

CONFERENCE AGENDA

Diamond Quantum Sensing Workshop 2015

Wednesday, 5 August

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|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 08:00 – 08:30 | Registration |
| 08:30 – 08:50 | Opening |
| 08:50 – 10:30 | Lily Childress (McGill University, Canada)
"An introduction to the NV center in diamond" |
| 10:30 – 10:45 | Break |
| 10:45 – 12:25 | Yuichiro Matsuzaki (NTT Basic Research Laboratories, Japan)
"Quantum sensing basics" |
| 12:25 – 13:50 | Lunch |
| 13:50 – 14:40 | Jorg Wrachtrup (University of Stuttgart, Germany)
"Diamond sensors: the road to applications" |
| 14:40 – 15:30 | Fedor Jelezko (Ulm University, Germany)
"Diamond based sensing enhanced by quantum error correction" |
| 15:30 – 16:00 | Junichi Isoya (University of Tsukuba, Japan)
"Material science approach in diamond quantum device development" |
| 16:00 – 16:20 | Break |
| 16:20 – 16:50 | Satoshi Yamasaki (AIST, Japan)
"The high potential for diamond electronic devices" |
| 16:50 – 17:20 | Norikazu Mizuochi (Osaka University, Japan)
"Electrical control of qubits in NV center in diamond" |
| 17:20 – 17:50 | Mutsuko Hatano (Tokyo Institute of Technology, Japan)
"Development of magnetic image sensors based on ensemble nitrogen–vacancy centers in CVD–grown diamond" |
| 17:50 – 21:00 | Poster and discussion |

Thursday, 6 August

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| 08:30 – 09:20 | Christian Degen (ETH, Switzerland)
"Nanoscale imaging and spectroscopy with single spins in diamond" |
| 09:20 – 10:10 | Amir Yacoby (Harvard University, USA)
"Probing magnetism using diamond NV magnetometry" |
| 10:10 – 10:30 | Break |
| 10:30 – 11:20 | Ronald Walsworth (Harvard University, USA)
"Nanoscale magnetic imaging using NV–diamond" |
| 11:20 – 12:10 | Dmitry Budker (Universitat Mainz, Germany)
"Photocurrent, infrared–absorption magnetometry, and stress in NV ensembles" |

12:30 – 18:00 Excursion (Naoshima)
19:00 – 21:00 Banquet dinner (Hanajukai)

Friday, 7 August

08:30 – 09:00 Renbao Liu (Chinese University of Hong Kong, China)
"Dynamical decoupling enhanced quantum sensing"

09:00 – 09:30 Jero Maze (Pontificia Universidad Catolica, Chile)
"Strain distribution in diamond with high-density NV ensembles"

09:30 – 10:00 Jiangfeng Du (University of Science and Technology of China, China)
"Single-protein spin resonance spectroscopy and imaging under ambient conditions"

10:00 – 10:30 Junko Ishi-Hayase (Keio University, Japan)
"Orientation and Position-controlled Nitrogen-Vacancy Centers in CVD Diamond grown on Micropatterned (001) Substrate"

10:30 – 10:50 Break

10:50 – 11:20 Kai-Mei Fu (University of Washington, USA)
"Far-field imaging of magnetic nanoparticles for DNA conformational studies"

11:20 – 11:50 Patrick Maletinsky (University of Basel, Switzerland)
"Quantum sensing using single spins in diamond nano-devices"

11:50 – 12:20 Liam McGuinness (University of Ulm, Germany and University of Melbourne, Australia)
"NV centers at the diamond surface: challenges, uses and outlook"

12:20 – 13:50 Lunch

13:50 – 14:20 Lloyd Hollenberg (University of Melbourne, Australia)
"Nanoscale electron spin resonance spectroscopy using the NV centre"

14:20 – 14:50 Hiroshi Kawarada (Waseda University, Japan)
"Diamond transistors and superconducting devices for N-V center research"

14:50 – 15:20 Marcus Doherty (Australian National University, Australia)
"Mechanical and electric field sensing using spins in diamond"

15:20 – 15:50 Break

15:50 – 16:20 Susumu Takahashi (University of Southern California, USA)
"High-frequency and high-field ODMR of nitrogen-vacancy centers in diamond"

16:20 – 16:50 Jan Meijer (University Leipzig, Germany)
"Prospects and first results of a color center screening project"

16:50 – 17:20 Yoshie Harada (Kyoto University, Japan)
"Application of fluorescent diamond nanoparticles to bio-imaging"

17:20 Summary and closing

19:00 – 21:00 Farewell dinner

Poster and discussion: Wednesday 5 August 17:50 – 21:00

- P-01 *Toward mass production of low dislocation intrinsic diamond substrate by CVD*
Shinichi Shikata (Kwansei Gakuin University, Japan)
- P-02 *Diamond growth for nanoscale NMR sensing*
Hideyuki Watanabe (AIST, Japan)
- P-03 *Characterization of isotopically controlled (^{15}N , ^{12}C) CVD-grown diamonds with single NV- defect centers*
Dongok Kim (Keio University, Japan)
- P-04 *Broadband, large-area microwave antenna for ODMR in NV centers in diamond*
Kento Sasaki (Keio University, Japan)
- P-05 *Wide-field Orientation Imaging of Nitrogen-Vacancy Centers in Diamond*
Mutsumi Okazaki (Keio University, Japan)
- P-06 *Properties of Nitrogen-Vacancy Centers created using Chemical Vapor Deposition on Micropatterned Substrate*
Ryushiro Fujita (Keio University, Japan)
- P-07 *ODMR spectral imaging of nanodiamonds for biological samples*
Takeharu Sekiguchi (Kyoto University, Japan)
- P-08 *(111) diamond growth for preferentially aligned ensemble NV centers*
Hayato Ozawa (Tokyo Institute of Technology, Japan)
- P-09 *Quantification method of the alignment ratio of ensemble nitrogen vacancy centers in (111) diamond*
Kosuke Tahara (Tokyo Institute of Technology, Japan)
- P-10 *Heteroepitaxial Growth of Diamond on 3C-SiC/Si by Antenna-edge Microwave Plasma CVD*
Takeru Suto (Tokyo Institute of Technology, Japan)
- P-11 *Germanium-Vacancy Single Color Centers in Diamond*
Takayuki Iwasaki (Tokyo Institute of Technology, Japan)
- P-12 *Improvement of photon collection efficiency from a nitrogen vacancy center in a self-formed diamond microstructure*
Tetsuo Kodera (Tokyo Institute of Technology, Japan)
- P-13 *Noise study for the magnetic sensing system using NV centers*
Yuji Hatano (Renesas Electronics Corporation, Japan)
- P-14 *Diamond film growth for formation of single photon source*
Tokuyuki Teraji (NIMS, Japan)
- P-15 *Fabrication of nitrogen-vacancy center array by Electron-beam lithography and ion implantation*
Godai Koike (Waseda University, Japan)
- P-16 *Array of bright silicon-vacancy centers in diamond fabricated by low-energy focused ion beam implantation*
Itaru Higashimata (Waseda University, Japan)
- P-17 *NV center utilized as a tool for radiation sensors*
Shinobu Onoda (Japan Atomic Energy Agency, Japan)
- P-18 *Exploration and Characterization of Single Photon Source in Wide Bandgap Semiconductors*
Takeshi Ohshima (Japan Atomic Energy Agency, Japan)

- P-19 *Diamond surface fluorescence for device sensing*
Masafumi Inaba (Waseda University, Japan)
- P-20 *Physical properties of superconducting diamond for quantum devices*
Taisuke Kageura (Waseda University, Japan)
- P-21 *Selective alignment of nitrogen-vacancy centers in diamond*
Norikazu Mizuochi (Osaka University, Japan)
- P-22 *Pure negatively charged state of NV center in n-type diamond*
Toshiyuki Tashima (Osaka University, Japan)
- P-23 *Inverse spin-Hall effect in NiFe/p-type diamond*
Hiroki Morishita (Osaka University, Japan)
- P-24 *Charge state control of nitrogen vacancy centers in diamond pin junction*
Toshiharu Makino (AIST, Japan)
- P-25 *First-principles energetics for growth of NV centers in C(111) substrate*
Takehide Miyazaki (AIST, Japan)
- P-26 *Surface modifications and selective imaging of nanodiamond for bio-application*
Ryuji Igarashi and Shingo Sotoma (University of Tokyo, Japan)
- P-27 *Realization of ultraflat diamond surface using dressed-photon-phonon-assisted etching on the angstrom-scale*
Takashi Yatsui (University of Tokyo, Japan)
- P-28 *EPR spectroscopy on a small ensemble of spins using a single nitrogen-vacancy center in diamond*
Susumu Takahashi (University of Southern California, USA)
- P-29 *Electron spin resonance spectroscopy using SQUID magnetometer*
Hiraku Toida (NTT Basic Research Laboratories, Japan)
- P-30 *Development of Scanning NV-center Spin Sensing Probe*
Toshu An (JAIST, Japan)
- P-31 *Nitrogen Terminated Diamond*
Alastair Stacey (University of Melbourne, Australia)
- P-32 *Effect of phonons on optical spectra of silicon-vacancy center*
Ariel Norambuena (Pontificia Universidad Catolica, Chile)
- P-33 *Controlling 2D layers of nuclear spins in diamond*
Boris Naydenov (Ulm University, Germany)
- P-34 *Probing spin waves using single electron spins*
Toeno van der Sar (Harvard University, USA)
- P-35 *Fourier magnetic imaging with nanoscale resolution and compressed sensing speed-up using electronic spins in diamond*
Keigo Arai (MIT, USA)
- P-36 *Dynamical decoupling of NV ensembles at low temperatures and nuclear sensing with nano-structured diamond*
Andrey Jarmola (UC Berkeley, USA)
- P-37 *Nanoscale NMR spectroscopy using multipulse quantum sensing sequences*
Tobias Roskopf (ETH, Switzerland)
- P-38 *Diamond-based probe for single-molecule spin resonance*

Fazhan Shi (University of Science and Technology of China, China)

P-39 *Demonstration of entanglement-enhanced phase estimation in solid*

Gangqin Liu (Chinese University of Hong Kong, China)

P-40 *Shape effect on cellular fate of nanodiamond*

Feng Xi (Chinese University of Hong Kong, China)

P-41 *Single NV zero-phonon line emission into waveguide-coupled GaP-on-diamond disk resonators*

Mike Gould (University of Washington)