Contribution ID: **164** Contribution code: **TUP32** Type: **Poster Presentation**

Hexi: The High-energy Electron Xtallography Instrument

Tuesday 16 September 2025 17:00 (1 hour)

The High-energy Electron Xtallography Instrument (HeXI), currently under construction at Diamond, is set to expand the range of samples suitable for structure determination via electron diffraction. Funded by the Wellcome Trust's "Electrifying Life Sciences"grant and Diamond Light Source, the HeXI project will utilize Mega-electron-volt (MeV) electrons to bridge the crystal size gap between electron and X-ray scattering. This will enable the determination of structures from crystals ranging between 300 nm and 3 µm. HeXI incorporates a tunable electron source, adjustable between 100 kV and 1 MeV, along with bespoke collimation and magnetic lenses, capable of achieving the precise optical properties necessary to interrogate nanometer-scale crystals within an in-vacuum sample environment. This first-of-its-kind instrument will combine the unique sensitivity of electrons to structural information with the advanced goniometry developed at Diamond for macromolecular X-ray crystallography to enhance overall data quality. In this poster, we will explore the design of this 7-meter-long electron beamline and its main challenges.

Footnotes

Funding Agency

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Session Classification: Tuesday Poster Session

Track Classification: BEAMLINES: Beamlines and Instruments