Proceedings of the International Conference on Optical, Optoelectronic and Photonic Materials and Applications (ICOOPMA) 2014

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Preface

Developments in the connected fields of optics, optoelectronics and photonics have had a profound effect on the emergence of modern technologies and their influence on our lives. In all of these fields, understanding and improving the basic underlying materials is of crucial importance for the development of systems and applications. The International Conference on Optical, Optoelectronic and Photonic Materials and Applications (ICOOPMA) has successfully married these fields and become a regular feature in the conference calendar. The 6th conference in the series, held at the University of Leeds from 27th July – 1st August, 2014, continued the ICOOPMA tradition and attracted 220 international delegates with a diverse range of disciplines and interests. The 59 papers in this Proceedings provide an excellent overview of the topics presented. The conference consisted of four thematic areas in the fields of *inorganic semiconductors, carbon and polymeric materials, inorganic glasses and crystalline materials, and metamaterials and plasmonics* where each theme area included research on basic materials through to device applications.

The conference began with a Workshop organised by Professor Dan Hewak (University of Southampton) with speakers covering *Organic Optoelectronic Complexes* (Dr Richard Curry, University of Surrey), *Metamaterials* (Dr Vassili Fedotov, University of Southampton), *Graphene* (Dr Monica Craciun, University of Exeter) and *Amorphous Semiconductors* (Dr Jiri Orava, University of Cambridge and Tohoku University). This provided an excellent overview of a representative range of the important topics that were discussed further at the conference. The conference included a banquet which successfully combined excellent food with a relaxing opportunity for the conference delegates to socialise and network. The pinnacle of the evening was the after dinner speech given by our distinguished guest, Professor Sir David Payne (University of Southampton), who gave a highly informative and humorous history of the development of photonics and the important role played by optical fibres, of which he was one of the key pioneers. Emerging scientific talent was also given a platform, with a particular feature of the conference being the Young Scientists Forum, organised by Dr Senthil Ganapathy (University of Southampton), consisting of a series of themed sessions providing up-and-coming researchers an opportunity to present and discuss their work.

Each technical theme of the conference was introduced with Plenary lectures delivered by leading international figures in their respective fields. Professor Jim

Harris (Stanford University) discussed the development of epitaxially grown dilute-nitride semiconductors and the important role that they play in high efficiency solar cells. This theme was continued by Professor Wolfgang Stolz (Philipps University, Marburg) who described the use of novel III-V semiconductors for the development of lasers on silicon. Dr Jerry Meyer (Naval Research Laboratories) and Dr. Kumar Patel (Pranalytica) discussed the important field of mid-infrared devices highlighting the significant developments that have been made in inter-band cascade and quantum cascade based devices, respectively and which have wide-ranging applications in sensing. Professor Neil Greenham (University of Cambridge) discussed solution-based semiconductors based on conjugated polymers and nanocrystals offering low cost routes to the wide-scale deployment of photonics. Professor Ortwin Hess (Imperial College) gave an overview of the physics and fascinating technological potential of negative refractive index materials. Professor Stephen Elliott (University of Cambridge) discussed the optoelectronic properties of phase change materials for memories. These areas were expanded upon in over 70 invited talks from international speakers highlighting recent developments in each of these areas. Further detailed discussions were presented in many parallel Oral and Poster sessions.

This Proceedings provides an exciting and wide-ranging discussion of the topics presented at ICOOPMA 2014. We are very grateful to the many people who helped with the organisation of the conference, with particular thanks to Alison Whiteley and her team who enabled the smooth running of the conference, Dr Senthil Ganapathy for his many and wide ranging contributions to the conference and finally Professor Safa Kasap for his wisdom, advice and strong support. The conference could not have happened without the commitment of the Local Organising Committee, who helped in many ways to assemble and run the conference, and for the International Programme, Advisory and Steering committees who guided the technical direction of the conference and assisted with the conference programme and proceedings. We are also extremely pleased to have received generous sponsorship from a large number of organisations and companies. Finally, we are also very grateful to Sarah Toms and the Editorial staff at the Institute of Physics, and the many contributors and reviewers for helping us to put-together this proceedings.

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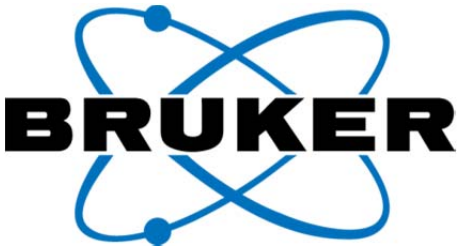

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