

Microcrystal sample delivery for serial crystallography in a high viscosity medium

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Serial crystallography at XFEL's has shown great promise in recent years for solving crystal structures from proteins which grow only micron sized crystals. G-protein coupled receptors are an important group of membrane proteins which are often crystallized in Lipidic Cubic Phase (LCP). This material has very high viscosity, and a device has been developed, which allows the generation of a microscopic stream of LCP with adjustable speed for sample delivery to the X-ray beam [1]. Some important GPCR structures could be solved with this device at the LCLS [2]. In addition, new media with similar viscosity to LCP have been developed which enable delivery of soluble or membrane proteins into the X-ray beam with low sample consumption [3]. The high viscosity injection method has also been shown to facilitate serial diffraction experiments with microcrystals at synchrotron microfocus beamlines. This talk will highlight these developments and discuss the possibilities.

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3. Conrad, C. E., Basu, S., James, D., Wang, D., Schaffer, A., Zatsepin, N. A., et al. (2015). A novel inert crystal delivery medium for serial femtosecond crystallography. *IUCrJ*, 2(4), 421–430.