Programme **http://www.uhasselt.be/sbdd**

Hasselt Diamond Workshop 2025

SBDD XXIX

March 19 - 21, 2025
cultuurcentrum Hasselt (Cultural Centre), Hasselt, Belgium

During three full days, SBDD XXIX will address recent progress in a variety of topics ranging from fundamental material science to applications, focusing on CVD diamond.

Tuesday, March 18, 2025

18:00 – 19:00 **Registration at the *Express by Holiday Inn*.**

Wednesday, March 19, 2025

08:20 – 08:50 **Registration at the *cultuurcentrum Hasselt*.**

08:50 – 09:00 **Opening "Hasselt Diamond Workshop 2025 – SBDD XXIX".**

Session 1
Diamond Growth for Quantum Technology
Chair: Quan Li, The Chinese University of Hong Kong, Hong Kong

09:00
1.1 (Invited)
Placement of NV-centers in diamond through CVD growth techniques
P. Knittel[1], N. Lang[1], P. Schätzle[1], C. Giese[1], P. Quellmalz[1]
[1]*Fraunhofer Institute for Applied Solid State Physics, Tullastraße 72, Freiburg, Germany*

09:30
1.2
Quantum-Grade Nanodiamonds Through Industrial-Scale Single-Step Pressure and Temperature Process
Y. Bao[1], M. Gulka[2], P. Kumar[3], J. Copak[2,4], P. Balasubramanian[5], Y. Mindarava[5], R. Blinder[5], M. Olney-Fraser[5], H. Wen[3], H. Spanielova[2], J. Hruby[6,7], F. Jelezko[5,8], J. Daniel Belnap[1], S. L. Y. Chang[3,9], P. Cigler[2]
[1]*MegaDiamond Technology Center, SLB Corporation, Provo, Utah 84606, USA*, [2]*Institute of Organic Chemistry and Biochemistry of the CAS, Prague, 166 10, Czech Republic*, [3]*School of Material Science and Engineering, University of New South Wales, Sydney, NSW 2052, Australia*, [4]*Department of Physical and Macromolecular Chemistry, Faculty of Science, Charles University, Hlavova 2030/8, 128 40 Prague 2, Czechia*, [5]*Institute of Quantum Optics, Ulm University, Ulm, 89081, Germany*, [6]*Institute for Materials Research (IMO), Hasselt University, Wetenschapspark 1, B-3590 Diepenbeek, Belgium*, [7]*IMOMEC Division, IMEC, Wetenschapspark 1, B-3590 Diepenbeek, Belgium*, [8]*Integrated Quantum Science and Technology (IQST), Ulm University, Ulm, 89081, Germany*, [9]*Electron Microscope Unit, Mark Wainwright Analytical Centre, University of New South Wales, Sydney, NSW 2052, Australia*

09:50
1.3
Diamond (001) and (111) on wafer-scale with functional microstructures based on the NV centre
J. Weippert[1], J. Kustermann[1], P. Klar[1], C. Giese[1], J. Jeske[1], P. Knittel[1], S. Mägdefessel[1], L. Kirste[1], T. Fehrenbach[2], M. Ohnemus[2], C. Wild[2], V. Lebedev[1], J. Engels[1]
[1]*Fraunhofer IAF, Fraunhofer Institute for Applied Solid State Physics, Tullastraße 72, Freiburg, Germany*, [2]*Diamond Materials GmbH & Co.KG, Hans-Bunte-Str. 19, Freiburg, Germany*

10:10 Coffee Break (Grand Banquet Hall)

Session 2
Diamond Quantum Sensing for Biomedical Applications
Chair: Anke Krueger, Universität Stuttgart, Germany

10:50
2.1 (Invited)
Diamond quantum magneto-microscopy towards cardiac imaging
N. Fabbri[1]
[1]*CNR-Istituto Nazionale di Ottica (INO) & European Laboratory for Non-Linear Spectroscopy (LENS), Italy*

11:20
2.2
Quantum sensing protocols for identification of magnetoreception candidates in African mole-rats
E. Walsh[1], L. Moritz[2], R. de Gille[1], E. Pascal Malkemper[2], D. Simpson[1]
[1]*School of Physics, The University of Melbourne, Parkville 3010, Australia*, [2]*Max Planck Institute for Neurobiology of Behavior - caesar, Bonn, Germany*

11:40
2.3
Assessing antibiotic activity with NV centre based relaxometry
A. Melcrová[1], W. Woudstra[1], R. Schirhagl[1]
[1]*Biomaterials and Biomedical Technology, University Medical Center Groningen, The Netherlands*

12:00
2.4
Microwave-free Magnetic Imaging with Nanodiamonds and a Functional Magnetic Endoscope
S. Sengottuvel[1,2], O. Dhungel[3,4], M. Mrózek[1], A. Wickenbrock[3,4,5], D. Budker[3,4,5,6], A. Wojciechowski[1]
[1]*Institute of Physics, Jagiellonian University, Łojasiewicza 11, 30-348 Kraków, Poland*, [2]*Doctoral School of Exact and Natural Sciences, Jagiellonian Univ., Łojasiewicza 11, 30-348 Kraków, Poland*, [3]*Helmholtz-Institut Mainz, 55099 Mainz, Germany*, [4]*Johannes Gutenberg-Universität Mainz, 55128 Mainz, Germany*, [5]*GSI Helmholtzzentrum für Schwerionenforschung GmbH, 64291 Darmstadt, Germany*, [6]*Department of Physics, University of California, Berkeley, California 94720-7300, USA*

12:20 SBDD XXIX group photo (Lecture Hall)

12:30 Lunch (Grand Banquet Hall)

Session 3
Multidisciplinary Approaches in Diamond Quantum Sensing
Chair: Elke Neu-Ruffing, RPTU Kaiserslautern-Landau, Germany

14:00
3.1 (Invited)
Probing phase transition of nanoconfined water by a quantum diamond sensor
Y. Jiang[1]
[1]*International Center for Quantum Materials, School of Physics, Peking University, Beijing, China*

14:30
3.2
Spin properties of NV ensembles in phosphorus doped diamond
I. Stenger[1], C. Arnold[1], M. Elhachmi Bouras[1], R. Gillet[1], P. Perrin[2], E. Loire[1], F. Jomard[1], A. Tallaire[2,3], G. Hétet[4], M.-A. Pinault-Thaury[1], J. Barjon[1]
[1]*GEMaC, UVSQ, CNRS, Université Paris Saclay, Versailles, France*, [2]*IRCP, Chimie ParisTech, CNRS, PSL Research University, Paris, France*, [3]*LSPM, CNRS, Université Sorbonne Paris Nord, Villetaneuse, France*, [4]*LPA, Ecole Normale Supérieure, CNRS, PSL Research University, Paris*

14:50
3.3
Nitrogen-vacancy diamond layers for widefield magnetic sensing
T. Graziosi[1], C. A. Hart[2], A. M. Edmonds[1], M. L. Markham[1]
[1]*Element Six Ltd, Fermi Avenue, Harwell, Didcot, U.K.*, [2]*Quantum Catalyzer, University Research Court, College Park, United States*

15:10
3.4
Large-scale Localization and Characterization of Diamond Color Centers for Deterministic Fabrication of Nanophotonic Spin-Photon Interfaces
M. H. van der Hoeven[1], J. M. Bopp[1,2], M. E. Stucki[1,2], T. Pregnolato[1,2], T. Schröder[1,2]
[1]*Department of Physics, Humboldt-Universität zu Berlin, Newtonstr. 15, 12489 Berlin, Germany*, [2]*Ferdinand-Braun-Institut gGmbH, Gustav-Kirchhoff-Straße 4, 12489 Berlin, Germany*

15:30 Coffee Break (Grand Banquet Hall)

Session 4
New Advancement in Diamond Quantum Technologies
Chair: Thierry Debuisschert, Thales, France

16:10
4.1 (Invited)
Towards integrated chips for diamond quantum technologies
M. Doherty[1]
[1]*Quantum Brilliance Pty Ltd, Australia*

16:40
4.2
Imaging the Stress and T2* of NV center around Dislocations
T. Tsuji[1], S. Harada[2], T. Teraji[1]
[1]*National Institute for Materials Science, 1-1 Namiki, Tsukuba, Ibaraki, 305-0044, Japan*, [2]*Nagoya University, Furo-cho, Nagoya, 464-8601, Japan*

17:00
4.3
Single-defect activation of ion-implanted samples via CW laser irradiation: a RT study on Group IV and NV centers
E. Nieto Hernández[1,2], V. Pugliese[1,2], E. Corte[1,2], S. Ditalia Tchernij[1,2], P. Olivero[1,2], J. Forneris[1,2]
[1]*Department of Physics, University of Torino, Via Pietro Giuria 1, Torino, Italy*, [2]*Istituto Nazionale di Fisica Nucleare (INFN), sezione di Torino,Torino, Italy*

17:20
4.4
Generation of coupled qubits in isotopically-engineered diamonds for quantum computation
C. Findler[1], A. De Gleria Clark[1], P. Vetter[1], E. Raffalt[1], Y. Hagian[1], S. Schmitt[1], J. Lang[1], C. Osterkamp[1]
[1]*Diatope GmbH, Wilhelm-Runge-Straße 10, 89081 Ulm, Germany*

Session 5
Posters I & Reception sponsored by: KONFIDI Diamond Laser Processing Infrastructure
Chairs: Julien Barjon, Université de Versailles Saint-Quentin-en-Yvelines, France; Anna Ermakova, Hasselt University & BIRA-IASB, Belgium; Paul W. May, University of Bristol, U.K.; Joana Catarina Mendes, Instituto de Telecomunicações, Portugal

17:40 – 19:40 (Grand & Small Banquet Hall)

5.1
Roles of gas-phase and surface kinetics of CxHy in diamond CVD
T. Nikhar[1], I. Petras[2], Y. Shustrov[2], L. Suter[3], A. Smirnov[2], S. V. Baryshev[1]
[1]*Electrical and Computer Engineering, Michigan State University, 428 S. Shaw Ln., East Lansing, MI, USA*, [2]*Semiconductor Technology Research d.o.o. Beograd, Science Technology Park, Veljka Dugoševića 54, Building B4, Belgrade, Serbia*, [3]*Fraunhofer USA, Inc., Center Midwest, East Lansing, MI, United States*

5.2
Approach for measuring diffusion lengths of growth precursors on diamond
S. D. Janssens[1], F. S. Forte Neto[2], D. Vázquez-Cortés[1], F. P. Dude[2], E. Fried[1]
[1]*Mechanics and Materials Unit (MMU), Okinawa Institute of Science and Technology Graduate University (OIST), 1919-1 Tancha, Onna-son, Kunigami-gun, Okinawa, 904-0495, Japan*, [2]*Programa de Engenharia Mecânica, COPPE, Universidade Federal do Rio de Janeiro, Cidade Universitária, Rio de Janeiro/RJ, 21941-972, Brazil*

5.3
Understanding the effect of flow rate on the deposition rate of diamond films by plasma-enhanced chemical vapor deposition.
D. Vazquez Cortes[1], S. D. Janssens[1], E. Fried[1]
[1]*Mechanics and Materials Unit, Okinawa Institute of Science and Technology, 1919-1 Tancha, Onna-son, Okinawa, Japan.*

5.4
HPHT diamond crystal shapes, cuts, and growth modeling
I. Ponomarev[1], A. Saidkhodjaev[1]
[1]*Euclid Beamlabs, 10000 Virginia Manor Rd, Ste 330, Beltsville, MD, 20705, USA*

5.5
Comparative Analysis of Stress Levels in CVD Diamonds Grown on HPHT and CVD Seeds: Insights from Birefringence, Raman Spectroscopy, and XRD analysis
N. C[1], R. Kumar[1,2], J. Rajeev Gandhi[1], B. Francis[1], R. Das[1], N. Arunachalam[1,2], M. Ramachandra Rao[1,3]
[1]*India Centre for Lab-grown Diamond (InCent-LGD), Indian Institute of Technology Madras, Chennai, India*, [2]*Department of Mechanical Engineering, Indian Institute of Technology Madras, Chennai, India.*, [3]*Department of Physics, Quantum Centre of Excellence for Diamond and Emergent Materials (QuCenDiEM) and Materials Science Research Centre and Nano-Functional Materials Technology Centre (NFMTC), Indian Institute of Technology Madras, Chennai, India.*

5.6
Towards Low Stress, Quantum Grade Diamond Grown via Chemical Vapor Deposition
P. Quayle[1], R. D. Diaz[1], P. Kalinadhabhotla[1], T. Sheppard[1], T. Grotjohn[1,2], D. Mukherjee[1]
[1]*Great Lakes Crystal Technologies (GLCT) East Lansing, MI USA*, [2]*Michigan State University East Lansing, MI USA*

5.7
Carbon isotope controlled {111} diamond growth
T. Yamamoto[1], B. van Ommen[1], K.-N. Schymik[1], S. Onoda[2], S. Saiki[2], R. Vollmer[3], T. H. Taminiau[1]
[1]*QuTech, Delft University of Technology, PO Box 5046, 2600 GA Delft, The Netherlands*, [2]*Takasaki Advanced Radiation Research Institute, National Institutes for Quantum Science and Technology, Takasaki, Japan*, [3]*Netherlands Organisation for Applied Scientific Research, P.O. Box 155, 2600 AD Delft, The Netherlands*

5.8
Towards Single-Crystal Device-Grade 100mm Homoepitaxial Diamond Wafers
J. P Ciraldo[1], M. Mühle[2]
[1]*WD Advanced Materials, 6710 Virginia Manor Rd, Beltsville, MD 20705, USA*, [2]*Fraunhofer USA - Center Midwest, 1449 Engineering Research Ct, East Lansing, MI 48824 USA*

5.9

Doped diamond growth: experimental insight into Impurity Incorporation

V. Mortet[1,2]

[1]*FZU - Institute of Physics of the Czech Academy of Sciences, Na Slovance 1999/2, 182 00 Praha 8, Czech Republic*, [2]*Faculty of Biomedical Engineering, Czech Technical University in Prague, Sitna sq. 3105, 272 01 Kladno, Czech Republic*

5.10

Chemical kinetics and growth of phosphorus doped CVD diamond films

Y. Barsukov[1], M. Mokrov[1], I. Kaganovich[1], K. Kumar Kovi[1], M.-C. Wu[1], A. Khrabry[2], A. Stacey[1]

[1]*Princeton Plasma Physics Laboratory, Princeton University, 100 Stellarator Road, Princeton, New Jersey, USA*, [2]*Princeton University, Princeton, New Jersey*

5.11

High-quality, single crystal phosphorus-doped and boron-doped diamond layers.

A. Freire de Rivas[1], F. Lloret[1,2], J. Millán-Barba[2,3], G. Alba[1,2], M. Suzuki[3,4], D. Araujo[2,3]

[1]*Department of Applied Physics, University of Cádiz, 11510 Puerto Real, Spain.*, [2]*IMEYMAT, University of Cádiz, 11510 Puerto Real, Spain.*, [3]*Department of Materials Science, University of Cádiz, 11510 Puerto Real, Spain.*, [4]*Orbray Co., Ltd., 3-8-22 Shinden, Adachi-ku, Tokyo, 123-8511 Japan*

5.12

Investigating the Role of Nitrogen in Stabilizing n-type Conductivity in Lithium Implanted Diamond

R. Raj[1], C. Nikhil[3], K. G. Pradeep[2], M. Ramachandra Rao[1,3]

[1]*Department of Physics, Quantum Centre for Diamond and Emergent Materials (QuCenDiEM)-[p-CoE], Nano Functional Materials Technology Center and Materials Science Research Center, Indian Institute of Technology Madras, Chennai, Tamil Nadu, 600036, India*, [2]*Department of Metallurgical and Materials Engineering, Correlative Microscopy Lab, Indian Institute of Technology Madras, Chennai, Tamil Nadu, 600 036, India*, [3]*India Centre for Lab-grown Diamond (InCent-LGD), Indian Institute of Technology Madras, Chennai, India.*

5.13

Boron level control in nanocrystalline diamond via N-co-doping

E. Ahmed[1,2], R. Rouzbahani[1,2], S. Reiß[3], P. Pobedinskas[1,2], K. Haenen[1,2]

[1]*Institute for Materials Research (IMO), Hasselt University, 3590 Diepenbeek, Belgium*, [2]*IMOMEC, IMEC vzw, 3590 Diepenbeek, Belgium*, [3]*CiS Forschungsinstitut für Mikrosensorik GmbH, 99099 Erfurt, Germany*

5.14

Expanding the Limits of 4-inch Diamond CVD at 2.45 GHz: Stabilization of a New Resonant Mode

A. Fiori[1], T. Muhamad Yasser[1], K. Tsugawa[1], M. Ikemoto[1]

[1]*Seki Diamond Systems - Cornes Technologies Ltd., 2-14-18 Tokiwa, Koto City, Tokyo 135-0006, Japan*

5.15

Improved Uniformity of Diamond Growth Through the Modeling of MPCVD on the Large Area Substrates

I. Petraš[1], Y. Shustrov[1], A. Smirnov[1]

[1]*Semiconductor Technology Research d.o.o. Beograd, Science Technology Park, Veljka Dugoševića 54, Building B5, Belgrade, Serbia*

5.16

Highly Uniform 4-Inch Polycrystalline Diamond Layers and Crystals using 2.45 GHz Microwave Plasma CVD

Y. Tasya Muhamad[1], A. Fiori[1], K. Tsugawa[1], M. Ikemoto[1]

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5.17

Three-dimensional multimodal X-ray characterisation of small diamond wafers

P. Reischig[1,2], E. Mejdal Lauridsen[1]

[1]*Xnovo Technology ApS, Galoche Alle 15, 1st Floor, Køge, 4600, Denmark*, [2]*InnoCryst Ltd, Dock - Space City, 75 Exploration Drive, Leicester, LE4 5NU, U.K.*

5.18

Investigation of crystallites in CVD diamond films and their impact on stress distribution

R. Nourzat[1,2], P. De Boiry[2], O. Brinza[1], R. Issaoui[2], A. Tallaire[3], F. Bénédic[1], J. Achard[1]

[1]*Université Sorbonne Paris Nord, LSPM-CNRS, 99, av JB Clément, 93430 Villetaneuse, France*, [2]*HiQuTe Diamond, 20 Rue Barthelemy Danjou 92100 Boulogne Billancourt, France*, [3]*IRCP, 11 rue Pierre et Marie Curie 7523 Paris Cedex 05, France*

5.19

Molten salts for dislocation revelation

D. Zvi Nusimovici[1,2], F. Niyibizi[1], L. Valera[1], D. Chaussende[2], J. Bousquet[1]

[1]*DIAMFAB, 25 avenue des Martyrs, 38042 Grenoble, France*, [2]*Univ. Grenoble Alpes, CNRS, Grenoble INP, SIMaP, F-38000 Grenoble, France*

5.20

Evolution and morphological characteristics of etch pits on diamond single crystal

G. Ren[1], S. Xu[1], S. Hao[1], L. Chen[1], J. Liu[1], J. Wei[1], C. Li[1]

[1]*Institute of Advanced Materials and Technology, University of Science and Technology Beijing, Beijing, 100083, China*

5.21

Plasma-based Polishing of Polycrystalline Diamond

E. Thomas[1], A. Glukhovskoy[1], A. Buchta[1], M. Wurz[1], F. Dencker[1]

[1]*Institute of Micro Production Technology, Leibniz University Hannover, An der Universität 2, Garbsen, Germany*

5.22

Withdrawn

5.23

Microwave characterisation of single-crystal boron doped diamond

J. A. Cuenca[1], Y. Jiang[2], N. Athavan[2], G. Klemencic[1], S. Prawer[2], D. N. Jamieson[2], O. A. Williams[1]

[1]*School of Physics and Astronomy, Cardiff University, Cardiff CF24 3AA, Wales, UK*, [2]*School of Physics, University of Melbourne, Parkville VIC 3052, Australia*

5.24

Peculiarities of AC and DC conductance measurements of single-crystal diamond in a wide range of boron doping

A. Solomnikova[1], G. Savchenko[2], V. Zubkov[1], N. Averkiev[2]

[1]*Saint Petersburg Electrotechnical University "LETI", Prof. Popov Str. 5, Saint-Petersburg, 197022, Russia*, [2]*Ioffe Institute, Politekhnicheskaya Str. 26, St Petersburg 194021, Russia*

5.25

Photocurrent contrast enhancement with auxiliary illumination

M. Petrov[1], B. Carmans[1], J. Soucek[1], E. Bourgeois[1], A. Kuriakose[2], O. Jedrkiewicz[2], M. Nesladek[1]

[1]*IMO-IMOMEC, Wetenschapspark 1, 3590, Diepenbeek,* [2]*Istituto di Fotonica e Nanotecnologie (IFN)-CNR, Università dell'Insubria, Via Valleggio 11, 22100 Como (Italy)*

5.26

Exciton absorption in electronic grade CVD diamond from photocurrent spectroscopy

R. Vandebosch[1], Z. Remes[2], E. Bourgeois[1,3], M. Nesladek[1,3]

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5.27

Probing defects in diamond by modulated transient surface photovoltage spectroscopy under biaslight

S. Fengler[1], L. Grieger[1], N. Schüler[1], T. Petit[2], T. Dittrich[2]

[1]*Freiberg Instruments GmbH, Delfter Str. 6, D-09599 Freiberg, Germany*, [2]*Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, CE-NSLI, Schwarzschildstr. 8, D-12489 Berlin, Germany*

5.28

Photoluminescence observation of isotope pure 12C diamond film

H. Li[1], Y. Li[1], C. Li[1], V. Sedov[2], J. Wei[1]

[1]*Institute for Advanced materials and Technology, University of Science and Technology Beijing, 30 Xueyuan Road, Beijing 100083, China*, [2]*Prokhorov General Physics Institute of the Russian Academy of Sciences, 38 Vavilov Str., Moscow 119991, Russia*

5.29

Photoluminescence Study of Helium-Irradiated CVD Diamond: Formation and Suppression of Intermediary Defects

V. Jesus Trava Airoldi[1], E. José Corat[1], J. Vieira da Silva Neto[1]

[1]*COPDT, Instituto Nacional de Pesquisas Espaciais*

5.30

Theoretical investigation of helium related defects in diamond

Z. Sántha[1], A. Gali[1,2], G. Thiering[2]

[1]*Department of Atomic Physics, Budapest University of Technology and Economics, Budapest, Hungary*, [2]*HUN-REN Wigner Research Centre for Physics, PO Box 49, H-1525 Budapest, Hungary*

5.31

Temperature-dependent delayed blue phosphorescence in a high-purity CVD synthetic diamond

F. James[1], C. McGuinness[2], G. Klemencic[1], C. Hodges[1], S. Lynch[1]

[1]*School of Physics and Astronomy, Cardiff University, Queen's Buildings, The Parade, Cardiff CF24 3AA, U.K.*, [2]*De Beers Group, Belmont Road, Maidenhead, Berkshire SL6 6JW, U.K.*

5.32

Temperature-sensing Cathodoluminescence spectroscopy of highly Nitrogen-doped nanodiamonds for a large spatial resolution thermal probe

P. Sáenz de Santa María Modroño[1], G. Jacopin[1]

[1]*Institut Néel CNRS/UGA, 25 rue des Martyrs 38042 Grenoble cedex 9, France*

5.33

Polarized Raman spectroscopy of epitaxial heavily boron doped diamonds

M. Alam[1], A. Cammarata[2], M. Kaintz[2], M. Davydova[1,3], J. Pokorny[1], V. Mortet[1,4]

[1]*FZU - Institute of Physics of the Czech Academy of Sciences, Na Slovance 1999/2, 182 00 Praha 8, Czech Republic*, [2]*Department of Control Engineering, Faculty of Electrical Engineering, Czech Technical University in Prague, Technická 2, 16627 Prague 6, Czech Republic*, [3]*Fraunhofer Institute for Applied Solid State Physics IAF, Tullastrasse 72, 7910 Freiburg, Germany*, [4]*Faculty of Biomedical Engineering, Czech Technical University in Prague, Sitna sq. 3105, 272 01 Kladno, Czech Republic*

5.34

Investigating Autofluorescence in Optical Fibers

A. Bukschat[1], S. Johansson[1], D. Lönard[1], I. Cardoso Barbosa[1], J. Gutsche[1], A. Widera[1], A. Erlenbach[1]

[1]*Department of Physics and State Research Center OPTIMAS, University of Kaiserslautern-Landau, Erwin-Schrödinger-Str. 46, 67663 Kaiserslautern, Germany*

5.35

Comparison of Raman and Tip-Enhanced Raman Spectroscopies for Probing Surface Phenomena in Black Diamonds

E. Bolli[1], A. Bellucci[1], M. Mastellone[1,2], S. Orlando[2], A. Orsini[1], R. Salerno[1], A. Santagata[2], V. Valentini[1], D. M. Trucchi[1]

[1]*ISM-CNR, DiaTHEMA Laboratory, U.O.S. Montelibretti, Via Salaria km 29.300, 00015 Monterotondo, Italy*, [2]*ISM-CNR, FemtoLAB, U.O.S. Tito Scalo, Zona Industriale, 85050 Potenza, Italy*

5.36

Ohmic Contacts on Boron-Doped Diamond by FIB

J. Luis Cruces[1], J. Valendolf[1], J. Millan[1], G. Alba[1], F. Lloret[2], R. Rouzbahani[3], K. Haenen[3], D. Eon[4], D. Araujo[1]

[1]*Departament of Materials Science and Metallurgical Engineering and Inorganic Chemistry. University of Cádiz, 11510, Puerto real, Spain*, [2]*Departament of Applied of Physics. University of Cádiz, 11510, Puerto real, Spain*, [3]*Institute for Materials Research (IMO), Hasselt University, & IMOMEC, IMEC vzw, 3590 Diepenbeek, Belgium.*, [4]*Institut Néel, CNRS, Grenoble INP. University of Grenoble Alpes, 38000, Grenoble, France.*

5.37

Ohmic contacts on phosphorus-doped diamond through FIB damage and surface Ga+ implantation

G. Mesas Peña[1], F. Lloret[1,2], A. Freire de Rivas[1], J. Millán-Barba[2,3], G. Alba[1,2], M. Suzuki[3,4], D. Araujo[2,3]

[1]*Department of Applied Physics, University of Cádiz, 11510 Puerto Real, Spain*, [2]*IMEYMAT, University of Cádiz, 11510 Puerto Real,*, [3]*Department of Materials Science, University of Cádiz, 11510 Puerto Real, Spain*, [4]*Orbray Co., Ltd., 3-8-22 Shinden, Adachi-ku, Tokyo, 123-8511 Japan.*

5.38

Low-resistance ohmic contacts and carbide formation on Hydrogen-terminated Diamond

Q. Guo[1], I. Maini[1], D. Moran[1], A. Stacey[2]

[1]*University of Glasgow, U.K.*, [2]*RMIT University, Australia*

5.39

Leveraging High-Order-Modes Resonance to improve Frequency Stability of Diamond MEMS Resonators

W. Zhao[1], G. Chen[1], K. Gu[1], S. Koizumi[1], Y. Koide[1], M. Liao[1]
[1]*National Institute for Materials Science, Japan*

5.40

Enhancing Diamond Schottky Diode Performance with Field Plate Edge Termination

V. Maurya[1], J. Letellier[1]
[1]*DIAMFAB, 25 avenue des Martyrs,38042 Grenoble, France*

5.41

Schottky barrier diodes on heteroepitaxial diamond with higher blocking voltage >500V and specific on-resistance of 17 mΩcm2

A. Abdelrahman[1,2], J. Shiraga[1,2], T. Yoshitake[2], S. Ohmagari[1]
[1]*Sensing System Research Center, National Institute of Advanced Science and Technology (AIST), Japan*, [2]*Department of Advanced Energy Science and Engineering, Faculty of Engineering Sciences, Kyushu University, Japan*

5.42

Diamond vertical Schottky barrier diodes with high forward current density >10^4 A/cm^2

J. Shiraga[1,2], S. Mylo Valappil[1,2], T. Yoshitake[2], S. Ohmagari[1]
[1]*Sensing System Research Center, National Institute of Advanced Industrial Science and Technology (AIST), 807-1, Shuku-machi, Tosu, Saga 841-0052, Japan*, [2]*Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, 6-1 Kasuga-koen, Kasuga, Fukuoka, 816-8580, Japan*

5.43

Defect Analysis in Schottky Barrier Diodes: Correlating Multi-Technique Characterization with Electrical Properties

H. Ribeiro[1,2], M. Jacquemin[1], D. Zvi Nusimovici[1], L. Valera[1], G. Jacopin[2]
[1]*DIAMFAB, 25 avenue des martyrs, 38042 Grenoble, France*, [2]*Institut Néel CNRS, Univ. Grenoble Alpes, 38042, Grenoble, France*

5.44

Secondary ion mass spectrometry analysis of PIN and NIP structures grown on (113)-oriented diamond

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5.45

Vertical p-diamond Schottky diode with nanocarbon network wires

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5.46

Advancements in Monolithic scCVD Diamond High-Voltage Capacitors: Enhanced Capacitive Density and Breakdown Voltage for High-Power Converters

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5.47

Diamond capacitor for high voltage applications: operation and trap detection under illumination

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5.48

Investigating strain effects on a directly bonded diamond-on-insulator substrate

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Ultrafast valleytronics in diamond

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5.50

Monte Carlo Method on Hole Transport of Diamond

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Electrical conduction at the interface of single crystal α-MoO3/hydrogen-terminated diamond heterostructure

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Coupling X-Ray Beam Induced Current (XBIC), ToF-XBIC, and X-Ray Diffraction Imaging for the Characterization of Diamond Plates as Semiconductor-Based Detectors

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5.53

Laser Etching of Single Crystal Diamond for Fabrication of Thin-film Diamond Beta-Radiation Detectors

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5.54

Radiation resistance of diamond for high flux and high fluence

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5.55

Growth of thin electroconductive diamond electrodes, optical quality at patterned glasses

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5.56

Effects of boron doping in BDD on the electrochemical oxidation of PFOA: insights from ^{14}C labelling and by-product analysis

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5.57

Surface-engineered Boron-doped Carbon Nanowalls versus Boron-doped Diamond: High-sensitivity Electrochemical Detection of Agricultural Herbicides in Environmental Matrices

P. Jakobczyk[1], P. Rutecki[1], S. Sain[2], A. Dettlaff[1], M. Ficek[1], M. Sobaszek[1], S. Sinha Roy[2], R. Bogdanowicz[1]
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5.58

Electrochemistry Using Nanostructured Diamond Electrodes

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5.59

Quantitative Prediction of Service Life of Boron Doped Diamond Electrodes for Electro-Oxidation Applications

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Co-Doped Based Diamond Electrodes for Efficient Nitrate Reduction and Pollutant Degradation

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Upgraded to Oral 12.4

5.62

Nanocrystalline diamond films for in vitro electrophysiological sensing

M. Silva[1,2], A. C. Vairinhos[3,4], M. C. Maradiya[5], F. J. Oliveira[6], M. A. Neto[6], M. R.P. Correia[7], S. S. Braga[1], M. Liehr[5], J. C. Mendes[2]

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Electrochemistry Using Nanostructured Diamond Electrodes

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Diamond-based devices with engineered surface properties for photo-electrocatalytic applications

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Diamond composite materials for high-performance flexible aqueous batteries

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5.66

Electrochemical doping of potassium in hexagonal boron nitride

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Structural tailoring of polyaniline synthesized by acid-assisted polymerization at room temperature: insights into polaron dynamics and semiconductor applications for advanced energy storage

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5.68

Black Diamond Cathodes for Conversion of Concentrated Solar Energy

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Tailoring Silicon-Diamond Structures for Photon-Enhanced Thermionic Emission

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Chemical analysis of directly grown multilayer graphene on diamond, combining ex situ and in situ methods

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First-Principles Investigation of Hydrogen-Mediated Charge Transfer Mechanisms in Au-Diamond-Graphene Memristive Heterostructures

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Side-by-side Study of Differently Terminated Diamond Surfaces using Oxygen: Advantages and Challenges of Present Techniques

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First-Principles Study of Oxygen- and Hydrogen-Terminated (111) Diamond Surface for Quantum Sensing

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Peculiar near-colourless CVD diamond with natural-like growth structure

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5.75

Withdrawn

5.76

Withdrawn

5.77

Development of a novel ion beam analysis setup for in-situ optical characterization of color centers in diamond

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5.78

Electron Beam based Surface and Defect Engineering of Diamonds

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Generation of Quantum Emitters by Introducing Color Centers inside Diamond

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5.80

Investigation of Paramagnetic Impurities and Irradiation Effects in CVD Diamond

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Radiotracer photoluminescence of colour centers in diamond

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5.82

Wavelength Dependence of the Electrical and Optical Readout of Diamond NV Centers

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Charge state dynamics of single NV centers in HPHT-IIa diamond

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5.84

Surface transfer doping of diamond probed by nitrogen-vacancy centers

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Photoactivation of shallow implanted NV centers in diamond using continuous-wave laser illumination

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Isotopically Purified NV Diamonds for Enhanced Quantum Sensing

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Creation of NV centers and control of their location in very thin single- crystal diamond films

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Investigation of hydrostatic pressure effect on the negatively charged group-IV–vacancy defects in diamond

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Simulation on dislocation density dependence for ODMR properties of NV center

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High coherence times in NV-doped thin films for diamond-based quantum sensing

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5.91

Reviving NV centers in diamond via local surface modification using atomic force microscopy under laser illumination

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Precise Rabi measurements using photoelectric readout of NV centers in diamond

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Diamond (111) on wafer-scale: growth and NV-doping enhancement

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Topographic evolution by diamond CVD overgrowth - towards the perfect surface for shallow NVs

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5.95

Placement of NV-centers in diamond through CVD growth techniques

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Enhancing nitrogen-vacancy center formation through sulphur co-doping and overgrowth

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Appearance of spectral dip in the cathodoluminescence spectrum of negatively charged nitrogen-vacancy centers in diamonds

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Microwave-free protocol with nitrogen-vacancy centers in diamond for quantum sensing

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Weak orthogonal magnetic field regime in Nitrogen-Vacancy color centers in diamond for quantum sensing and computing

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Quantum properties of NV centers in diamond: towards optimized industrial protocols

L. Desvignes[1], O. Brinza[2], A. Tallaire[2,3], R. Nourzat[1,2], F. Bénédic[2], J. Achard[2], F. Alzetto[1], R. Issaoui[1]

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5.101

DC magnetometry sensitivity enhancement using optimal control on ensembles of NV centers in diamond

A. Skljarow[1], I. Jauch[1,2], F. Dolde[1], T. Strohm[1], T. Fuchs[1], F. Jelezko[2]

[1]*Corporate Sector Research and Advance Engineering, Robert Bosch GmbH, Robert-Bosch-Campus 1, Renningen 71272, Germany*, [2]*Institute for Quantum Optics and Center for Integrated Quantum Science and Technology (IQST), Ulm University, Albert-Einstein-Allee 11, Ulm 89081, Germany*

5.102

Limits of absolute vector magnetometry with NV centers in diamond

D. Lönard[1], I. Cardoso Barbosa[1], S. Johansson[1], J. Gutsche[1], A. Widera[1]

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5.103

Detection of Statistical RF Signals with NV centers at 2.7 T

R. Maier[1,2], C.-I. Ho[1], V. Vorobyov[1], J. Wrachtrup[1,2]

[1]*3rd Institute of Physics, University of Stuttgart, Allmandring 13, 70569 Stuttgart, Germany*, [2]*Max Planck Institute for Solid State Research, Heisenbergstr. 1, 70569 Stuttgart, Germany*

5.104

Developing of broad-band MW excitation structure for the photoelectrical detection of NV quantum response

M. Novak[1], O. Fiser[1], J. Redr[1], M. Brunat[1], J. Soucek[1,2], M. Nesladek[2], J. Vrba[1], D. Vrba[1]

[1]*Department of Biomedical Technology, Faculty of Biomedical Engineering, Czech Technical University in Prague, Sitna square 3105, 272 01 Kladno, Czechia*, [2]*Institute for Materials Research (IMO) & Division IMOMEC, Hasselt University, Wetenschapspark 1, 3590 Diepenbeek, Belgium*

5.105

Improving ODMR Contrast via Hybridization of Nitrogen-Vacancy Centers with External Emitters

M. Espinosa Edo[1,2], X. Vidal[1]

[1]*TECNALIA, Basque Research and Technology Alliance (BRTA), Derio, 48160, Spain*, [2]*Department of Physical Chemistry, University of the Basque Country UPV/EHU, Apartado 644, 48940 Leioa, Spain*

5.106

Towards high-sensitivity magnetometry with nitrogen vacancy centers in diamond using the singlet infrared absorption

A. Tayefeh Younesi[1], M. Omar[2,3], A. Wickenbrock[2,3], D. Budker[2,3,4], R. Ulbricht[1]

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5.107

Emission from NV color centers in single diamond nanopillars

A. Penkała[1], M. Mendoza Delgado[2], C. Popov[2], P. Podemski[1]

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5.108

Towards fabrication of shallow NV centers with long coherence times

J. Fernanda da Silva Barbosa[1], A. Kaiser[1], A. Beatrice Sergi[1], M. Mohr[1]

[1]*German Aerospace Center, Institute of Quantum Technologies, Ulm, Germany*

5.109

Fabrication of implantation masks for deterministic formation of NV centers and their application

L. Freudenstein[1], J. Heupel[1], D. Reinhardt[2], R. Wunderlich[2], C. Popov[1]

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5.110

Upgraded to Oral 4.3

5.111

Solid diamond immersion lens for NV quantum sensor sensitivity enhancement

X. Chen[1], R. Allert[1], N. Neuling[1], K. Briegel[1], V. Cimalla[2], P. Knittel[2], D. Bucher[1]

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5.112

Development of a multi-channel highly-sensitive diamond quantum sensor

A. Yoshimura[1], A. Kanamoto[1], N. Sekiguchi[1], C. Shinei[2,3], M. Miyakawa[2], T. Taniguchi[2], T. Teraji[2], H. Abe[4], S. Onoda[4], T. Ohshima[4], T. Iwasaki[1], M. Hatano[1]

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5.113

Probing the fluctuating magnetic field of Fe-triazole spin-crossover thin-layers with nitrogen-vacancy centers in diamond

A. Erlenbach[1], I. Cardoso Barbosa[1], T. Hochdörffer[2], J. A. Wolny[2], D. Lönard[1], S. Johansson[1], J. Gutsche[1], V. Schünemann[2], A. Widera[1]

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5.114

Growth and optimization of SiV enhanced nanocrystalline diamond films: from synthesis to nanoparticle fabrication

Š. Potocký[1], T. Meľová[1,2], Z. Doležal[1,2], K. Aubrechtová Dragounová[1,2], D. Sharma[1], A. Kromka[1]

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5.115

Spectrally resolved work function and photovoltage of nanocrystalline diamond films with SiV centers

J. Kuliček[1], A. Atassi[1], Š. Potocký[1], Š. Stehlík[2], A. Kromka[2], B. Rezek[1]

[1]*Faculty of Electrical Engineering, Czech Technical University in Prague, Technická 2, 16627 Prague, Czechia*, [2]*Institute of Physics, Czech Academy of Sciences, Cukrovarnická 10, 16200 Prague, Czechia*

5.116

Toward high-density negatively-charged silicon vacancy centers in monocrystalline diamond

I. Bydžovská[1,2], T. Khan[1], O. Babčenko[1], Š. Potocký[1], A. Kromka[1], L. Ondič[1]

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5.117

Numerical Simulation and Performance of a Patch Antenna for Magnetic Field Control in Diamond-Based Quantum Sensing

O. Fiser[1], J. Redr[1], M. Brunar[1], M. Novak[1], J. Soucek[1,2], M. Nesladek[1,2], J. Vrba[1], D. Vrba[1]

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5.118

Comparative Study of DFT and GW Approximation on the Germanium-Vacancy Center

E. Aylin Melan[1,2,3], T. G. I. van Wijk[1,2], L. Henrard[3], D. E. P. Vanpoucke[1,2]

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5.119

Calculating the vibrational spectrum of the GeV defect in Diamond.

T. G.I. van Wijk[1,2], D. E.P. Vanpoucke[1,2]

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5.120

Growth and Photoluminescence of Germanium-Vacancy Centers in Nanodiamonds: Impact of CVD Process Conditions

R. Mary Joy[1,2], P. Pobedinskas[1,2], H. Jeuris[1,2], J. D'Haen[1,2], K. Haenen[1,2]

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5.121

Creation of Germanium Vacancy Centers in Diamond by Maskless Focused Ion Beam Implantation

S. Dietel[1], E. Scattolo[2], L. Kazak[1], J. Fuhrmann[1], E. Missale[2], A. Cian[2], R. Dell´Anna[2], D. Giubertoni[2], F. Jelezko[1]

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5.122

Towards deterministic fabrication of tin-vacancy centers in diamond photonic structures

J. Fait[1], S. Nuchikkat[1], P. Fuchs[1], K. Mark[1], N. Klingner[2], C. Pauly[3], G. Astakhov[2], C. Becher[1]

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5.123

Efficient spin control of tin-vacancy color centers in diamond for photonic quantum memories

J. Wollenberg[1], K. Oshimi[1], C. Gurr[1], T. Schröder[1,2]

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5.124

Withdrawn

5.125

Fast Experimental Characterization of Nuclear-Spin Ensembles via Signal-to-Image AI Model

B. Varona Uriarte[1,2], F. Belliardo[3], C. Bonato[3], E. Garrote[1], J. Casanova[2,4]

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5.126

Using nanostructures in single crystal diamond to improve the sensitivity of NV- center-based magnetometers

A. Guilbault[1], D. Lepage[1], S. Ecoffey[1], D. Drouin[1]
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5.127

Technology transfer of nanofabrication processes for quantum magnetosensitive sensors.

H. D. Tremblay[1], D. Lepage[1], D. Drouin[1]
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5.128

Nanofabrication methods for quantum photonic devices based on color centers in diamond

T. Pregnolato[1,2], M. E. Stucki[1,2], D. Bermeo Alvaro[1,2], D. Ahiboz[1,2], T. Schröder[1,2]
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5.129

Photonic integration of diamond materials for quantum sensing applications with spin ensembles

R. Chembra Vasudevan[1], P. Huillery[1], Y. Dumeige[1]
[1]*Univ Rennes, INSA Rennes, Institut FOTON-UMR 6082, F-35000, Rennes, France*

5.130

Diamond surface preparation for implantation of color centers and fabrication of 2D and 1D photonic cavities

P. Graßhoff[1], J. Heupel[1], J. Peter Reithmaier[1], C. Popov[1]
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5.131

Tailoring optical and electronic properties of diamond surface by laser-induced processing

A. Bellucci[1], E. Bolli[1], M. Mastellone[1,2], S. Orlando[2], A. Orsini[1], R. Salerno[3], A. Santagata[2], V. Valentini[1], D. M. Trucchi[1]
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5.132

COMSOL Multiphysics to simulate light interactions with defects in diamond nanostructures

M. Lafontaine[1], D. Drouin[1], D. Lepage[1]
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5.133

Fabrication and Characterization of Micrometer-thin Diamond Platelets for Open Microcavities

Z. Sadre Momtaz[1], Y. Herrmann[2,3], J. M. Brevoord[2,3], J. Fischer[2,3], S. Scheijen[2,3], C. Sauerzapf[2,3], Y. van der Graaf[2,3], C. F. J. Wolfs[2,3], R. Méjard[2,3], N. de Jong[1], R. Hanson[2,3]
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5.134

Structural changes in CVD nanocrystalline diamond films irradiated by femtosecond laser with different wavelengths

A. Soltaniandehkordi[1,2], L. Himics[1], M. Veres[1]
[1]*Institue for Solid State Physics and Optics, HUN-REN Wigner Research Centre for Physics, Konkoly-Thege M. str. 29-33, H1121 Budapest, Hungary*, [2]*University of Szeged, Dugonics tér 13, 6720, Szeged, Hungary*

5.135

Fabrication of conductive graphitic layers in diamond by multi-species focused ion beam

E. Scattolo[1], E. Missale[1], A. Cian[1], G. Speranza[1], R. Dell'Anna[1], D. Giubertoni[1]
[1]*Center for Sensors & Devices, Fondazione Bruno Kessler, Via Sommarive 18, I-38123 Trento, Italy*

5.136

Parallelised laser fabrication of electrically conductive graphitic columnar arrays through diamond substrates

M. Kruger[1], M. Booth[1]
[1]*Department of Engineering Science, University of Oxford, UK*

5.137

Development of 3D-printable Nanodiamond-Polycaprolactone composites as antibacterial material against Escherichia coli

C.-Y. Chang[1], C.-L. Cheng[2]
[1]*Department of Physics, National Dong Hwa University, 97401, Hualien, Taiwan*, [2]*Department of Physics, National Dong Hwa University, 97401, Hualien, Taiwan*

5.138

Exploring Non-Covalent and Covalent Protein Interactions on Ultrananocrystalline Diamond Films with Diverse Surface Terminations and Functionalizations

R. Ghasemitabesh[1], D. Merker[1], D. Bertinetti[2], F. W. Herberg[2], C. Popov[1]
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5.139

Diamond coated silicon AFM tips – a back-end approach tested in an active cantilever system

M. Bähr[1], F.-M. Deckert[1], A. Taylor[2], I. Käpplinger[1], A. Suryadi Tan[3], C. Möller[1], P. Pobedinskas[4,5], I. Rangelow[6], T. Ortlepp[1]
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5.140

Impact of nanodiamond surface chemistry on quantum coherence

T. Agrawal[1], Q. Lu[1], K. Wu[1], Y. Wu[1], T. Weil[1]
[1]*Max Planck Institute for Polymer Research, Mainz, Germany*

5.141

Revealing superradiant emission in the single-to-bulk transition of quantum emitters in nanodiamond agglomerates

J. Gutsche[1], A. Zand[1], M. Bültel[1], A. Widera[1]
[1]*Rheinlandpfälzische Technische Universität Kaiserslautern-Landau and Landesforschungszentrum OPTIMAS, 67663 Kaiserslautern, Germany*

5.142

Spatially resolved in operando temperature sensing in electrochemical devices by diamond quantum sensors

Z. Li[1], H. Wang[2], Y. Wang[2], R. Liu[1], Q. Li[1]
[1]*Department of Physics, The Chinese University of Hong Kong*, [2]*Department of Chemistry, The Chinese University of Hong Kong*

5.143

Biocompatible Nanoscale Thermometry Using NV centres in Nanodiamonds for Biological Applications

A. Shmakova[1], S. Zaghbouni[2], M. Petrov[1], K. Kvakova[3], V. Chadimova[3], J. Neburkova[3], A. Ermakova[1], P. Cigler[3], B. Brone[2], M. Nesladek[1]
[1]*IMO-IMOMEC, Hasselt University, Wetenschapspark 1, 3590 Diepenbeek, Belgium*, [2]*BIOMED, Hasselt University, Agoralaan gebouw C, 3590 Diepenbeek, Belgium*, [3]*Institute of Organic Chemistry and Biochemistry of the CAS, Flemingovo nam. 2, 160 00 Prague, Czechia*

5.144

Quantum sensing of microRNAs with nitrogen-vacancy centers in diamond

M. M. Greve[1], L. Bellucci[2,3], G. Sacco[4], V. Håkonsen[5], V. Tozzini[2,3], R. Nifosì[2,3]
[1]*Department of Physics and Technology, University of Bergen, Allegaten 55, Bergen, Norway*, [2]*Istituto Nanoscienze - CNR, Piazza San Silvestro 12, Pisa 56127, Italy*, [3]*Lab NEST Scuola Normale Superiore, Piazza San Silvestro 12, Pisa 56127, Italy*, [4]*Scuola Internazionale Superiore di Studi Avanzati (SISSA), Via Bonomea 265, Trieste I-34136, Italy*, [5]*NTNU NanoLab, Norwegian University of Science and Technology, Trondheim 7491, Norway*

5.145

Nanodiamonds enlighten subcellular mechanisms of temperature-controlled neuronal growth

S. Zaghbouni[1], A. Shmakova[2], K. Kvaková[3], P. Cigler[3], C. Faes[4], M. Nesladek[2], B. Brône[1]
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5.146
Quantum sensing for free radical generation in living cells and organisms
S. Fan[1], R. Schirhagl[1]
[1]*Department of Biomaterials & Biomedical Technology (BBT), University Medical Centre Groningen (UMCG), Antonius Deusinglaan 1, 9713 AV, Groningen, The Netherlands*

5.147
Enhanced cancer therapy with Nanodiamond-drug complex and observing P-glycoprotein interactions in lung cancer and normal cells
C.-H. Tsou[1], C.-Y. Huang[2], C.-L. Cheng[3]
[1]*Department of Physics, National Dong Hwa University, 97401, Hualien, Taiwan*, [2]*Department of Physics, National Dong Hwa University, 97401, Hualien, Taiwan*, [3]*Department of Physics, National Dong Hwa University, 97401, Hualien, Taiwan*

5.148
Nanodiamond and berberine composite to inhibit melanin production and enhanced anti-migratory effects in Melanoma (B16F10) cell line in vitro
Z.-Y. Peng[1], Y.-C. Yeh[1], C.-L. Cheng[1]
[1]*Department of Physics, National Dong Haw University 97401 Hualien, Taiwan*

5.149
Nanodiamond modified positively charged filters
S. Mandal[1], O. A. Williams[1]
[1]*School of Physics and Astronomy, Cardiff University, Cardiff, CF24 3AA, UK*

5.150
Nanodiamond functionalization for precise sensing of protein dynamics
A. Sadzak[1], M. Boersch[2], A. Krueger[1]
[1]*Institute of Organic Chemistry, University of Stuttgart, Pfaffenwaldring 55, Stuttgart, Germany*, [2]*AG Mikroskopie-Methodik, Universitätklinikum Jena, Am Klinikum 1, Jena, Germany*

5.151
Effect of Detonation Nanodiamonds on Plasmonic Resonance of Silver Nanoparticles in Colloidal Mixtures
V. Hrnčířová[1], M. Šlapal Bařinková[1], B. Rezek[1]
[1]*Faculty of Electrical Engineering, Czech Technical University in Prague, Technická 2, 166 27 Prague, Czechia*

5.152
Fluorescent Nanodiamonds as Biosensors in Bioreactors
H. Jain[1], P. Martucci[1], A. Bošković[1], C. Reyes-San-Martin[1], F. P. Perona Martinez[1], A. Morita[1], R. Schirhagl[1]
[1]*Department of Biomaterials & Biomedical Technology (BBT), University Medical Centre Groningen (UMCG), Antonius Deusinglaan 1, 9713 AV, Groningen, The Netherlands*

5.153
Advancing Quantum-Grade Nanodiamonds through Amination and Azidation
F. Steiner[1,2], E. Fialová[1], J. Čopák[1,2], M. Gulka[1], P. Cígler[1]
[1]*Institute of Organic Chemistry and Biochemistry of the Czech Academy of Sciences, Flemingovo namesti 542/2, 160 00 Prague 6, Czech Republic*, [2]*Department of Physical and Macromolecular Chemistry, Faculty of Science, Charles University, Hlavova 8, 128 00 Prague 2, Czech Republic*

5.154
Diamond nanomaterials as highly reductive photocatalysts in organic synthesis
R. Belen Rodriguez[1], T. Karl[2], B. König[2], A. Krueger[1]
[1]*Institute of Organic Chemistry, University of Stuttgart, Pfaffenwaldring 55, Stuttgart, Germany*, [2]*Faculty of Chemistry and Pharmacy, University of Regensburg, Universitätsstraße 31, Regensburg, Germany*

5.155
Gas-phase formation of diamond in chemical vapor deposition: fiction or reality?
T. Nikhar[1], S. V. Baryshev[1]
[1]*Electrical and Computer Engineering, Michigan State University, 428 S. Shaw Ln., East Lansing, USA*

19:40 Closing Day 1 "Hasselt Diamond Workshop 2025 – SBDD XXIX".

Thursday, March 20, 2025

Session 6
Diamond for electronics
Chair: Ken Haenen, Hasselt University & IMEC vzw, Belgium

09:00
6.1 (Invited)
Smart Cut™ Transfer of Wide Bandgap Materials: The Case of Diamond
J. Widiez[1]
[1]*Commissariat à l'énergie atomique et aux énergies alternatives, France*

09:30
6.2
Lateral deep depletion diamond MOSFET breakdown voltage improvement up to 950 V
D. Michez[1,2], J. Letellier[1], R. Makhoul[2], M. Couret[2], J. Pernot[3], N. Rouger[2]
[1]*DIAMFAB, 25 avenue des Martyrs,38042 Grenoble, France*, [2]*LAPLACE, Univ. Toulouse III Paul Sabatier, 2 rue Charles Camichel, 31071 Toulouse, France*, [3]*Institut Néel, Univ. Grenoble Alpes, CNRS, Grenoble INP, 38000 Grenoble, France*

09:50
6.3
Enabling Scalable Fabrication of High-Mobility Hydrogen-Terminated Diamond FETs
M. Monish[1], K. Hino[1,2], Y. Sasama[1], M. Urakami[3], T. Ota[3], N. Mitsunaga[3], H. Sakai[3], K. Sakamoto[1], K. Takakura[3], Y. Takahide[1,2]
[1]*National Institute for Materials Science, Tsukuba 305-0044, Japan*, [2]*University of Tsukuba, Tsukuba 305-8571, Japan*, [3]*National Institute of Technology, Kumamoto College, 2659-2, Suya, Koshi-shi, Kumamoto 861-1102, Japan*

10:10
6.4
Study of Graphite/diamond Schottky contact for the electrical readout of an NV ensemble
X. Phuc Le[1], L. Mayer[1], S. Magaletti[1], M. Schmidt[2], J.-F. Roch[2], T. Debuisschert[1]
[1]*Thales Research and Technology, 1 Avenue Augustin Fresnel, 91767 Palaiseau Cedex, France.*, [2]*Université Paris-Saclay, CNRS, ENS Paris-Saclay, CentraleSupelec, LuMIn, 91190 Gif-sur-Yvette, France*

10:30 Coffee Break (Grand Banquet Hall)

Session 7
Controlling Diamond Properties at the Nanoscale
Chair: Chia-Liang Cheng, National Dong Hwa University, Taiwan

11:10
7.1 (Invited)
Nanodiamond properties tuning for radiotherapy application
F. Picollo[1]
[1]*Physics Department, University of Torino, Italy*

11:40
7.2
Diamond nanosystems for delivery of siRNA
P. Cigler[1]
[1]*Institute of Organic Chemistry and Biochemistry of the Czech Academy of Science, Flemingovo namesti 542/2, 160 00 Prague 6, Czech Republic*

12:00
7.3
Controlling the interaction in biological environments: Dipeptides as surface modulators for nanodiamond
E. Mayerhoefer[1], A. Jerlitschka[1], H. Parajuli[2], M.-R. Cimpan[3], H. Nitin Dongre[2], D. Elena Costea[2], A. Krueger[1]
[1]*Institute of Organic Chemistry, University of Stuttgart, Pfaffenwaldring 55, Stuttgart, Germany*, [2]*Department of Clinical Medicine, University of Bergen, Jonas Lies vei 87, Bergen, Norway*, [3]*Department of Clinical Dentistry, University of Bergen, Årstadveien 19, Bergen, Norway*

12:20
7.4
Laser sub-monolayer manipulation of diamond surface chemistry
M. Moshkani[1], J. Downes[1], R. Mildren[1]
[1]*Centre for Quantum Engineering, Macquarie University, Sydney, NSW, Australia*

12:40 Lunch (Grand Banquet Hall) + Joint Committees Meeting (Fluistertuin)

Session 8
Diamond and Electrochemistry
Chair: Robert Bogdanowicz, Gdańsk University of Technology, Poland

14:00
8.1 (Invited)
Electrochemical CO2 reduction by boron-doped diamond electrodes
Y. Einaga[1]
[1]*Department of Chemistry, Keio University, 3-14-1 Hiyoshi, Yokohama 223-8522, Japan*

14:30
8.2
Electrochemical charge transfer effects of detonation nanodiamonds in cortisol immunosensor on metal electrodes
D. Vítek[1], C. Esmaeili[1], M. Šlapal Bařinková[1], B. Rezek[1]
[1]*Faculty of Electrical Engineering, Czech Technical University in Prague, Technická 2, Prague, Czechia*

14:50
8.3
Diamond Cloth for high-performance flexible supercapacitors
C. Li[1,2], X. Jiang[1], N. Yang[2,3]
[1]*Institute of Materials Engineering, University of Siegen, Siegen 57076, Germany*, [2]*Department of Chemistry, Hasselt University, 3590 Diepenbeek, Belgium*, [3]*IMO-IMOMEC, Hasselt University, 3590 Diepenbeek, Belgium*

15:10
8.4
Development of an Atomic Layer Etching process dedicated to diamond device technology
M. Régnier[1,2,3], A. Traoré[4], M. Bonvalot[3,5], E. Gheeraert[1,2,3]
[1]*Univ. Grenoble Alpes, CNRS, Grenoble INP, Institut Néel, 38000 Grenoble, France*, [2]*Institute of Applied Physics, University of Tsukuba, Japan*, [3]*Japanese-French Laboratory for Semiconductor Physics and Technology J-FAST, CNRS, Univ. Grenoble Alpes, University of Tsukuba, Japan*, [4]*LSPM, CNRS, Université Sorbonne Paris Nord, 93460 Villetaneuse, France*, [5]*Univ. Grenoble Alpes, CNRS, Grenoble INP, LTM, 38000 Grenoble, France*

Session 9
Posters II & Coffee Break
Chairs: Julien Barjon, Université de Versailles Saint-Quentin-en-Yvelines, France; Anna Ermakova, Hasselt University & BIRA-IASB, Belgium; Paul W. May, University of Bristol, U.K.; Joana Catarina Mendes, Instituto de Telecomunicações, Portugal

15:30 – 17:00 (Grand & Small Banquet Hall)

For a detailed list of posters, see Session 5.

Session 10
Diamond-based Magnetometry
Chair: Nicole Fabbri, CNR-Istituto Nazionale di Ottica (INO) & European Laboratory for Non-Linear Spectroscopy (LENS), Italy

17:00
10.1
Realizing quantum sensing with NV centers at high magnetic fields
R. Maier[1,2], V. Vorobyov[1], J. Isoya[3], J. Wrachtrup[1,2]
[1]*3rd Institute of Physics, IQST and Centre for Applied Quantum Technologies, University of Stuttgart, 70569 Stuttgart, Germany*, [2]*Max-Planck Institute for Solid State Research, 70569 Stuttgart, Germany*, [3]*Faculty of Pure and Applied Sciences, University of Tsukuba, Tsukuba 305-8573, Japan*

17:20
10.2
A new high-contrast NV magnetometry approach based on cavity-enhanced absorption in the visible to near-infrared range
F. Schall[1], F. A. Hahl[1], L. Lindner[1], J. J. Schindler[1], Y. Rottstaedt[1], X. Vidal[1,2], T. Luo[1], A. M. Zaitsev[3], T. Ohshima[4,5], J. Jeske[1], R. Quay[1]
[1]*Fraunhofer Institute for Applied Solid State Physics IAF, Tullastraße 72, 79108 Freiburg, Germany*, [2]*TECNALIA, Basque Research and Technology Alliance (BRTA), Astondo Bidea 700, 48160 Derio, Spain*, [3]*College of Staten Island (CUNY), 2800 Victory Blvd., Staten Island, NY 10312, USA*, [4]*National Institutes for Quantum Science and Technology (QST), 1233 Watanuki, Takasaki, Gunma 370-1292, Japan*, [5]*Department of Materials Science, Tohoku University, Aoba, Senda, Miyagi, 980-8579, Japan*

17:40
10.3
Evaluation of a Diamond Quantum Magnetometer for Biomagnetic Sensing Using a Phantom
N. Sekiguchi[1], Y. Kainuma[1], M. Fushimi[2], C. Shinei[3,4], M. Miyakawa[5], T. Taniguchi[5], T. Teraji[3], H. Abe[6], S. Onoda[6], T. Ohshima[6,7], M. Hatano[1], M. Sekino[2], T. Iwasaki[1]
[1]*Department of Electrical and Electronic Engineering, Institute of Science Tokyo, Meguro, Tokyo 152-8550, Japan*, [2]*Department of Bioengineering, The University of Tokyo, Bunkyo, Tokyo 113-8656, Japan*, [3]*Research Center for Electronic and Optical Materials, National Institute for Materials Science, Tsukuba, Ibaraki 305-0044, Japan*, [4]*Department of Applied Physics, University of Tsukuba, Tsukuba, Ibaraki 305-8571, Japan*, [5]*Research Center for Materials Nanoarchitectonics, National Institute for Materials Science, Tsukuba, Ibaraki 305-0044, Japan*, [6]*Takasaki Institute for Advanced Quantum Science, National Institutes for Quantum Science and Technology, Takasaki, Gunma 370-1292, Japan*, [7]*Department of Materials Science, Tohoku University, Sendai, Miyagi 980-8579, Japan*

18:00 **Closing Day 2 "Hasselt Diamond Workshop 2025 – SBDD XXIX".**

20:00 **Conference Dinner at the *Ravel* & *De Boulevard* of the *Holiday Inn*.**

Friday, March 21, 2025

Session 11
Role of Diamond in Thermal Management
Chair: Julien Pernot, CNRS/Université Grenoble Alpes-Institut Néel, France

09:30
11.1 (Invited)
Is diamond electronics' best friend?
J. C. Mendes[1]
[1]*Instituto de Telecomunicações, Universidade de Aveiro, Portugal*

10:00
11.2
High sensivity NV Temperature Sensor Based on Double Quantum Resonance
R. Tavakoli[1], M. Gijbels[1], M. Nesladek[1]
[1]*Institute for Materials Research University Hasselt, & Imomec division, imec vzw,Weteschapspark 1, B 3591 Hasselt*

10:20
11.3
Unveiling charge transport in a diamond electronic device with light, photoelectric detection and quantum sensing
A. Wood[1], R. M. Goldblatt[1], D. J. McCloskey[1], N. Dontschuk[1], A. M. Martin[1]
[1]*School of Physics, The University of Melbourne, Parkville, Victoria, Australia*

10:40 **Coffee Break (Grand Banquet Hall)**

Session 12
Diamond for Biotechnology
Chair: Petr Cígler, CAS-Institute of Organic Chemistry and Biochemistry, Czech Republic

11:10
12.1
Precision Engineering of Immunocellular States via Nanodiamond Composite
K. Wu[1], Q. Lu[1], Y. Ren[1], K. Ebadi Jalal[2], T. Rebecca Bohn[2], Y. Wu[1], T. Weil[1]
[1]*Max Planck Institute for Polymer Research, Ackermannweg 10, 55128 Mainz, Germany*, [2]*Institute of Immunology, University Medical Center Mainz, Langenbeckstraße 1, 55131 Mainz, Germany*

11:30
12.2
Bridging Diamond and Cyanobacteria: the Role of Polydopamine in Photocurrent Generation
N. Colson[1,2,3], A. Braun[1], P. Pobedinskas[2,3], P. Janssen[4], K. Haenen[2,3]
[1]*Empa. Swiss Federal Laboratories for Materials Science and Technology, Laboratory for High Performance Ceramics, Ueberlandstrasse 129, 8600 Dübendorf, Switzerland*, [2]*Institute for Materials Research (IMO), Hasselt University, Wetenschapspark 1, 3590 Diepenbeek, Belgium*, [3]*IMOMEC, IMEC vzw, Wetenschapspark 1, 3590 Diepenbeek, Belgium*, [4]*Institute for Nuclear Medical Applications, Belgian Nuclear Research Centre, Boeretang 200, 2400 Mol, Belgium*

11:50
12.3
Comparing the drug efficacy of nanodiamond facilitated drug delivery in co-culture of cancer and non-cancer cells
C.-C. Chang[1], C.-H. Tsou[1], Y.-C. Lin[1]
[1]*Department of Physics, National Dong Hwa University, Hualien, 97401, Taiwan*

12:10
12.4
Detection of nitrosamines for unitary tract infection diagnosis on boron-doped diamond electrodes
S. Stewart[1], C. Janiaud[2], G. Chatalic[2], G. Lemetais[2], E. Scorsone[1]
[1]*Université Paris-Saclay, CEA, List, F-91120 Palaiseau, France*, [2]*Usense, 64 avenue Pierre Grenier, 92012 Boulogne-Billancourt, France*

12:30 Lunch (Grand Banquet Hall)

Session 13
Defect Centres in Diamond
Chair: Miloš Nesládek, Hasselt University & IMEC vzw, Belgium

13:40
13.1
Temperature resolved spectroscopy of photoionization from the 1E singlet state in the nitrogen vacancy center in diamond
K. V. Ung[1,2,3], R. L. Walsworth[1,2,3,4], S. M. Blakley[4,5,6]
[1]*Department of Physics, University of Maryland, College Park, MD, USA*, [2]*Quantum Technology Center, University of Maryland, College Park, MD, USA*, [3]*Joint Quantum Institute, University of Maryland, College Park, MD, USA*, [4]*The Institute for Research in Electronics and Applied Physics, University of Maryland, College Park, MD, USA*, [5]*DEVCOM Army Research Lab, Adelphi, MD USA*, [6]*National Institute of Standards and Technology, Gaithersburg, MD, USA*

14:00
13.2
Photo-excitation Dynamics of Carbon Vacancies in Diamond
M. Tuan Luu[1], A. Tayefeh Younesi[1], Q. Khai Dao[1], G. Thiering[2], C. Linderälv[3], A. Zaitsev[4], R. Ulbricht[1]
[1]*Max-Planck-Institut für Polymerforschung, Ackermannweg 10, 55128 Mainz, Germany*, [2]*Wigner Research Centre for Physics, Hungarian Academy of Sciences, PO Box 49, Budapest 1525, Hungary*, [3]*University of Oslo, Department of Physics, Centre for Material Science and Nanotechnology, P.O. Box 1048, Blindern, Oslo N-0316, Norway*, [4]*College of Staten Island/CUNY, 2800 Victory Blvd., Staten Island, NY 10312, USA*

14:20
13.3
Laser Activation of Single Group-IV Colour Centres in Diamond
P. Salter[1], X. Cheng[2], A. Thurn[3], G. Chen[2], G. Jones[2], M. Coke[4], M. Adshead[4,5], C. Michaels[3], O. Balci[6], A. Ferrari[6], M. Atature[3], R. Curry[4,5], J. Smith[2], D. Gangloff[3]
[1]*Department of Engineering Science, University of Oxford, Parks Road, Oxford OX1 3PJ, UK*, [2]*Department of Materials, University of Oxford, Parks Road, Oxford OX1 3PH, UK*, [3]*Cavendish Laboratory, University of Cambridge, J. J. Thomson Avenue, Cambridge CB3 0HE, UK*, [4]*Photon Science Institute, University of Manchester, Manchester M13 9PL, UK*, [5]*Department of Electrical Engineering, University of Manchester, Manchester M13 9PL, UK*, [6]*Department of Engineering, University of Cambridge, Trumpington Street, Cambridge CB2 1PZ, UK*

14:40
13.4
Implanted GeV centers in different doping types of diamond
U. Wahl[1], J. Guilherme Correia[1], B. Biesmans[2], K. Danilov[2], A. Lamelas[3], V. Amaral[3], E. David-Bosne[4], S. Malven Tunhuma[2], R. Rouzbahani[5], P. Pobedinskas[5], K. Haenen[5], A. Vantomme[2], L. Pereira[2]
[1]*Centro de Ciências e Tecnologias Nucleares (C2TN), Departamento de Engenharia e Ciências Nucleares (DECN), Instituto Superior Técnico, Universidade de Lisboa, 2695-066 Bobadela LRS, Portugal*, [2]*KU Leuven, Quantum Solid-State Physics, 3001 Leuven, Belgium*, [3]*CICECO- Instituto de Materiais de Aveiro, Universidade de Aveiro, 3810-193 Aveiro, Portugal*, [4]*Institute of Experimental and Applied Physics, Czech Technical University in Prague, Czech Republic*, [5]*Institute for Materials Research (IMO), Hasselt University, and IMOMEC, IMEC vzw, 3590 Diepenbeek, Belgium*

15:00
13.5
Sulfur in diamond and its effect on the creation of nitrogen-vacancy defect from ab initio simulation
N. Ghafari Cherati[1,2], A. Pershin[1], A. Gali[1,2,3]
[1]*HUN-REN Wigner Research Centre for Physics, P.O. Box 49, H-1525 Budapest, Hungary*, [2]*Department of Atomic Physics, Institute of Physics, Budapest University of Technology and Economics, Műegyetem rakpart 3., H-1111 Budapest, Hungary*, [3]*MTA-WFK Lendület "Momentum" Semiconductor Nanostructures Research Group*

15:20 **Closing "Hasselt Diamond Workshop 2025 – SBDD XXIX".**

Workshop sponsored by Konfidi, Qnami, Seki Diamond Systems, HiQuTe Diamond, MUEGGE, Diatope, STR, Orbray, DIAMFAB, and Hasselt University via the Institute for Materials Research (IMO-IMOMEC).

HASSELT DIAMOND WORKSHOP 2025 – SBDD XXIX

Tuesday, March 18, 2025

18:00 – 19:00 Registration at the *Express by Holiday Inn* & Reception

Wednesday, March 19, 2025

08:20 – 08:50 Registration at the *cultuurcentrum Hasselt*.

08:50 – 09:00 Opening "Hasselt Diamond Workshop 2025 – SBDD XXIX".

09:00 – 10:10 Session 1
Diamond Growth for Quantum Technology
Chair: Quan Li, The Chinese University of Hong Kong, Hong Kong

10:10 – 10:50 Coffee Break (Grand Banquet Hall)

10:50 – 12:20 Session 2
Diamond Quantum Sensing for Biomedical Applications
Chair: Anke Krueger, Universität Stuttgart, Germany

12:20 SBDD XXIX group photo (Front entrance ccHa)

12:30 – 14:00 Lunch (Grand Banquet Hall)

14:00 – 15:30 Session 3
Multidisciplinary Approaches in Diamond Quantum Sensing
Chair: Elke Neu-Ruffing, RPTU Kaiserslautern-Landau, Germany

15:30 – 16:10 Coffee Break (Grand Banquet Hall)

16:10 – 17:40 Session 4
New Advancement in Diamond Quantum Technologies
Chair: Thierry Debuisschert, Thales, France

17:40 – 19:40 Session 5
Posters I & Reception sponsored by: KONFIDI Diamond Laser Processing Infrastructure
Chairs: Julien Barjon, Université de Versailles Saint-Quentin-en-Yvelines, France; Anna Ermakova, Hasselt University & BIRA-IASB, Belgium; Paul W. May, University of Bristol, U.K.; Joana Catarina Mendes, Instituto de Telecomunicações, Portugal

20:00 Closing Day 1 "Hasselt Diamond Workshop 2025 – SBDD XXIX".

Thursday, March 20, 2025

09:00 – 10:30 Session 6
Diamond for Electronics
Chair: Ken Haenen, Hasselt University & IMEC vzw, Belgium

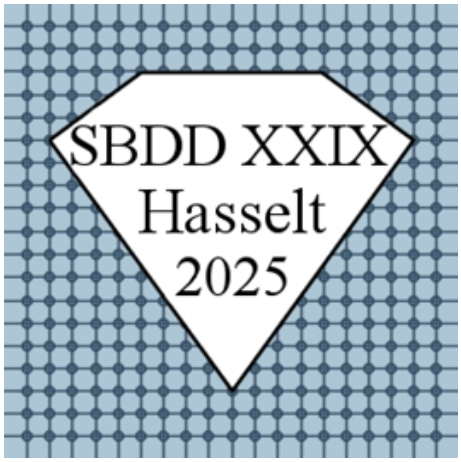
10:30 – 11:10 Coffee Break (Grand Banquet Hall)

11:10 – 12:40 Session 7
Controlling Diamond Properties at the Nanoscale
Chair: Chia-Liang Cheng, National Dong Hwa University, Taiwan

12:40 – 14:00	**Lunch (Grand Banquet Hall)**
14:00 – 15:30	**Session 8** **Diamond and Electrochemistry** **Chair: Robert Bogdanowicz, Gdańsk University of Technology, Poland**
15:30 – 17:00	**Session 9** **Posters II** **Chairs: Julien Barjon; Anna Ermakova; Paul W. May; Joana Catarina Mendes**
17:00– 18:00	**Session 10** **Diamond-based Magnetometry** **Chair: Nicole Fabbri, CNR-Istituto Nazionale di Ottica (INO) & European Laboratory for Non-Linear Spectroscopy (LENS), Italy**
18:00	**Closing Day 2 "Hasselt Diamond Workshop 2025 – SBDD XXIX".**
20:00	**Conference dinner at the *Ravel* & *De Boulevard* of the *Holiday Inn.***

Friday, March 21, 2025

09:30 – 10:40	**Session 11** **Role of Diamond in Thermal Management** **Chair: Julien Pernot, CNRS/Université Grenoble Alpes-Institut Néel, France**
10:40 – 11:10	**Coffee Break (Grand Banquet Hall)**
11:10 – 12:30	**Session 12** **Diamond for Biotechnology** **Chair: Petr Cígler, CAS-Institute of Organic Chemistry and Biochemistry, Czech Republic**
12:30 – 13:40	**Lunch (Grand Banquet Hall)**
13:40 – 15:20	**Session 13** **Defect Centres in Diamond** **Chair: Miloš Nesládek, Hasselt University & IMEC vzw, Belgium**
15:20	**Closing "Hasselt Diamond Workshop 2025 – SBDD XXIX".**



Workshop sponsored by Konfidi, Qnami, Seki Diamond Systems, HiQuTe Diamond, MUEGGE, Diatope, STR, Orbray, DIAMFAB, and Hasselt University via the Institute for Materials Research (IMO-IMOMEC).