

Synchrotron Radiation and Biocrystallography

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The lesson is focussed on the 3D structure determination and analysis of macromolecules (proteins, nucleic acids and their complexes) by using biocrystallographic techniques. Experimental methods for protein crystal growth will be described in details, with application to soluble and membrane proteins. X-ray diffraction on protein crystals will be treated extensively, with particular emphasis on synchrotron light application to solve the “phase problem” for electron density calculation. Crystallographic refinement and protein model validation techniques will be analyzed, together with the main features of the Protein Data Bank. Examples of protein structural projects will be provided, with emphasis on high-throughput applications of the biocrystallographic methods.