

EDITORIAL

The 19th International Conference on Optical Fibre Sensors, OFS-19

Guest Editors

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OFS-19 was held in April 2008 in Perth, Australia, with Professor David Sampson (University of Western Australia) as General Chair assisted by Technical Programme Co-Chairs Professor Stephen Collins (Victoria University, Australia), Professor Kyunghwan Oh (Yonsei University, Korea) and Dr Ryoza Yamauchi (Fujikura Ltd, Japan). 'OFS-19' has once again affirmed the OFS series as the leading international conference for the optical fibre sensor community. Since its inception, in London in 1983, and under the leadership of an international steering committee independent of any learned society or professional institution, it has been held approximately every eighteen months. The venue nominally rotates from Europe, to the Americas, and thence to Asia and the Pacific. OFS-19 demonstrated the continuing vigour of the community, with some 240 papers presented, plus 8 tutorials; submissions and attendance were from 29 countries, with a little over half coming from the Asia-Pacific Region.

In recent years, it has become a tradition to publish a post-conference special issue in *Measurement Science and Technology*, and these special issues offer a representative sample of the current status of the field. In the 25 years since OFS began, many of the early ideas and laboratory-based proof-of-principle experiments have successfully evolved into highly developed instrumentation systems and commercial products. One of the greatest success stories has been the optical fibre Bragg grating. Its exquisite intrinsic sensitivity to temperature and strain has led to an expanding niche in structural monitoring, especially in civil engineering. It has formed the 'beach-head' for penetration of optical fibre sensors into the oil and gas industry, initially in the harsh environment of down-hole monitoring. Latterly, it has paved the way for new applications of one of the earliest fibre sensors, the fibre hydrophone, which is now making its mark in sub-sea seismic surveying. Additionally, distributed fibre sensors, based on Raman or Brillouin scattering, are beginning to be deployed for remote and sub-sea infrastructure monitoring. Western Australia enjoys a booming oil and gas sector, and so OFS-19's Special Session entitled *Oil & Gas: Current Practice–Future Opportunity* was timely and locally relevant.

An innovation at OFS-19 was turning the traditional first day's Workshop into a Tutorial Workshop delivered under the title *Optical Fibre Sensors: Enabling the Next Generation, Stretching the Present Generation*. International experts delivered a set of eight tutorials, covering both fundamentals and cutting-edge advances, to a large proportion of the conference delegates (the tutorials are available for download at obel.ee.uwa.edu.au/OFS-19).

This special issue amply demonstrates in microcosm the breadth of the field of optical fibre sensors, with papers concerning applications in the oil and gas industry, in water and air quality, in civil engineering, as well as new sensors, sensor systems and methods for sensing. In addition, there are papers concerning sensor fabrication and calibration, as well as components of sensing systems.

Several papers and topics are worthy of mention. The engineering of nanostructured materials promises much in many fields, including sensing in general. Thus, it is not surprising to find that nanotechnology is in evidence in the field of fibre sensing (Jarzebinska, Viegas). Microengineered mechanical structures also promise much for sensing and the exquisite 'head-of-a-pin'

engineering of a cantilever on a fibre end-face is an elegant and versatile platform demonstrated here for refractometry (Alberts). The field has always provided fertile ground for new ideas, and this issue proves no exception. For example, three papers deal with new ways of solving the well-known issue of decoupling temperature from strain in fibre Bragg gratings (Guo, Nguyen, Yam). The ultimate endpoint for research in such a practical field is a useful deployed sensing system, and the oil and gas industry is the focus for four papers in this issue (Aref, Jackson, Mignani, Possetti).

We hope that this special issue helps to further developments in the field of optical fibre sensors and would like to thank all the contributing authors and reviewers for making it possible. We also thank the staff at IOP Publishing for their support and in ensuring timely publication. OFS-20 will be held in Edinburgh, Scotland, 5–9 October 2009 (www.ofs20.org), with a corresponding special issue planned.