

# Electron Diffraction – Structure Elucidation of Nano-Crystalline Materials

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Electron diffraction (known also as ED, 3D ED or microED) performing nano-crystallography on crystals smaller than 1  $\mu\text{m}$  is increasingly gaining momentum in science and industry. Complementary to neutron-, powder-, and single-crystal X-ray diffraction, the disruptive technology of electron diffraction opens up fascinating new perspectives for a wide variety of compounds in the fields of chemical, pharmaceutical, and advanced materials research. The recent introduction of dedicated instrumentation to perform ED experiments is a key aspect of the continued growth and success of this technology. ELDICO Scientific presents the electron diffractometer ED-1, a smart combination of a 5-axis nanometer-precise goniometer, a large sample chamber, radically simplified electron optics, and an ultra-high-speed hybrid-pixel Dectris Quadro® camera for diffraction data acquisition. Several examples of data collected on ELDICO ED-1 are showcased to demonstrate the potential and advantages of a dedicated electron diffractometer, covering selected applications and challenges of electron diffraction: 1) polymorphism, 2) crystal mapping and extrapolation to powder XRD, and 3) structure elucidation of energy storage materials as well as zeolites and minerals.