes	KASSEM Hussein

Monday May 29

R02

Diamond Devices II

Chairperson(s) : TOKUDA Norio

Madrid 1 (Ground floor)

10:30	2625	INV	Future prospect and challenges of Diamond power electronic devices: from deep depletion FETs to H-Terminated devices	DONATO Nazareno
11:00	1934		Design and technology of Normally-off Diamond Reverse Blocking MESFET	GHEERAERT Etienne
11:15	2324	INV	Recent developments in transfer-doping of diamond for electronic devices	MORAN David
11:45	734		Graphitic Micro-channels in Diamond: An Impedance Spectroscopy Study	HENDERSON Calum

Monday May 29

R03

Quantum devices I

Chairperson(s) : BECHER Christophe

Madrid 1 (Ground floor)

14:00	2472	INV	Diamond-based quantum sensors for in situ monitoring of spin active chemical species in molecular structures and nanomaterials	MATHER Melissa
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14:30	2032		All-Optical Nuclear Quantum Sensing using Nitrogen-Vacancy Centers in Diamond	SJÖLANDER Tobias
14:45	1169		Investigation of diamond-based quantum sensors in laterally overgrown hole arrays	OSHNIK Nimba
15:00	1597		Evaluation of NV0 defects in single-crystal diamond grown directly on Si substrate using Raman spectroscopy	YAMAZAKI Shohei
15:15	2480		Interfacing diamond with silicon microtechnology for quantum applications	SMITH Joe
15:30	2381	INV	Two-dimensional spin systems in PECVD-grown diamond with tunable density and long coherence for enhanced quantum sensing and simulation	HUGHES Lillian

Monday May 29

R_P

Poster session

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

01_2612		Correlated micro-Raman, scanning spreading resistance and Kelvin-probe mapping of dislocations etch pits and sectoral boundaries in boron-doped HPHT-diamond	NIKOLENKO Andrii
02_2613		Temperature dependence of growth-sector-dependent Raman spectra of boron-doped HPHT- diamonds	DANYLENKO Ihor
03_2586		Temperature dependence of the Raman spectra of various multi-sectoral HPHT diamond plates	DANYLENKO Ihor
04_2383		Diamond nanowire transistor with high current capability	MOORS Ralph
05_754		First principles calculations of the electronic, vibrational and dielectric properties of defective diamond	RUSEVICH Leonid
06_373		Investigated performance of AlHfGaO UVC phototransistors deposited by vapor cooling condensation system at low temperature	LEE Ching-Ting

Tuesday May 30

R04

Detectors and Sensors

Chairperson(s) : BERGONZO Philippe

Madrid 1 (Ground floor)

10:00	2461	INV	Design of innovative diamond detectors for beam monitoring in highly radiative environment for applications in nuclear and medical physics	GALLIN-MARTEL Marie-Laure
10:30	86		Diamond detectors for pulse resolved intensity measurements at European XFEL	BOESENBERG Ulrike
10:45	66		Diamond Sensor for XFEL Beam Diagnostics at the European XFEL	FREUND Wolfgang
11:00	2458	INV	An electrochemically assisted system based on heterojunction silicon/diamond sensor for natural uranium detection in liquid solutions	POMORSKI Michal
11:30	1699		A diamond/graphene/diamond sandwich structure electrode for waste water treatment	YANG Nianjun
11:45	1176		Nitrogen-doped carbon nanowalls/diamond films as efficient electrocatalysts toward oxygen reduction reaction	ZHANG Chuyan

Tuesday May 30

R05

Growth and Characterisation

Chairperson(s) : GHEERAERT Etienne

Madrid 1 (Ground floor)

14:00	2749	INV	Two-Inch High Quality Diamond Heteroepitaxial Growth on Sapphire for High-End Applications	KIM Seong-Woo
14:30	2591		Development of new carbon solvent compositions for HPHT-growth of boron-doped large diamond single crystals for applications as electronic device substrates	KOVALENKO Tetiana
15:00	2192		Diamond growth on non-diamond substrate: A zeta potential preview	MANDAL Soumen
15:15	1031		Vertically Three-Dimensional Diamond-Graphene Nanohybrid Films: Preparation, Characterization and Application	XIONG Ying

15:30 **2781** **INV** A review of key developments and challenges in CVD diamond materials for sensor and detector applications **FRIEL Ian**

Wednesday May 31
R06
Quantum devices II

Chairperson(s) : MATHER Melissa

Madrid 1 (Ground floor)

10:00	2704	INV	The tin vacancy center in diamond: control of charge states, spins and photons	BECHER Christophe
10:30	661		Widefield detection of NV center Rabi oscillations	MAGALETTI Simone
10:45	2699		Excited singlet and triplet states of the negatively charged NV-center in diamond calculated using a variation density functional approach	JONSSON Hannes
11:00	2406		Detecting spatial magnetic field gradients using a nanodiamond thin-film sensor on an optical fiber facet	JANI Mona
11:15	2198		Enhanced SiV magnetometry in diamond using electromagnetically induced transparency	JIMENEZ Alejandro
11:30	1453		Diamond-Based Magnetic Widefield-Microscopy of Domain Patterns in Transformer Steel	PHILIPP Simon
11:45	1055		Revealing impurity evolution in silicon-doped diamond film via thermal oxidation	YANG Bing

Wednesday May 31
R07
Processing, Optics and Thermal Management

Chairperson(s) : FRIEL Ian

Madrid 1 (Ground floor)

13:45	1378	INV	A TEM study of the 3D nanographitic generated structures generated by Laser writing process to induce local diamond conduction	ARAUJO Daniel
14:15	521		Surface Transfer Doped Diamond Diodes with Metal Oxide Passivation and Field-plate	WATKINS Rebecca
14:30	2398		Locally Ion Implantation and Annealing Effects in Diamond	BOURAS Mohamed Elhachmi

14:45	525	Diamond Electrochemical Sensors: Graphitic microchannels as both through substrate vias and patterned electrodes	MOORS Ralph
15:00	1857	Surface modification of thin boron doped diamond electrodes with controlled sp ² sites – ultrashort laser pulses fabrication and electrochemical characterization	LAMBERT Nicolas
15:15	1750	Consistent manufacturing of high-quality in-diamond lens devices for enhanced Color Center Photoluminescence detection	TSAPANOU-KATRANARA Eftychia
15:30	2126	Nano-structured Diamond Sensors for Extreme Environments: Taking SERS from the laboratory to the Ocean	RAMSAY Massimiliano
15:45	2769	Low Thermal Budget Diamond Heat Spreader for Semiconductor Devices Channel Cooling	MALAKOUTIAN Mohamadali

Wednesday May 31

R08

Sensors and Bio-devices

Chairperson(s) : MANDAL Soumen

Madrid 1 (Ground floor)

16:30	2423	INV	Boron-doped diamond enriched vertical graphene nanostructures for electronic and sensing applications	PIERPAOLI Mattia
17:00	1092		Protein immobilization on ultrananocrystalline diamond for biosensing applications	POPOV Cyril
17:15	2497		Exploring the impact of ionizing radiation on neuronal networks and neuroendocrine cells with advanced diamond-based cellular sensors	PICOLLO Federico
17:30	2487	INV	Virus Capture by nanodiamond modified membranes	WILLIAMS Oliver

