



The Physics of Group IV Semiconductors



7-10 April 2003

Workshop Organisers

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Local Organisers

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Introduction

The Physics of Group IV Semiconductors Workshop 2003 is a joint collaboration between the *UK Network on Point Defects in Silicon and Si/Ge* and the *UK Diamond Research Network*. The workshop will be held at the University of Exeter between the 7th and 10th of April 2003.

There is a need for papers. There will be a published proceedings of full length papers in *Journal Physics:Condensed Matter*. At present the deadline for submission of papers has not determined but it will probably be sometime in February.

For updates and more information please be sure to visit <http://groupIV-2003.ex.ac.uk>

Preliminary Programme

Unless stated all events take place in the Harrison building, rooms 101, 102 and 103.

Sunday April 6

Participants arrive; a ferry service will run between Exeter St. David's station and Mardon Hall.

17:00-20:00	Registration: Foyer of Mardon Hall
19:00-23:00	Wine Reception and Registration: Mardon Hall
20:00-21:00	Buffet Dinner: Mardon Hall
19:00-23:00	Bar Facilities available in Mardon

Monday April 7

7:30-8:30 Breakfast: Mardon Hall

Session I: Chair J. Evans-Freeman

9:15-9:30 Introduction

9:30-10:15 *Properties of vacancy-hydrogen defects in group-IV semiconductors*, B. Bech Nielsen, Institut for Fysik og Astronomi, Aarhus Universitet, Ny Munkegade, 8000 Århus C, Denmark

10:15-10:30 Discussion

10:30-11:00 Coffee

Session II: Chair G. Davies

11:00-11:45 *Using a free-electron laser for two-color spectroscopy of re-doped semiconductors*, T. Gregorkiewicz, Van der Waals–Zeeman Institute, University of Amsterdam, 65 Valckenierstraat, NL-1018 XE Amsterdam, The Netherlands

11:45-12:00 Discussion

12:00-12:25 *The origin of the 0.78 eV luminescence band in strained layer SiGe/Si samples*, A. J. Kenyon, Department of Electronic & Electrical Engineering, University College London, Torrington Place, London WC1E 7JE, United Kingdom

12:25-12:30 Discussion

12:30-12:55 *Photoluminescence as a probe of defect evolution in ion-implanted silicon*, R. Harding, Department of Physics, King's College London, London WC2R 2LS, United Kingdom

12:55-13:00 Discussion

13:00-14:00 Buffet Lunch

Session III: Chair K. Saarinen

14:00-14:45 *Studies on defect complexes in Si and SiC*, P. Deák Physical Institute of the Technical University of Budapest, Budapest, Hungary

14:45-15:00 Discussion

15:00-15:45 *Epitaxial 4H-Silicon Carbide and High-Purity/Low-Doped Silicon; Irradiation-Induced Point Defects*, B. Svensson, University of Oslo, Department of Physics, Physical Electronics, P.B. 1048 Blindern, N-0316 Oslo, Norway

15:45-16:00 Discussion

16:00-16:30 Tea

Session IV: Chair P. Deák

16:30-16:55 *Recent Developments in Laplace Deep-Level Transient Spectroscopy*, A. R. Peaker, Centre for Electronic Materials Devices and Nanostructures, University of Manchester Institute of Science and Technology, Manchester M60 1QD, UK

16:55-17:00 Discussion

17:00-17:25 *Electronic structure of divacancy-hydrogen complexes in silicon*, J. Coutinho, Department of Physics, University of Aveiro, 3810 Aveiro, Portugal

17:25-17:30 Discussion

17:30-18:15 *The Control and Engineering of Intrinsic Point Defects in Silicon Crystal Growth and Wafer Processing*, R. Falster, MEMC SpA, Novara, Italy

18:15-18:30 Discussion

19:30-20:30 Dinner: Mardon Hall

20:30- Poster Session (Silicon) and Bar: Mardon Hall common room

20:00-23:00 Bar in Mardon Hall

Tuesday April 8

7:30-8:30 Breakfast: Mardon Hall

Session V: Chair R. Falster

9:00-9:45 *Interactions Between Misfit Dislocations, Surface Morphology, and Point Defects During Strain Relaxation in Semiconductor Heteroepitaxy*, R. Hull, Department of Materials Science and Engineering, University of Virginia, 116 Engineer's Way, P.O. Box 400745, Charlottesville, VA 22904-4745, USA

9:45-10:00 Discussion

10:00-10:45 *Vacancy-impurity complexes in highly n-type Si and SiGe: atomic structure, formation mechanisms, and electrical properties*, K. Saarinen, Laboratory of Physics, Helsinki University of Technology, P.O. Box 1100, FIN-02015 HUT, Finland

10:45-11:00 Discussion

11:00-11:30 Coffee

Session VI: Chair B. Bech Nielson

11:30-12:15 *Ion implantation and ion-beam-induced defect formation in Si and SiC studied by atomistic computer simulations*, M. Posselt, Forschungszentrum Rossendorf, Institute of Ion Beam Physics and Materials Research, P.O. Box 510113 D-01314 Dresden, Germany

12:15-12:30 Discussion

12:30-14:00 Buffet Lunch

Session VII: Chair R. Hull

14:00-14:45 *Quantitative high-resolution electron microscopy of defects and interfaces in silicon-based systems*, M. Seibt, IV.Physikalisches Institut der Georg-August-Universität Göttingen and Sonderforschungsbereich 602, Bunsenstr.13-15, D-37073 Göttingen, Germany

14:45-15:00 Discussion

15:00-15:45 *DLTS of defects introduced in Si (and SiGe) by low energy (<5 keV) particles*, D. Auret, University of Pretoria, Pretoria, South Africa

15:45-16:00 Discussion

16:00-16:30 Tea

Session VIII: Chair M. Seibt

16:30-17:15 *n-Type doping of diamond and the device applications*, S. Koizumi, Advanced Materials Laboratory, NIMS, 1-1 Namiki, Tsukuba, Ibaraki, Japan

17:15-17:30 Discussion

17:30-17:55 *Electrical behaviour of antimony implants in silicon at large tilt angle*, G. Claudio, School of Electronics and Physical Sciences, University of Surrey, Guildford GU2 7XH UK

17:55-18:00 Discussion

19:30-20:30 Dinner: Mardon Hall

20:30- Poster Session (Diamond) and Bar: Mardon Hall common room

20:00-23:00 Bar in Mardon Hall

Wednesday April 9

7:30-8:30 Breakfast: Mardon Hall

Session IX: Chair A. Mainwood

9:00-9:45 *Vacancies and interstitials in Group IV semiconductors: what has been learned from EPR studies*, G. D. Watkins, Sherman Fairchild Laboratory, Lehigh University, Bethlehem, USA

9:45-10:00 Discussion

10:00-10:45 *Single crystal microwave plasma deposited CVD diamond*, D. Twichen, Element Six, King's Park Ride, Ascot, Berks SL5 8BP, UK

10:45-11:00 Discussion

11:00-11:30 Coffee

Session X: Chair D. Twitchen

11:30-12:15 *Single hydrogen defects and hydrogen dimers in Si*, R. Jones, School of Physics, University of Exeter, Stocker Road, Exeter, EX4 4QL, UK

12:15-12:30 Discussion

12:30-12:35 Conference photograph: Assemble outside Harrison building

12:35-14:00 Buffet Lunch

Session XI: Chair W. I. Milne

14:00-14:45 *Optical properties of amorphous carbons and Amorphous carbon nitrides*, A. Tagliaferro, Dip. Fisica & Unità INFM, Politecnico di Torino, Torino, ITALY

14:45-15:00 Discussion

15:00-15:25 *Multi-wavelength laser Raman and X-ray photoelectron spectroscopy of phosphorus containing DLC films*, G. M. Fuge, School of Chemistry, University of Bristol, Bristol BS8 1TS, U.K.

15:25-15:30 Discussion

15:30-15:55 *The dissociation of dislocations in diamond*, A. T. Blumenau, University of Paderborn, Theoretical Physics, Faculty of Science, D - 33098 Paderborn, Germany

15:55-16:00 Discussion

16:00-16:30 Tea

Session XII: Chair E. Kohn

16:30-16:55 *The vacancy-nitrogen-hydrogen complex in diamond: a potential deep centre in CVD material*, J. P. Goss, School of Natural Sciences, University of Newcastle upon Tyne, Newcastle upon Tyne, NE1 7RU, U.K.

16:55-17:00 Discussion

17:00-17:25 *Mapping the energy levels of the self-interstitial in diamond* H. E. Smith, Physics Department, King's College London, Strand, London WC2R 2LS, UK

17:25-17:30 Discussion

17:30-18:15 *Plasma Processes of Interest to the Growth of Ultrananocrystalline Diamond and to Etching of Silicon Semiconductors*, D. Gruen, Argonne National Laboratory, 9700 S. Cass Avenue, Argonne, IL 60439, USA

18:15-18:30 Discussion

19:30-20:00 Banquet Reception: Reed Hall

20:00-00:00 Conference Banquet: Reed Hall

Thursday April 10

7:30-8:30 Breakfast: Mardon Hall

Session XIII: Chair D. Gruen

9:00-9:45 *Diamond MEMS*, E. Kohn, Universitat Ulm, Department of Electron Devices and Circuits, Albert-Einstein-Allee 45, 89081 Ulm, Germany

9:45-10:00 Discussion

10:00-10:45 *Recent Developments in Diamond Detectors*, H. Kagan, Dept. of Physics, Ohio State University, 174 W. 18th Ave, Columbus, OH 43210 USA

10:45-11:00 Discussion

11:00-11:30 Coffee

Session XIV: Chair R. Jones

11:30-11:55 *Growth and characterisation of epitaxial and polycrystalline n-type CVD diamond films*, K. Haenen, Limburgs Universitair Centrum, Institute for Materials Research, Wetenschapspark 1, B-3590 Diepenbeek, Belgium

11:55-12:00 Discussion

12:00 Lunch and close of workshop

Ferry service to run between between Mardon Hall and Exeter St. David's station

