Preface

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The 2008 International Workshop on Optical Waveguide Theory and Numerical Modelling (OWTNM 08) was the 17th in a series of (nearly) annual events that date back to the first workshop in Teupitz, Germany, in 1992. The forum covers a mature field of science. Nevertheless, researchers in the field never cease to push (beyond) its boundaries, both in depth, concerning e.g. the refinement of simulation techniques, and in width, such that the list of topics now covers a quite broad range of photonic structures.

While in the earliest OWTNMs the emphasis has been mainly on mode solvers and relatively simple uni-directional beam propagation methods, nowadays a variety of different methods and techniques are used to tackle problems related to novel device concepts and materials. The scope of the present workshops encompasses a myriad of photonic micro- and nano- structures, including plasmonic configurations, optical meta-materials, photonic band-gap structures, materials and devices with nonlinear and time-variant properties, many different kinds of resonator configurations, and, of course, conventional dielectric waveguides. As to modelling and simulation, smart refinements of existing techniques, as well as novel approaches, of both analytical and numerical character are proposed regularly, offering increased accuracy, reduced computational costs, and better reliability and robustness. Along with the increase of available computing power, problems are now regularly considered that formerly seemed to be intractable. Further, automated optimization and design methods for improved performance of optical waveguides and photonic devices have emerged.

These developments are reflected in the present special issue of Optical and Quantum Electronics, containing papers that are more ore less tightly related to oral or poster presentations of the workshop. A classification, as before, into the categories of "novel device concepts and phenomena" and "advances in modelling and simulation techniques" is straightforward for several of the contributions, but turns out to be difficult for others: On the one hand, new structures might require specialized approaches of modelling. On the other hand, interesting ideas for devices can sometimes be explored conveniently by a newly established simulation technique. It is characteristic for the OWTNM workshop, that the computational equipment for numerical or analytical "experiments" in the field is devised, assessed, and put to work.

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The 2008 event took place at the Eindhoven University of Technology, Eindhoven, The Netherlands, on June 13–14, co-located with the European Conference on Integrated Optics (ECIO, June 11–13). Sessions were held on beam-propagation and modal methods for waveguides and fibers, on optical microcavities, and on nano-optical components, involving plasmonics, photonic crystals and meta-materials, on active and nonlinear materials and devices, and on advancements in numerical methods. A joint session with the ECIO covered papers that were dedicated specifically to device modelling. About sixty participants followed a programme that consisted of 29 talks (6 of them invited), accompanied by a poster session with 25 presentations, and, as it is traditional for this series of events, a delicious workshop dinner.

The members of the OWTNM Technical Committee are Trevor Benson (University of Nottingham, UK), Peter Bienstman (Ghent University, Belgium), Jiří Čtyroký (Institute of Electronics and Photonics, Czech Republic), Anand Gopinath (University of Minnesota, USA), Hugo J.W.M. Hoekstra (University of Twente, Netherlands), Andrei V. Lavrinenko (COM-DTU, Lyngby Kgs., Denmark), Xavier Letartre (LEOM, Ecole Centrale de Lyon, France), Andrea Melloni (DEI-Politecnico di Milano, Italy), Olivier Parriaux (University of Saint Etienne, France), Reinhold Pregla (FernUniversität Hagen, Germany), Christoph Wächter (Fraunhofer IOF, Jena, Germany). Their advice is highly appreciated.

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We have enjoyed our task as guest editors of the present volume of Optical and Quantum Electronics. We thank all authors for submitting their work to this special issue. Finally, we would like to thank the reviewers for scrutinizing the submissions, and for their valuable comments that have contributed to the quality and clarity of the reported work.

Participants of the XVIIth International Workshop on Optical Waveguide Theory and Numerical Modelling, Eindhoven, The Netherlands, June 13-14, 2008