

## **Cryogenics for Third Generation X-ray Research**

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Since the beginning of the 1990's when the third generation X-ray synchrotron sources started operation, the intensity of the X-ray photon beams has steadily risen while the size of the focal spot has been reduced. New disciplines have joined the synchrotron user communities and new techniques have been developed. The challenge in cryogenics is that many of these techniques impose specific conditions, amongst others, X-ray energy, optical access angles, a range of movements, beam heat load and position stability. Additionally, all synchrotron X-ray sources are operated as user facilities which implies that equipment has to be reliable and easy to operate. This presentation aims at giving a short overview of different X-ray measurement techniques used at the ESRF, the constraints and cryogenic problems they present and the possible solutions.