THPV038 Plug-in-Based Ptychography & Cdi Reconstruction User Interface Development

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Xi-cam [1] proposed to jointly develop data analysis software with standardized framework



Figure 1. Ptychography and CDI plugin are implemented in Xi-cam framework. Other plugins can be added as needed.

Various types of analysis softwares

ntensity Constrain

2

Ptychography

information

Diffraction patterns measured by changing the position of the samples are stored with

Ptychography



Figure 2. Schematics of Ptychography measurement and reconstruction algorithm.



Figure 3. Ptychography reconstruction window.



Figure 4. Ptychography result display.

CDI



Figure 5. Schematics of CDI measurement and reconstruction algorithm. An example of 2D CDI reconstruction using PAL emblem. The more iterations repeated, the closer to the original object.



Bragg CDI is a technique that acquires a 3D image by using Q-Space information around the Bragg Peak. So it is necessary to convert the measured data into Q-space

Figure 6. Bragg CDI reconstruction processes.



Figure 7. Reconstruction and result view window performing 3D Bragg CDI reconstruction.

Conclusion



Figure 8. Ptychography window.



Figure 9. CDI window.

- Ptychography & CDI Plugin were produced In the form of Xi-cam plugin.
- These plugins were tested by using data from soft X-ray and hard X-ray beamlines.
- Excellent tools for building user interface were provided in the Xi-cam framework.

References

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[5] https://bitbucket.org/physwkim/ptychography/src/pls/

[6] https://bitbucket.org/physwkim/xicam.cdi/src/master/

Table 1. References