

A CuBe pressure cell for XPD, XAS and SAXS experiments using Synchrotron Light

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A high pressure CuBe cell with B₄C anvil has been developed since 2004 for small- and wide-angle synchrotron x-ray scattering experiments under hydrostatic pressure up to 2GPa, at room temperatures. Recently, an optimized version of this cell was used to measure the pressure effect on structure of Cardanol/Furfural/PAni Green Blend in SAXS beam line at Laboratório Nacional de Luz Síncrotron - LNLS - Campinas. This cell has also been applied to investigate solid samples behaviour under external hydrostatic pressure since 2007 at LNLS. Moreover, it might also be used to investigate biological system as lipid-water dispersions without changes in its design. Magnetic field up to 1.6 kGauss can be applied together the hydrostatic pressure in this cell, taken into account there is no magnetic signal from CuBe, B₄C anvil, and CuBe gasket used. Investigations about ReO₂ behaviour under hydrostatic pressure up to 1.6 GPa were performed at LNLS-XPD and XAFS Synchrotron beam line, and the results revealed to be the ReO₂ a good inner gauge pressure for 8keV-13keV energy range. This project has been developed by LNLS, UFES, IPEN/CNEN and IEA/CTA collaboration.

Keywords: High pressure, CuBe cell, X-ray diffraction, SAXS, XAS.

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