

AGAY  
10-14<sup>th</sup> June 2024



VILLAGE CAP ESTÉREL- FRANCE

Monday, June 10, 2024

FRENCH JAPANESE  
WORKSHOP

ON DIAMOND  
ELECTRONIC DEVICES

12:20 pm

Buffet and registration

2:00 pm

Welcome

Session 1 | **SENSOR 1** - J. Pernot

2:20 pm

3D diamond alpha detectors with internal nanocarbon network electrodes

*Rebecca Watkins, Ralph Jennings-Moors, Alex C. Pakpour-Tabrizi, Patrick S. Salter, and Richard Jackman*

2:40 pm

High-temperature diamond MEMS magnetic sensor

*Meiyong Liao, Zilong Zhang, Satoshi Koizumi, Yasuo Koide, Wen Zhao, and Guo Chen*

3:00 pm

Indications for long migration lengths of growth precursors on diamond

*Stoffel D. Janssens, David Vázquez-Cortés, and Eliot Fried*

3:20 pm

Coupling X-ray Beam Induced Current, ToF-XBIC and X-ray Diffraction Imaging to characterize diamond plates used as semiconductor-based detectors

*Pierre Everaere, José Baruchel, Denis Dauvergne, Marie-Laure Gallin-Martel, Robin Molle, and Tran Caliste Thu Nhi*

3:40 pm

Electrochemical fingerprinting analysis of natural waters using diamond-based electronic tongue

*Shinya Ohmagari, Nobutomo Morita, Kenshin Takemura, and Wataru Iwasaki*

4:00 pm

Coffee Break

Session 2 | **POWER 1** - J. Letellier

4:40 pm

Diamond Heterojunction PN Diodes: Fabrication and Modeling

*Timothy Grotjohn, S M Asaduzzaman, and Cristian Herrera-Rodriguez*

5:00 pm

Vertical bipolar diamond diodes

*Florent Sevely, Karine Isoird, Josiane Tasselli, Mohamed Bouras, François Jomard, Marie-Amandine Pinault-Thaury, Riadh Issaoui, Ken Castillo Arvizu, Dominique Planson, and Luong Viêt Phung*

5:20 pm

Development of scCVD monolithic diamond capacitors for high voltage applications

*Michal Pomorski, Larry Buffle, Cyrille Laviron, Baptiste Truffet, and Frederic Voiron*

5:40 pm

(100)-oriented P-doped diamond films for p+/p-/n Schottky diodes

*Rozita Rouzbahani, Paulius Pobedinskas, David Eon, Fernando Lloret, and Ken Haenen*

6:00 pm

Accumulation Channel H-diamond FETs with extreme Enhancement-Mode operation (< -6V Vgs) and high on-state current

*Chunlin Qu, Isha Maini, Qing Guo, Alastair Stacey, and David Moran*

6:20 pm

A long walk along and around column IV

*Étienne Bustarret*

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VILLAGE CAP ESTÉREL- FRANCE

**Tuesday, June 11, 2024**

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**ON DIAMOND  
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**Session 3 | GROWTH 1 - J. Bousquet**

- 9:00** am CVD diamond {111} freestanding crystals  
*Tokuyuki Teraji, Chikara Shinei, and Yuta Masuyama*
- 9:20** am Free-standing n-type phosphorus-doped diamond  
*Rémi Gillet, Ingrid Stenger, Subodh Kumar Gautam, Christophe Arnold, Estelle Loire, François Jomard, Julien Barjon, and Marie Amandine Pinault-Thaury*
- 9:40** am Hot-filament CVD growth and characterization of phosphorus-doped diamond thin films  
*Yuki Katamune, Satoshi Inoshita, Izumi Akira, Tokuyuki Teraji, Kenji Watanabe, and Satoshi Koizumi*
- 10:00** am Optimization of the growth parameters for increasing functional area of (113)-oriented thick boron doped diamond  
*Rémi Mesples-Carrere, Riadh Issaoui, Audrey Valentin, Ovidiu Brinza, Fabien Benedic, and Jocelyn Achard*

**10:20** am **Coffee Break**

**Session 4 | POWER 2 - S. Majdi**

- 10:50** am Challenges associated with hydrogen-terminated diamond electronic device production and questions yet un-answered (a perspective)  
*David Moran, Isha Maini, Kevin Crawford, Chunlin Qu, Stephen Russell, David Macdonald, and Qing Guo*
- 11:10** am Diamond FET improvement to reach industrial reality  
*Damien Michez, Nicolas Rouger, Marine Couret, and Juliette Letellier*
- 11:30** am Drift Layer-Free Diamond MOSFET for High Voltage Operation  
*Tsubasa Matsumoto, Kai Sato, Yuto Nakamura, Tsubasa Yoshimoto, Toshiharu Makino, Hiromitsu Kato, Masahiko Ogura, Aboulaye Traoré, Kimiyoshi Ichikawa, Kan Hayashi, Takao Inokuma, Satoshi Yamasaki, and Norio Tokuda*
- 11:50** am Diamond gate-controlled supercurrent (GCS) transistors and high current vertical FETs using heavily boron doping  
*Hiroshi Kawarada, Chiyuki Wakabayashi, Minoru Tachiki, Shuuichi Ooi, Koji Amazutsumi, Tatsuya Fujishima, Ryo Matsumoto, and Yoshihiko Takano*

**12:10** pm **Lunch**

**1:20** am **Free time and Networking**

**4:20** pm **Coffee Break**

**Session 5 | BEFORE, NOW & THEN - J. Achard**

- 5:00** pm Radiation detector of heteroepitaxial diamond grown on Ir/sapphire  
*Koji Koyama, Seongwoo Kim, Osamu Maida, Keitaro Hitomi, Toshiyuki Onodera, Mitsuhiro Nogami, and Kiyomitsu Shinsho*
- 5:20** pm 1 cm<sup>2</sup> single crystal diamond Substrate for advanced applications  
*Riadh Issaoui, Ovidiu Brinza, Lahcene Mehmel, Paul De Boiry, Alexandre Tallaire, Fabien Benedic, and Jocelyn Achard*
- 5:40** pm Diamond Substrate Prospects for High-Performance Applications  
*Philippe Bergonzo*

**6:00** pm **Round Table**

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VILLAGE CAP ESTÉREL- FRANCE

Wednesday, June 12, 2024

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Session 6 | **INTERFACE 1** - K. Ueda

- 9:00** am Low Resistance N-type Contacts for Diamond Receiver Protect Diodes  
*Gabriel Munro-Ludders, Evangeline Amonoo, Saurabh Vishwakarma, Franz Koeck, Terry Alford, David Smith, Trevor Thornton, and Robert Nemanich*
- 9:20** am Improvement on diamond thin film transfer using Smart Cut<sup>TM</sup> Technology  
*Jeremie Chretien, Pierrick Gilles, Lucas Colonel, Frédéric Milesi, Frédéric Berger, Nicolas Bernier, Nicolas Gauthier, Gérard Lapertot, Denis Mariolle, Patrice Gergaud, Frédéric Mazon, Isabelle Huyet, Julie Widiez, and Lucie Le Van-Jodin*
- 9:40** am High quality Al<sub>2</sub>O<sub>3</sub>/(111) (OH)-terminated diamond interface for MOSFETs fabrication  
*Pietro Argenton, Martin Kah, David Eon, and Julien Pernot*
- 10:00** am Electron Beam-Induced Etching of Single Crystal Diamond: effect of atmosphere  
*Marine Regnier, Duc-Duy Tran, Fabrice Donatini, and Etienne Gheeraert*

**10:20** am Coffee Break

Session 7 | **GROWTH 2** - R. Rouzbahani

- 10:50** am Versatile microwave plasma assisted growth process for single crystal diamond synthesis  
*Chaimaa Mahi, Midrel Wilfried Ngandeu Ngambou, Pauline Perrin, Alexandra Oliveira, Ovidiu Brinza, Riadh Issaoui, Vianney Mille, Azadeh Valinattaj Omran, Alexandre Tallaire, Philippe Goldner, Jocelyn Achard, and Fabien Benedic*
- 11:10** am SiV- and NV- color centers in diamond for ratiometric luminescence nanothermometry  
*Iván Carrillo-Berdugo, Mabel Rodríguez-Fernández, María Gragera, Paulius Pobedinskas, and Javier Navas*
- 11:30** am Effect of Gas Flow on 4-Inch MPCVD Diamond Growth and Doping at 2.45 GHz  
*Alexandre Fiori*

**11:50** am Lunch

**1:20** am Social event

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VILLAGE CAP ESTÉREL- FRANCE

**Thursday, June 13, 2024**

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**-- Morning shifted slots --**

**Session 8 | INTERFACE 2 - S. Chowdury**

**8:30** am *AI electronic devices using diamond/graphene (carbon sp<sup>3</sup>-sp<sup>2</sup>) heterointerfaces*  
*Kenji Ueda*

**8:50** am *Single Crystalline Diamond as a Substrate for Graphene Devices*  
*Aisuluu Aitkulova, Nattakarn Suntornwipat, Saman Majidi, and Jan Isberg*

**9:10** am *Surface functionalized diamond for antimicrobial application*  
*Ruoying Zhang, Nianhua Peng, Mark Sims, and Haitao Ye*

**9:30** am *The direct bonding of 3C-SiC and polycrystalline diamond for high power GaN device applications*  
*Jianbo Liang, Yutaka Ohno, Yasuyoshi Nagai, and Naoteru Shigekawa*

**9:50** am **Coffee Break**

**Session 9 | POWER 3 - T. Makino**

**10:30** am *On the edge termination design and optimisation for > 2kV diamond pseudo-vertical Schottky diodes: challenges and opportunities*  
*Martin Kah, Nazareno Donato, Rebecca Watkins, Calum Henderson, Jingfan Yang, Richard Jackman, and Florin Udrea*

**10:50** am *Electronic Circuit Development Utilizing Radiation Hardened H-Diamond MOSFET (RADD FET) for Radiation Measurement*  
*Yousuke Ito, Hiroyuki Kawashima, Tatsuyuki Maekawa, Junichi Kaneko, and Hitoshi Umezawa*

**11:10** am *Dual function of Diamond via Photoconductive Switching and Thermal Management*  
*Srabanti Chowdhury*

**11:30** am **Lunch**

**1:20** am **Free time and Networking**

**4:20** pm **Coffee Break**

**Session 10 | POWER AND OTHERS - D. Eon**

**5:00** pm *Carrer transport mechanism of diamond Schottky-pn diode*  
*Toshiharu Makino, Masahiko Ogura, Hiromitsu Kato, Yukako Kato, Aboulaye Traoré, and Takeaki Sakurai*

**5:20** pm *Design of innovative diamond detectors for beam monitoring in highly radiative environment for applications in nuclear and medical physics*  
*Marie-Laure Gallin-Martel*

**5:40** pm *Current Status and Prospects of Diamond Quantum Sensors for Quantum-LEAP*  
*Mutsuko Hatano*

**6:00** pm **Round Table**



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**Session 11 | GROWTH 3 - M.A. Pinault-Thaury**

**9:00** am *HFCVD growth and stress of homoepitaxial diamond (111)*  
*Kimiyoshi Ichikawa, Kazuki Kobayashi, Tsubasa Matsumoto, Kan Hayashi, Takao Inokuma, Satoshi Yamasaki, and Norio Tokuda*

**9:20** am *Investigation of the crystalline quality and dislocations in tungsten-doped diamond layers*  
*Dov Zvi. Nusimovici, Thu Nhi Tran-Caliste, José Baruchel, Olivier Mathon, David Eon, Bousquet Jessica, and Didier Chaussende*

**9:40** am *Laser MicroJet Technology for diamond processing and shaping*  
*Ovidiu Brinza, Vianney Mille, Alexandre Tallaire, Jocelyn Achard, and Fabien Benedic*

**10:00** am *Characterization of defects in diamond by EBIC*  
*Hitoshi Umezawa, Takehiro Shimaoka, Satoshi Koizumi, Julien Pernot, and Etienne Gheeraert*

**10:20** am **Coffee Break**

**Session 12 | SENSOR 2 - S. Ohmagari**

**10:50** am *Development of an ultracompact monolithic E-E diamond telescope for the identification of short-range particles for nuclear physics applications*  
*Claire Léonhart, Marie-Laure Gallin-Martel, Etienne Gheeraert, Philippe Barberet, Francois Vianna-Legros, Denis Dauvergne, Fabrice Donatini, Jean-Francois Muraz, Juliette Letellier, Jessica Bousquet, and Julien Pernot*

**11:10** am *Temperature Dependence of Betavoltaic Cell Performance of Diamond pn Junction Diode*  
*Takehiro Shimaoka, Hitoshi Umezawa, Gwénoél Jacopin, Satoshi Koizumi, Takeshi Fujiwara, and Julien Pernot*

**11:30** am *Radiation tolerance of diamond detector with 68 MeV protons: flux and fluence studies*  
*Robin Molle, Marie-Laure Gallin-Martel, Charbel Koumeir, Denis Dauvergne, Pierre Everaere, Laurent Gallin-Martel, Arnaud Guertin, Ferid Haddad, Christophe Hoarau, Jayde Livingstone, Jean-Francois Muraz, and Freddy Poirier*

**11:50** am **Closing speech**

**12:00** pm **DEPARTURE**