



**GUEST EDITOR**

**Mladen Franko**

Dear Colleagues

This first issue of Acta Chimica Slovenica in the year 2006 is dedicated mainly to the spectrochemical analysis and applications of spectroscopic techniques for the characterisation of various materials and processes. The selection of papers is based primarily on the most interesting contributions presented in part at the 14ISSTP - 14<sup>th</sup> International Symposium "Spectroscopy in Theory and Practice", held in Nova Gorica from April 10<sup>th</sup> – April 13<sup>th</sup> 2005, and is complemented by some other papers submitted for the publication in Acta Chimica Slovenica which are related to the subject of this issue. The content of papers reflects a general trend in chemical analysis, which has already been present for some time, and follows the demands of other fields such as material, biomedical and environmental sciences, where simple quantitative analysis is no longer sufficient. Instead, the information on the chemical form of elements, their environment in structures, as well as on the structure-related properties of new materials is demanded. As a result, new analytical tools are being developed, relying mainly on new light sources offered by synchrotron and laser technologies or the hyphenation of spectroscopic and separation techniques.

The push for lower and lower limits of detection is otherwise traditionally present in chemical analysis. New large-scale facilities, such as HADES underground laboratory for low background gamma-ray spectroscopic measurements reflect these endeavours. Among the spectroscopic methods less frequently encountered in chemical analysis, the potentials of EXAFS for the characterisation of new materials such as MoSI nanowires should certainly be pointed out. Nanostructured materials such as silica based nanocomposite  $I^-/I_3^-$  electrolytes,  $SiO_2:Eu^{2+}$  particles, or nanostructured  $TiO_2$  films again demand chemical and structural characterisation by novel techniques and studies of their properties and potentials as materials of the future.

It is of course impossible to imagine the spectrochemical analysis without the use of well established conventional methods such as IR spectrometry and NMR, as reflected in this issue by their application to studies of environmental processes such as the formation and degradation of organic marine macro-aggregates or the degradation of neonicotinoids – the representatives of the new generation of pesticides.

Hyphenated techniques such as GC-MS or LC-MS are also inevitable in investigations of biologically active compounds like for example polyphenols, and their abundance in foodstuffs as well as in routine analyses for monitoring purposes, as demonstrated by the two technical papers. The progress in this field is also noticed, as time-consuming

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analytical methods are being replaced by rapid and cost effective bioassays, often supported by highly sensitive laser-based spectrometric methods.

I am very pleased to observe that the latest trends in spectrochemical analysis are not just being successfully transferred into practice in Slovenia, but are also supported by high-quality research and relevant contributions of Slovenian research groups in this field.

Sincerely,

Mladen Franko

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