



Contribution ID: 74

Type: Oral contribution

ELECTRON DIFFRACTION AND NANOCRYSTALLOGRAPHY: A DEVICE DEDICATED TO THE CRYSTALLOGRAPHIC COMMUNITY

Monday 15 March 2021 16:05 (20 minutes)

Key words: Electron Diffraction, nano-crystallography, electron diffractometer, Eldico Scientific.

Abstract: After the Science nomination for “Breakthrough of the year 2018”[1,2], 3D-Electron Diffraction (3D-ED) using the continuous rotation method and X-ray crystallographic software, is gaining a lot of attention. In the past years many achievements using electron diffraction techniques have been made in the fields of organic and inorganic molecules, polymorphism, material sciences, geological sciences, natural products, energetic materials, bio-molecules and many others [2,3]. Such experiments are done in a (modified)-Electron Microscope. Though the realization of such experiments still requires plenty of expertise and efforts and it cannot be applied on daily bases by everyone. Pioneers in the field of Electron Diffraction [4], all agree that a dedicated device for the realization of such experiments would be of great advantage to the crystallographic community. Though such a device doesn’t exist (up to now) at all. Therefore, it is a necessity that such a device could be made available for the realization of this exciting field of nano-crystallography. Here will present a new device which is dedicated exclusively for such purposes. The device, an Electron Diffractometer, is built and optimized for electron diffraction experiments. Furthermore, it uses exclusively the crystallographic approach (continuous rotation method) and crystallographic software. Experimental examples carried out in this device will be showcased too.

References:

- [1] See: <https://vis.sciencemag.org/breakthrough2018/finalists/#rapid-structure>
- [2] **a)** T. Gruene, *et al. Angew. Chem. Int. Ed.*, **2018**, 57, 313-16317. **b)** C. G. Jones, *et al. ACS Cent. Sci.*, **2018**, 4, 1587–1592.
- [3] Short, personal selected list of mayor achievements: **a)** P. Brázda, *et al. Science*, **2019**, 364, 667-669. **b)** R. Bückner, *et al. Nat. Commun.*, **2020**, 11, 996. **c)** E. T. Broadhurst, *et al. IUCrJ*, **2020**, 7, 5-9.
- [4] Personal communication with (selected list): S. Parsons, T. Grüne, M. Gemmi, U. Kolb, among others.

Primary author: Dr SANTISO-QUINONES, Gustavo (Eldico Scientific AG)

Co-authors: Dr STEINFELD, Gunther (Eldico Scientific AG); Dr HOVESTREYDT, Eric (Eldico Scientific AG)

Presenter: Dr SANTISO-QUINONES, Gustavo (Eldico Scientific AG)

Session Classification: Electron diffraction and electron microscopy

Track Classification: Electron diffraction and electron microscopy