

## Synergy-ED: A new electron diffractometer for microED

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The study of the structure of single crystals has typically been achieved with X-ray diffraction while many decades of progress and research have led to hardware improvements which have pushed the limits of X-ray diffraction. The current generation of home lab instruments allow the study of crystals down to about 1 micron in size with sources such as the FR-X, a high-power rotating anode [1].

In the quest to study even smaller samples than this, microED has become increasingly popular in recent years [2,3]. As electrons interact more strongly with a crystalline sample than X-rays do, the study of samples smaller than 1 micron becomes possible and, in fact, necessary. We would like to introduce our solution for microED, the Synergy-ED, along with results we have obtained using it, and efforts we have made to improve the quality of results.

[1] Matsumoto, T. Yamano, A. Sato, T. et al. "What is This?" A Structure Analysis Tool for Rapid and Automated Solution of Small Molecule Structures. *J Chem Crystallogr* (2020).

[2] Nannenga, B.L. MicroED methodology and development. *Struct Dyn.* (2020) 7(1).

[3] Gruene, T. et al Rapid Structure Determination of Microcrystalline Molecular Compounds Using Electron Diffraction *Angew. Chem. Int. Ed.* (2018) 57(50): 16313–16317.