

EUROPT(R)ODE '96

EUROPT(R)ODE, with (R) in brackets, is the abbreviated title of the European Conference on Optical Sensors. The (R) marks a compromise between two possible names for an optical sensor: 'optrode', based on the older name 'electrode', denoting an electrochemical sensor; and the name 'optode', derived from the stem in opt(ical) or opt(ics). EUROPT(R)ODE is organized periodically every two years by a European centre of excellence in sensor technology. The next EUROPT(R)ODE in 1998 will be organized by *K. Cammann* in Münster, Germany, who was honourably elected by the scientific committee out of several competitors. The first EUROPT(R)ODE was initiated by *Otto S. Wolfbeis* and held in Graz, April 12–15, 1992. The second one took place in Florence, April 19–21, 1994, and was chaired by *Annamaria Verga Scheggi*. The Swiss Federal Institute of Technology (ETH) in Zürich, Switzerland, was honoured to host the third conference at Technopark-Zürich from March 31 to April 3, 1996. The conference was organized by a local organizing committee consisting of the chairperson *Ursula E. Spichiger-Keller* (Centre of Chemical Sensors, ETHZ-Technopark), *Rino Kunz* (Paul Scherrer Institute, Zürich), *Sergio Bellucci* (Management and Technology Institute) and *Thomas von Waldkirch* (Director of Technopark Foundation, Zürich).

The variety of optical sensors spanned in the abstracts of the third conference, held in Zürich, is striking, and the number of prototypes continues to grow. What is a sensor? A sensor is an analytical device which should ideally be: selective, reversible for continuous monitoring, mobile and versatile, not too expensive and user-friendly.

Very few sensors show all these features and, in practice, the most suitable sensor is generally that which best fits the application required. A conference such as EUROPT(R)ODE '96 shows the whole spectrum of models and realizations of such optical sensors. 268 Attendees paid attention to 8 plenary lectures and to 54 oral contributions in three parallel sessions (chemistry, instrumentation and application). The participation in the poster session with 142 posters was equivalent to

a share of 69.6% of all papers accepted. Even if being a European conference, conferees from all over the world, from the USA, Asia, South-America and New Zealand joined, in Zürich, in addition to participants from 17 European countries. The proceedings will be published in *Sensors & Actuators* in 1997 and will be available at *Elsevier Science Publishers*, Amsterdam. Some abstract books are still available at the Centre for Chemical Sensors (e-mail: uspi@chemsens.pharma.ethz.ch).

Excellent overviews were presented in the plenary lectures by *G. Gauglitz*, Tübingen, reviewing the development of optical sensors. *R. Kopelmann*, Michigan, USA, discussed miniaturization in his talk entitled: 'Is Smaller Better?'. *R.E. Kunz*, Zürich, covered the field of miniaturized integrated optical modules for chemical and biochemical sensing. *J.K. Tusa*, Atlanta, USA, presented a fascinating review on using optical sensors in various types of medical devices. *O.S. Wolfbeis*, Regensburg, discussed the limitations of existing relative to advanced fluorescent probes, and *I. Klimant*, Bremen, presented an exciting view of the marine environment mirrored by measuring the local partial pressure of oxygen. *G. Folkers*, Zürich, solved the difficult task to teach some aspects of molecular design by showing exciting and instructive insights in molecular structures, and *R. Niessner*, München, closed the conference in the last plenary lecture with a view to future developments in the field of noninvasive glucose sensors based on photoacoustic spectroscopy.

The conference provided generally a broad overview on optical techniques and optical sensor research and development. In the instrumentation section, the main aspects were miniaturization, luminescence and absorption spectroscopy, interferometry, with special focus on integrated optical sensors, lifetime-based sensors, sensors using near-infrared semiconductor light sources, refractometry and various forms of evanescent wave sensing schemes. A couple of talks and posters were devoted to two different trends in miniaturization very dissimilar in both the realization and the use: these are micro- and nanotransducers in the form of fibre

tips connected to peripheral evaluation equipment on one hand and miniaturized modules on the other hand.

The development of chemical sensing principles involved a broad spectrum of designs from the purely biological dyes, such as modified bacteriorhodopsins to near-infrared dyes, and redox-active fluorophores; purely synthetic ligands, such as crown ethers, cyclodextrins and calixarenes, were discussed along with labelled antibodies, and enzymes used as host-guest or key-hole molecular recognition principles. Recognition elements immobilized in photoactive polymers could be compared to compounds caged in solgel based silica films. The basic developments in the field of instrumentation and biochemical research were mirrored in a wide variety of applications in environmental, marine, medical and pharmaceutical analysis, in biotechnology and process monitoring.

Last but not least, relying on the strong commitment of the chemical and instrumental companies in Switzerland to EUROPT(R)ODE '96, on the commitment of the city of Zürich and of the Swiss Federal Institutes of Technology, ETHZ and EPFL, the conference was a full success, and the organizing committee gratefully acknowledges the considerable support and the many worthwhile contributions.

Ursula E. Spichiger-Keller