

## Foreword

Optical waveguide analysis

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Optical waveguide (OWG) has been recognized as one of the most powerful analytical tools for in situ observation of interfacial phenomena for the last few decades. The recent rapid progress in OWG forces us focus on the technical and scientific problems towards the fruition of novel application and devices. Especially, the development of OWG spectroscopy enabled us to obtain in situ absorption spectra from adsorbed molecules under monolayer coverage. This method has at least two obvious advantages comparing to other ones for in situ surface analysis (1) which can treat mixed multiple compounds in a phase by absorption peak separation, and (2) which can observe the adsorbed states and species quantitatively. Recently time-resolved OWG spectroscopy brought us the opportunity to get detail information about adsorption process of proteins and dye molecules on solid/liquid interfaces including the standard Gibbs free energy of adsorption.

In this special issue of Talanta contains 12 manuscripts describing current important results in this field. These papers describe not only basic aspects of OWG but also the possibility of future application to sensors and photonic devices. In particular, it is clearly shown that the in situ investigation of electrochemically potential controllable OWG system contributes to understand the electrochemical reactions on electrode/electrolyte interfaces.

In the near future, I believe that the amount of manuscripts and research fields performed by OWG should be increasing in a large extent. Additionally the application of OWG for molecular recognition device,  $\mu$ -TAS, electrochemical sensors, etc., would be realized soon with utilizing the specific potential and ability of OWG.

I would like to express my sincere thanks to Prof. Dr. Jean-Michel Kauffmann for giving me the chance to plan this special issue, and all the authors for joining to this special issue. Finally I would like to hope the readers of this special issue would be inspired to use OWG in their research.

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29 September 2004  
Available online 2 February 2005