Fundaments of chemical experiments using visible light

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Absorption and emission of light is used in many studies of chemical and biochemical problems. In this course we will focus on the use of the most common instrumentation found in research laboratories. We will make special attention to the proper recording of spectra and time-resolved data and their adequate handling. The course is intended not only for the practitioners of these techniques but also for those having to deal with these data when comparing them to theoretical calculations.

Short outline:

1. Introduction. 1.1 Why using light in the lab? 1.2 Light induced processes outside the laboratory.

2. Basic operational properties of light.

3. Few concepts on light-matter interaction.

4. The photometer. 4.1 Sources of light. 4.2 Optical elements.4.3 The sample. 4.4 Detectors. 4.5 Electronics.

5. Spectroscopies. 5.1 Linear absorption spectroscopy. 5.2 Stationary fluorimetry. 5.3 Combining absorption and emission spectra. 5.4 Measuring kinetics in the excited states. 5.5 A commented list of other more complex techniques and their possibilities. 5.6 Combining light and other techniques.

6. Microscopies based on fluorescence.

Please register via email (gangulo@ichf.edu.pl) two weeks before the start of the course.