



Ion Beams for future Technologies 2019

Invited: 30 min + 5 discussion
Technical: 15 min + 5 discussion
Coffee: 30 min
Lunch: 90-100 min

Monday

1. **9.00 Jeroen Van Kan, National University of Singapore**
Focused MeV Proton Beams for 3D Nano-Lithography and Nuclear Microscopy: Outlook towards single digit nanometer beam size
2. **9.35 Ben Murdin, Photonics and Quantum Sciences Group, Department of Physics, University of Surrey, Guildford, UK**
"Quantum computers using donors in silicon: from physics to architecture tolerances"
3. **10.10 Juha Muhonen, Department of Physics, Nanoscience Center, University of Jyväskylä, Finland**
Silicon quantum technologies using spins of implanted donor atoms

10.45 Coffee

4. **11.15 Jan Meijer, Universität Leipzig, Felix Bloch Institute for Solid State Physics, Leipzig, Germany**
Deterministic single ion implantation: A door opener for quantum technology products
5. **11.50 David Cox, Advanced Technologies Institute, University of Surrey, Guildford, UK**
Deterministic implantation using FIB: The battle with statistics
6. **12.25 Paul Räcké, Leibniz Institute of Surface Engineering (IOM), Leipzig, Germany,**
Image charge detection statistics relevant for deterministic ion implantation
7. **12.45 Nathan Cassidy, Department of Physics, University of Surrey, Guildford, UK**
Single Ion Detection Counting Statistics - towards 99% detection

13.05 – Lunch

8. **14.30 Ferdinand Schmidt-Kaler, Johannes Gutenberg-Universität Mainz, Institut für Physik, Mainz, Germany**
A linear Paul trap for catching, sympathetic cooling, identifying and shooting out ions: Deterministic doping solids for quantum information processing and simulation
9. **15:05 Edward S. Bielejec, Sandia National Laboratories, Albuquerque, USA,**
Fabrication of Single Atom Devices by Direct Write Nanofabrication
10. **15.40 Nicole Raatz, Universität Leipzig, Felix Bloch Institute for Solid State Physics, Leipzig, Germany**
Channeling and Scattering effects for High Resolution Single Ion Implantation

16.00 Coffee

16.30- Round table: [discussion of future networking actions](#)

Evening

- walking tour
- **SOCIAL DINNER**





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Tuesday

11. 9.00 Jacopo Forneris, National Institute for Nuclear Physics (INFN), Torino, Italy
Fabrication of color centers in diamond by ion implantation for single-photon sources engineering and quantum sensing applications
12. 9:35 Michal Pomorski, CEA-LIST, Diamond Sensors Laboratory, Gif-sur-Yvette, France
Development and applications of diamond membrane detectors
13. 10.10 Natko Skukan, Ruđer Bošković Institute, Laboratory for ion beam interactions, Zagreb, Croatia
Charge multiplication in diamond
14. 10.30 Jérôme Tribollet, Institut de Chimie, Université de Strasbourg, France
SiC-YiG quantum sensor for surface EPR at X band: concept and first experimental developments

11.05 Coffee Break

15. 11.35 Georgy Astakhov, Institute of Ion Beam Physics and Materials Research, HZDR, Germany
Effect of irradiation on defect coherence properties in silicon carbide
16. 12.10 Takeshi Ohshima, Quantum Beam Science Research Directorate, Takasaki Advanced Radiation Research Institute, Takasaki, Japan
Creation of silicon vacancy in silicon carbide using proton beam writing techniques for quantum sensing

12.45 Lunch

17. 14.00 Gregor Hlawacek, Institute of Ion Beam Physics and Materials Research, HZDR, Germany
In-situ experiments and characterization in the Helium Ion Microscope
18. 14.35 Zdravko Siketić, Ruđer Bošković Institute, Laboratory for ion beam interactions, Zagreb, Croatia
Capabilities of microanalysis using single MeV ions
19. 15.10 Mateus Masteghin, Department of Physics, University of Surrey, Guildford, UK
Liquid Metal Alloy sources for Quantum Applications
20. 15.30 Cheng-Wei Lee, Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, USA
Hot-electron enhancement of oxygen diffusion in MgO under proton irradiation from first principles

15.50 Coffee Break

16.20 Round table: Discussion on follow-up research and networking actions

Evening: FREE





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Wednesday

21. 9.00 Guanghua Du, Institute of Modern Physics, Chinese Academy of Sciences, Lanzhou, China,
Nano structure fabrication using single heavy ions of MeV/amu energy range, techniques and applications
22. 9.35 Jacques O'Connell, Nelson Mandela University, Port Elizabeth, South Africa
TEM characterization of SHI based material modification
23. 9.55 Marko Karlušić, Ruđer Bošković Institute, Laboratory for semiconductors, Zagreb, Croatia
Swift heavy ion irradiated effects in graphene and gallium nitride
24. 10.15 Marco Peres, Instituto Superior Técnico, Universidade de Lisboa, Portugal
In Situ Characterization and Modification of β -Ga₂O₃ Flakes Using an Ion Micro-Probe

10.35 Coffee Break

25. 11.05 Ivana Capan, Ruđer Bošković Institute, Laboratory for Semiconductors, Zagreb, Croatia,
What can we learn about radiation induced defect centers with capacitance transient techniques: energy level diagrams, thermal stability, introduction rates and more
26. 11.40 Federico Picollo, Università degli Studi di Torino, Solid State Physics Group, Torino, Italy
Ion beam modification of diamond for biosensing application: from nanoparticle sensing and drug delivery to bulk electrochemical sensors

12.00 Closing Remarks

