

# PyXES: the all-in-one beamline control and data analysis tool for HERFD/XES/RIXS

S. Bauters<sup>1,2</sup>, V. Dyadkin<sup>3</sup>, A. Scheinost<sup>1,2</sup>, K. Kvashnina<sup>1,2</sup>

<sup>1</sup>Rossendorf Beamline at ESRF - The European Synchrotron, CS40220, 38043 Grenoble Cedex 9, France, <sup>2</sup>Helmholtz Zentrum Dresden-Rossendorf, Institute of Resource Ecology, PO Box 510119, 01314, Dresden, Germany, <sup>3</sup>ESRF - The European Synchrotron, Swiss Norwegian Beamlines, Grenoble, France, [stephen.bauters@esrf.fr](mailto:stephen.bauters@esrf.fr)

With the rise of High Energy Resolution Fluorescence Detected (HERFD) X-ray Absorption Near-Edge Structure (XANES) and the increasing presence of multi-crystal spectrometers at beamlines all around the world, the need for straight-forward user-friendly tools to perform data acquisition and analysis has also risen<sup>[1,2]</sup>.

PyXES is a newly developed program capable of controlling all necessary equipment involved with HERFD, X-ray Emission Spectroscopy (XES) and Resonant Inelastic X-ray Scattering (RIXS) experiments; monochromator movement, defining scan parameters, multi-crystal alignment and movement are all possible with or without SPEC. The online data visualisation tools combined with the easy to use macro builder allow for a completely Graphical User Interface (GUI) based control, if preferred. Also several tools for off-line data treatment and analysis are available, creating an all-in-one user experience from start to finish.

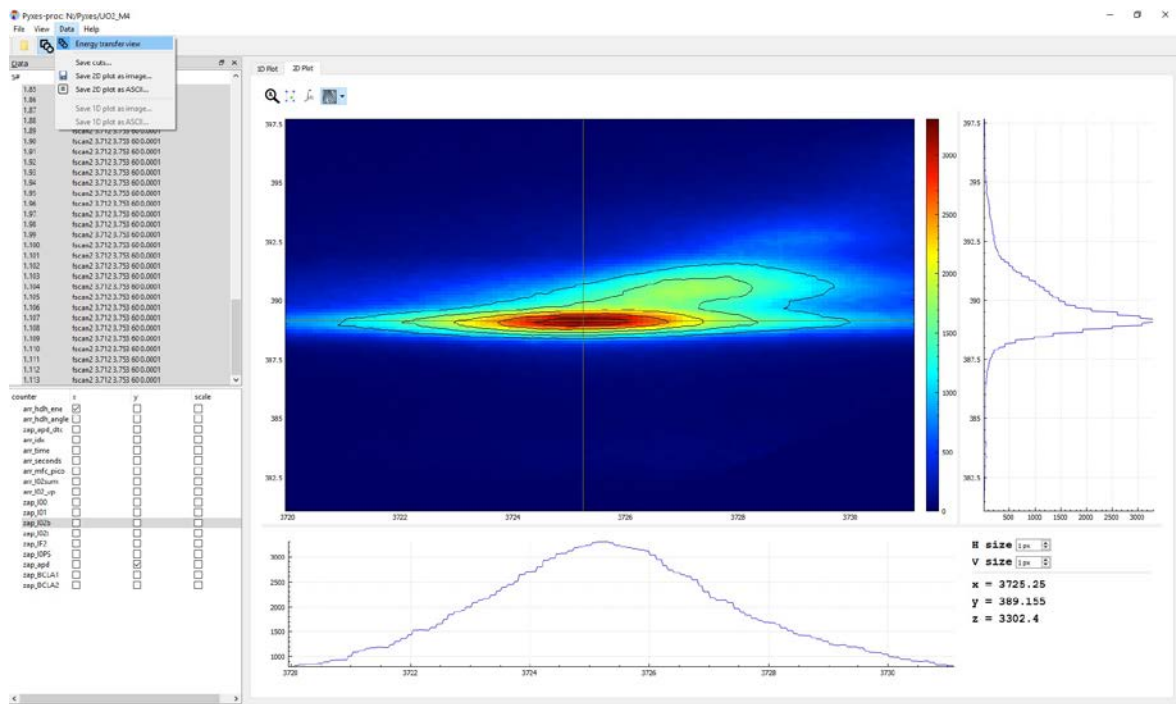


Figure 1: Example of the data analysis module displaying UO<sub>2</sub> M4 RIXS data with energy transfer y-axis

## References

- [1] - K. Hämäläinen, D.P. Siddons, J.B. Hastings and L.E. Berman, Phys. Rev. Lett., 1991, 67, 2850-2853.
- [2] - P. Glatzel, T.-C. Weng, K. Kvashnina, J. Swarbrick, M. Sikora, E. Gallo, N. Smolentsev and R.A. Mori, J. Electron Spectros. Relat. Phenomena, 2013, 188, 17-25.