MS14-P5 G-Rob with Crystal Listing function for automated *in situ* diffraction and with robotic Crystal Harvesting. Mohammad Yaser Heidari Khajepour[a], Xavier Vernčde[a], Hugo Lebrette[a], David Cobessi[a], Franck Borel[a], Jacques Joly[a], Christophe Berzin[a], Maxime Terrien[a], Jean-Luc Ferrer[a] [a]*Institut de Biologie Structurale 41 Rue Jules Horowitz 38027 Grenoble, France*
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Two new functions have been recently developed based on the G-Rob systems. G-Rob system [1] was developed on protein crystallography beamline FIP-BM30A at the ESRF. G-Rob, A 6-axis robotic arm based system, is a fully integrated device for crystallography beamlines and laboratories. G-Rob is an "all in one" system. Thanks to its tool changer, it goes automatically from one application to another. A new tool for the robot (μ-Tweezer), a fully motorized inverted microscope (Visualization Bench) and an adapted environment has been developed to allow G-Rob automated *in situ* crystal screening and crystal harvesting. An image processing program has been developed which finds the well centre of the CrystalQuick™ X plates accurately. The centre of the well will be considered as the reference (0;0). A click on the centre of the crystal will save the coordinates referring to the centre (0;0) into a data base. This operation is done on the Visualization Bench independently from G-Rob and users can save as much as interesting crystals they have in their CrystalQuick™ X plate. By providing the plate to G-Rob, the same image processing program leads to an automated crystal centering and X-ray *in situ* screening [2] without any human intervention for a high-throughput diffraction analysis. The harvesting function allows grabbing crystals with the μ-Tweezer tool of the G-Rob system, which is a two-finger micro-gripping device. A semi-autonomous procedure has been developed in order to harvest a crystal from its crystallization drop by using a game pad. The robot while grabbing the crystal soaks it into an appropriate cryo-protectant solution before flash cooling the crystal in the 100K temperature nitrogen stream on the spindle position. Combining the goniometer function of the G-Rob system and the X-ray transparency of the ending elements of the μ-Tweezer tool, gives the ability to diffract crystals in the μ-Tweezer on 360° oscillation without dismounting or human manipulation of the crystal.

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[2] Jacquamet L, Ohana J, Joly J, Borel F, Pirocchi M, Charrault P, Bertoni A, Israel-Gouy P, Carpentier Ph, Kozielski F, Ferrer J-L. *Structure* 12 (2004): 1219-1225.

Keywords: automated *in situ* diffraction, robotic crystal harvesting, robot goniometer

MS14-P6 Surface modification of calcium hydroxyapatite by etidronic acid. Masseoud Othmani[a], Abdallah Aissa[a], Mongi Debbabi[a], [a] *Laboratoire de Physico-chimie des Matériaux, Faculté des Sciences de Monastir, 5019 Monastir, Tunisia*
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Calcium hydroxyapatite $Ca_{10}(PO_4)_6(OH)_2$ possesses two superficial active sites ≡CaOH and ≡POH which facilitate the retention of organic groups. We present here the investigation on the hydroxyapatite surface modified by grafting the etidronic acid ($C_2H_8O_7P_2$) in a wet basic medium. XRD, IR and NMR MAS ^{31}P spectroscopy and chemical analyses show the formation of new hybrid compounds hydroxyapatite-etidronic acid. Chemical analyses indicate that the grafting increases with the increase of the editronic acid content in the synthesis solution. The XRD shows that the apatitic phase is conserved with a low affectation of crystallinity. The IR and NMR MAS ^{31}P spectra confirm the apatitic structure and indicate the presence of new absorption bands (880 and 925 cm^{-1}) and new signals (18 ppm) attributed to the etidronic acid.

Keywords: Hydroxyapatite; Surface modification; Etidronic acid