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Preface

This volume contains invited and contributed papers presented at the conference on ‘Microscopy of Semiconducting Materials’ held at the University of Cambridge on 2-5 April 2007. The event was organised under the auspices of the Electron Microscopy and Analysis Group of the Institute of Physics, the Royal Microscopical Society and the Materials Research Society. This international conference was the fifteenth in the series that focuses on the most recent world-wide advances in semiconductor studies carried out by all forms of microscopy and it attracted delegates from more than 20 countries.

With the relentless evolution of advanced electronic devices into ever smaller nanoscale structures, the problem relating to the means by which device features can be visualised on this scale becomes more acute. This applies not only to the imaging of the general form of layers that may be present but also to the determination of composition and doping variations that are employed. In view of this scenario, the vital importance of transmission and scanning electron microscopy, together with X-ray and scanning probe approaches can immediately be seen. The conference featured developments in high resolution microscopy and nanoanalysis, including the exploitation of recently introduced aberration-corrected electron microscopes. All associated imaging and analytical techniques were demonstrated in studies including those of self-organised and quantum domain structures. Many analytical techniques based upon scanning probe microscopies were also much in evidence, together with more general applications of X-ray diffraction methods. The materials subjected to investigation covered the complete range of elemental and compound semiconductors, often in epitaxial form, with some emphasis on both device-processed materials and finished devices at the state-of-the-art. This Proceedings volume presents work described in all study areas.

Every manuscript submitted for publication in this Proceedings volume has been reviewed by at least two referees and modified accordingly. The editors are very grateful to the following colleagues for their rapid and meticulous reviewing work:

A Andreev, J Arbiol, I Arslan, J S Barnard, H Bender, N Browning, T J Bullough, A Cavallini, M Dahne, C Dieker, M Fay, M Galtrey, M Gass, V Grillo, A Harrison, C J Humphreys, Z Liliental-Weber, H Kirmse, M MacKenzie, J Mardinly, G Moldovan, R T Murray, R Oliver, B Pecz, F Priolo, A Rocher, A Rosenauer, F M Ross, J-L Rouviere, O Schmidt, M Schowalter, B Sieber, J Sloan, E Spiecker, V Stolojan, P Sutter, K Tillmann, C Trager-Cowan, T Walther, E Yakimov, N Zakharov.

It is a pleasure to thank Claire Garland and Jodie Cartwright of the Institute of Physics for their expert assistance in organising the present conference. Also, we are very grateful to Erica Bithell, Jo Sharp and Edmund Ward of Cambridge University for editorial assistance in preparing papers for printing in this Proceedings volume.

A G Cullis
P A Midgley
December 2007

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