B.N. Murdin    S.K. Clowes
(Eds.)

Narrow Gap
Semiconductors 2007

Proceedings of the
13\textsuperscript{th} International Conference,
8–12 July, 2007, Guildford, UK
Preface

The Thirteenth International Conference on Narrow Gap Semiconductors (NGS13) was held in Surrey, UK, on July 8-12, 2007. We brought together researchers from 15 countries to discuss recent advances and discoveries in the science and technology of narrow gap semiconductors, following the traditions of the previous twelve conferences in this series – Dallas, USA (1970), Nice, France (1973), Warsaw, Poland (1977), Linz, Austria (1981), Gaithersburg, USA (1989), Southampton, UK (1992), Santa Fe, USA (1995), Shanghai, China (1997), Berlin, Germany (1999), Kanazawa, Japan (2001), Buffalo, USA (2003) and Toulouse, France (2005).

It was over 40 years ago, before we were born, that the first III-V semiconductors started to be crystallised in high quality, and the best materials available were the so called narrow gap materials. These materials were of fundamental interest at the time, and have continued to be so due to the strong effects of non-parabolicity and spin-orbit coupling, providing exciting tests of solid-state quantum mechanics. For applications they were overtaken in importance for microelectronics and optoelectronics by other wider gap materials, but they nevertheless became of great importance with the advent of mercury cadmium telluride mid-infrared detector applications. Recently narrow gap materials have had a resurgence in interest in a number of application areas. They can exhibit interesting spin-physics and have great potential for spintronic devices, thanks to strong coupling to the conduction band of the strongly spin-orbit split valence band. The growth of nanocrystals made from narrow gap materials has offered the possibility of cheaper near-infrared devices, in competition with wide gap structures. Graphene has emerged as a zero-gap semiconductor with special properties and exciting physics and applications. Finally, now, the InSb transistor has exhibited record performance characteristics and forms one of the possible strands of the information technology roadmap. Although these applications have given new impetus, there remains a strong fundamental physics interest in narrow gap semiconductors, and effects such as zitterbewegung are especially strong in these materials. All of the above topics were represented at the Thirteenth Conference, and the subject is as vibrant as ever.

It gives us great pleasure that some of the Fathers of this field were present at the Conference, and we are especially grateful to Professors Carl Pidgeon and Guenther Bauer, whose enormous enthusiasm made our job as Chairmen a great pleasure.

The social events provided an excellent setting for informal discussions. The Welcome Reception took place at the Advanced Technology Institute on the
campus of the University of Surrey. The Conference Excursion took the participants to the 16th century Hampton Court Palace; home to Cardinal Wolsey and King Henry VIII. The Conference Dinner was held at the award winning Denbies Wine Estate, the largest vineyard in England.

We would like to thank all members of the program and advisory committees for their individual contributions for the organization of the conference and for setting up the scientific program, and we want to thank all participants for attending the conference and for their valuable scientific presentations. Our special thanks must go to Steven Clowes, whose responsibilities included setting up and maintaining the program for manuscript and abstract submissions and paper distributions to referees. We must also thank Julie Maplethorpe for her unwavering support as conference secretary, who assisted in the organisation of all aspect of the event and ensuring we were all well looked after during the conference week. Without Steven and Julie, putting together this Conference Proceedings in such a short period of time would have been impossible.

Finally, we have the pleasure to announce that the next Conference, NGS14, will be held on 4-8 or 18-22 August 2009, at the Sendai International Center, Sendai, Japan, and will be chaired by Professor Junsaku Nitta and co-chaired by Professor Hiro Munekata.

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Conference Banquet – Denbies Wine Estate
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Department of Physics, University of Surrey (http://www.surrey.ac.uk/physics)
Institute of Semiconductor and Solid State Physics, University of Linz (http://www.hlphys.jku.at)

Conference Website - http://www.ati.surrey.ac.uk/NGS13
Presentations - http://www.ati.surrey.ac.uk/NGS13/presentations
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Junior / senior distribution

[Pie charts showing percentages of junior and senior attendees]
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