



Contribution ID: 227

Type: Oral

From Niche to Mainstream: Ptychography Comes of Age.

Wednesday, 24 November 2021 11:00 (20 minutes)

In the space of a few short years, ptychography has moved from a niche method^{1,2} to emerging as a mainstream technique for user science^{3,4}. Until recently, ptychography required significant expert user experience to collect and reconstruct useable data, with a field of view often limited to a small area (such as a single cell)⁵ by data collection and reconstruction limitations⁶. Now however, ptychography data can be collected at high speed⁷ complementary to modern X-ray fluorescence fly-scanning⁸, with data-pipelines providing results within a few hours using GPU enabled reconstruction algorithms⁹. These advances allow ptychography to be applied to larger areas and sample replicates¹⁰, allowing statistically significant user science to be done in a reasonable time-frame while simultaneously collecting X-ray fluorescence data¹¹⁻¹³. In this presentation, I highlight key milestones on the ptychography journey as it makes its way into the mainstream, as well as looking towards the future.

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Which facility did you use for your research

Primary author: JONES, Michael (QUT)

Presenter: JONES, Michael (QUT)

Session Classification: Instruments & Techniques

Track Classification: Instruments & Techniques