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## CRISMAT involved in a H2020 European Training Network

In the frame of the European H2020 Marie Skłodowska-Curie Actions, the Electron Nanocrystallography (NanED) project has been selected among the European Training Networks (ETN) awarded for 2020<sup>1</sup> under the grant agreement N°956099. *NanED* includes all European scientists hitherto active in the development of electron diffraction methods for structural crystallography and a pool of large and small companies interested in instruments development and materials or pharmaceuticals production and analysis. Nine different countries are represented: Italy, Czech Republic, France, Sweden, Belgium, the Netherlands, Switzerland, Germany and United Kingdom.

Electron diffraction for structural crystallography has grown considerably after the development of dedicated protocols for data acquisition and analysis, to the point where it was listed in Science magazine as one of the major scientific breakthroughs of the year 2018<sup>2</sup>. The so-called "3D" electron diffraction<sup>3</sup> (3D ED) is a novel method for atomic structure determination of inorganic, organic and macromolecular compounds when their crystal size falls in the scale of few tens of nanometer<sup>4</sup> or even below. In many cases, these compounds of high commercial value or with medical applications, are in fact available only as nanocrystals or show phase/polymorphic transitions during crystal growth. 3D ED is an extraordinary new tool to disclose the nature of all these nanocrystalline materials, shedding new light and bringing new knowledge into different scientific fields, from materials science to physics of diffraction, from instrument engineering to chemical production and pharmacology.

Up to now, the development of 3D ED has remained limited to a few laboratories and has been slowed by the lack of both dedicated instruments and young researchers trained in this field at PhD level. *NanED* aims to form a new generation of electron crystallographers, able to master and develop 3D ED techniques in an interdisciplinary and interconnected network, where competences and know-how of usually distant scientific sectors are shared and merged. *NanED* will also establish a new standard of crystallographic training, closer to current industrial needs. Finally, *NanED* will boost the dissemination of 3D ED in academic and industrial laboratories, pushing Europe to be the leader for nanomaterial characterization and development, with a noticeable and global economic impact.

<sup>1</sup> [https://ec.europa.eu/research/mariecurieactions/news/ITN-2020-call-results\\_en](https://ec.europa.eu/research/mariecurieactions/news/ITN-2020-call-results_en)

<sup>2</sup> <https://vis.sciencemag.org/breakthrough2018/>

<sup>3</sup> Gemmi, M. Mugnaioli, E. Gorelik, T. E. Kolb, U. Palatinus, L. Boullay, P. Hovmöller, S. Abrahams, J. P. 3D Electron Diffraction: The Nanocrystallography Revolution. ACS Cent. Sci. 5, 1315–1329 (2019)

<sup>4</sup> 1 nanometer (nm) = 10<sup>-9</sup> meter