MicroED excels at detecting atomic periodicities smaller than 1 Å and ab initio determination of molecular structures at this scale. Better than ~0.8 Å periodicities can be determined in crystals too small to be analyzed using traditional x-ray techniques. MicroED structure solutions reveal all atoms in an assembly, even hydrogens and for semi-crystalline biopolymers, and regions of local order/disorder are revealed. Importantly, in the best of cases, these structures can be rapidly determined (within 1h) from powders. Thus, the promising materials generated from the foundry (both small molecules and polymers) can rapidly be characterized by this novel electron diffraction technique.

The Spectra 300C is a next-generation high-stability transmission electron microscope. The Spectra's high brightness X-CFEG field emission gun offers high current in a focused electron probe for 4DSTEM acquisition. This tool is equipped with the latest software and hardware to enable rapid microED data collection at either room temperature or liquid nitrogen temperature.

Key features:

30, 60, 120 to 300 kV Alignments C-TWIN Lens, Gap = 11 mm, Cs = 2.7 mm X-CFEG Cold Field Emission Gun Piezo and Motor Driven Computer-controlled Compustage +/- 80o single tilt Gatan Elsa Cryo-Transfer holder +/- 60/20o dual tilt analytical holder +/- 60/20o dual tilt Gatan 915 Cryo-Transfer holder STEM, Panther Detector, HAADF, iDPC Ceta-D High Speed (4k x 4k, 40 fps) 4DSTEM package MicroED Package (small beam blocker) S/TEM tomography package Velox, image analysis software (TFS) 5th Generation Octagon with fast kV changes