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pySTXM: a STXM data acquisition application using python, EPICS and Qt

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Scanning Transmission X-ray Microscopy (STXM) is a method used to create spectral images of a wide range of samples. STXM microscopes have been a staple in spectromicroscopy for nearly 30 years, and as such has seen many innovations of that time span. The heart of the technique is the use of software to control the numerous devices that work in coordination with each other to produce a wide range of spectral images. Over the last 4 years the CLS has developed a STXM data collection software called pySTXM, that is focused on the experiment as well as user efficiency. The GUI was implemented in Python using Qt as the application framework, and all device control as well as the scanning engine were implemented in EPICS. Some of the design goals of pySTXM include leveraging the growing knowledge of python in the greater scientific community, placing equal importance on the ability to scale and maintain the software while at the same time presenting a powerful yet friendly GUI regardless of the experience level of the user, and minimizing or remove dependencies on licensed and obsolete third party software. There has been interest from several European labs in the user interface with the desire to integrate it with their (non EPICS) control systems. We will describe the overall architecture and motivations for the design choices made as well as present some of the more unique aspects of the user interface that have garnered the attention from other facilities.

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