

The Power of Spectroscopy



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According to the *IUPAC Gold Book*, spectroscopy refers to “the study of physical systems by the electromagnetic radiation with which they interact or that they produce.” Behind this simple definition lies one of the richest and most diverse areas of science, with wide implications in chemistry, physics and biology.

In this special issue of CHIMIA, we celebrate the diversity and power of spectroscopy. From the gas-phase to biology, from absorption *via* emission to imaging, over broad spectral ranges and various time scales, we cover here contributions from wonderful spectroscopists from Switzerland and abroad. I want to thank them first of all, it has been a pleasure working with you!

The journey starts with a contribution from **Samuel Leutwyler** and colleagues, who have developed a spectroscopic pump-dump-probe technique to measure binding energies in gas-phase intermolecular complexes with unprecedented accuracy. We then move on to work from **Arianna Marchioro**, who has investigated delayed luminescence due to temporary charge trapping in colloidal semiconductor nanocrystals, on the microsecond to second timescale. In the next two contributions, the spectroscopy becomes ultrafast, as the fluorescence dynamics are studied with femtosecond resolution. First, **Thomas Gustavsson** and colleagues present time-resolved fluorescence studies of drug–protein and drug–amino acid dyad complexes, which are essential to optimize the interactions of such drugs with blood proteins. Then, **Alexandre Fürstenberg** reviews the behavior of fluorescent dyes in water and discusses chromophore aggregation and quenching. This understanding is essential when the dyes are used in the aqueous biological systems. Finally, we remain in the biological context, but move towards spectroscopic imaging techniques in the mid-infrared range. Here, **Fabio Zobi** describes recent advances in two- and three-dimensional tomographic mid-infrared imaging, with focus on cells and tissues.

Last but not least, I want to thank my very creative PhD Student Lisa Peterhans for designing the cover of this CHIMIA issue.

I hope you will enjoy the read as much as I did!

Sincerely,

Prof. Dr. Natalie Banerji
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It is with great appreciation that the Editorial Board of CHIMIA warmly thanks the coordinating guest editor Prof. Dr. Natalie Banerji for the successful realization of the present issue on ‘The Power of Spectroscopy’.