

Raman-assisted X-ray crystallography for the analysis of biomolecules.

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We will describe Raman microspectrophotometry applied to crystals of biomolecules [1]. Raman spectra collected *in crystallo* bring structural information highly complementary to X-ray diffraction, relate the crystalline state to the solution state, and allows the identification of ligand-bound or intermediate states of macromolecules [2]. Non-resonant Raman spectroscopy is particularly suitable to the study of macromolecular crystals, and therefore applies to a wide range of non-colored crystalline proteins. Practical issues related to the investigation of crystals by Raman microspectrophotometry, notably at the ESRF/IBS Cryobench laboratory (<http://www.esrf.eu/UsersAndScience/Experiments/MX/Cryobench/>) will be reviewed.

[1] P. Carpentier et al. "Advances in spectroscopic methods for biological crystals, part II: Raman spectroscopy" *J. Appl. Cryst.* (2007), **40**, 1113-1122

[2] G. Katona G et al. "Raman assisted crystallography reveals end-on peroxide intermediates in a non-heme iron enzyme" *Science* (2007) **316**(5823): 449-453