

# ELDICO *ED-1*: A cutting-edge tool to push innovations in nanotechnology

- **ELDICO Scientific has now launched the ELDICO *ED-1*, the world's first dedicated electron diffractometer**
- **A device specifically designed to enable crystallographic experiments on nano-sized solid-state samples, combining the potential of electrons with the accuracy and the ease-of-use known from X-ray crystallography**
- **Electron diffraction is a powerful analytical technique with numerous applications in inorganic and organic chemistry, material sciences, the pharmaceutical industry, e-mobility and battery development as well as in nanotechnologies**

Villigen (PARK INNOVAARE, PSI/West, Switzerland), August 11, 2021 – With ELDICO *ED-1*, the world's first dedicated electron diffractometer just launched by ELDICO Scientific, crystallographic experiments on nano-crystalline samples become easy. The electron diffraction company, a Swiss technology and solution provider, will be presenting its new system to a broader public at the IUCr XXV, the 25<sup>th</sup> world congress of the International Union of Crystallography (IUCr) on August 14, 2021, in Prague (CZ). Electron diffraction is a powerful analytical technique that will prove to be vital for innovations in many industries. The fields of application range from academic crystallography to large and fast-growing industries such as the pharmaceutical industry, battery research and advanced materials, such as MOFs.

ELDICO's *ED-1* is a revolutionary instrument that combines an electron beam of radically simplified design with a goniometer, precise down to the sub-micrometer level. Building on proven approaches from X-ray diffraction and electron microscopy, the new tool combines the best of these worlds, enabling diffraction experiments at the nano-scale in an easy-to-install, user-friendly device. Equipped with this instrument, any lab will be able to perform routine crystallographic analysis on samples that have so far been considered prohibitive.

***“ELDICO's *ED-1* is a class of its own. It will enable crystallographers to enter the sub- $\mu\text{m}$  regime for single-crystal structure analysis of nanocrystalline particles with the accuracy and the ease-of-use known from X-ray crystallography. The crystallization attempts to grow samples that are large enough are finally a thing of the past”, says Eric Hovestreydt, founder and CEO of ELDICO Scientific.*** As the only “dedicated” electron diffractometer in a revolutionary horizontal concept, the device is specifically developed for diffraction experiments.

### **ELDICO *ED-1*: Outperforming any other method used for nano-sized samples**

The device is a smart combination of a five-axis, 360° rotation, submicrometer-precise goniometer and a 160 keV electron beam with specifically designed optics. ELDICO's *ED-1* has Dectris inside: the powerful QUADRO is the most proven detector that is well suited for electrons. The cryo function, available as an option, provides cooling by conduction to support near liquid nitrogen temperatures.

**“We have tailored our system to strictly adhere to the most essential specifications – this is why we can claim ELDICO *ED-1* is made ‘by crystallographers, for crystallographers’”, says Eric Hovestreydt.**

With its superior features, the device outperforms any other method used for nano-sized samples. The diffractometer is designed to measure samples in the range from 10 to 1,000 nm and is targeted to provide resolution of up to 0.84 Å with at least 60-70% complete datasets having an  $R_{int} < 20\%$ . This data typically allows for structure solution and refinement down to  $R_1$  values of 10% in 75% of cases, with unit cell determination as accurate as 1:1,000.

ELDICO *ED-1* is dedicated solely to electron diffraction, delivering high quality results, and is ideally suited for various applications such as:

- atomic structure determination
- absolute configuration determination
- polymorph, salts and co-crystal screening
- detection of micro-crystallinity on amorphous solid dispersions
- proton or lithium cation identification in channels
- exact knowledge of the metal coordination sphere in high-tech materials such as MOFs

### **Customer-centric product and service portfolio, including a leasing option**

With its disruptive horizontal design and innovative sample-handling mechanism, the diffractometer will help crystallographers enter the field of nanocrystallography and produce important structural information faster, with better quality and at a competitive price. **“The ELDICO *ED-1* provides tremendous benefits for those working with sample sizes at the sub-micron level. To cover the vital needs of our clients in academia and various industries, we have set up a strong product and service portfolio”**, says Eric Hovestreydt in his function as ELDICO's Commercial Director.

ELDICO's product and service offerings range from device procurement through CAPEX-friendly subscription solutions to special arrangements for academic clients and measurements-as-a-service – and are thus perfectly tailored to the needs of any user.

**(For journalists, detailed specifications are available on request.)**

**Captions:**

<b>Product picture:</b> “ELDICO ED-1”	<b>Instrumenting nanocrystallography: ELDICO ED-1, the solution for challenges at the sub-micron level</b>
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<b>Photo:</b> “E. Hovestreydt”	<b>“ELDICO’s ED-1 enables crystallographers to investigate nano-sized samples with the accuracy and the ease-of-use known from X-ray crystallography”, says Dr. Eric Hovestreydt, CEO.</b>
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**About ELDICO Scientific AG**

ELDICO Scientific AG (the Electron Diffraction Company) is a Swiss technology and service company founded in 2019 and based at the [Switzerland Innovation Park Innovaare](#) at the Paul Scherrer Institute (PSI), one of the world’s leading research institutes for natural sciences and engineering. ELDICO develops, manufactures and commercializes electron diffractometers: novel analytical instruments for electron-based crystallography that make it possible to investigate nanocrystalline samples. ELDICO will be launching the first instrument specifically designed for nanocrystallographic investigations. Proof-of-concept was achieved in 2018 (ETH Zurich, C-CINA Basel) as part of a Nano-Argovia project of the Swiss Nanoscience Institute (SNI). It was published in 2018 and awarded as a Top 5 "[Breakthrough of the Year 2018](#)" by the leading science magazine SCIENCE. In 2020, among other public recognitions on the Swiss and EU level, ELDICO took second place in the prestigious Pioneer Prize awarded by Technopark Zurich and the Zürcher Kantonalbank (ZKB). ELDICO’s clients are industrial and academic researchers in large and fast-growing industries such as the pharmaceutical, electromobility and advanced materials/MOF sector. ELDICO partners with established engineering companies and component suppliers – including Dectris, a world-leading supplier of detectors – to deliver superior performance. [www.eldico-scientific.com](http://www.eldico-scientific.com)

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