

REPORT

Experiment **MA-4527**

" Structural characterization of novel advanced materials on high-resolution synchrotron beamline ID22"

In the framework of experiment **MA-4527** granted by ESRF for 3 shifts on beam line ID22 (started on 01 December 2020 at 08:00 and ended on 02 December at 08:00) 17 high-resolution powder patterns of 10 compounds were measured. The X-ray wavelengths used were 0.354478(1) and 0.354494(4) Å. The patterns were measured in the 2θ ranges 0.0 – 32°. The Figures of all 17 patterns are shown below.

Sample **ZIOC2** (chiral HOF) has been measured at elevated temperature. Eight synchrotron patterns gave us an opportunity to establish two new crystal structures - tetrahydrate and anhydrous forms of **ZIOC2**.

Samples **GAVR47**, **GAVR50**, **GAVR51**, **GAV52** & **GAVR53** are chiral organic diamidophosphites. Patterns **GAVR51** & **GAVR52** are indexed, the structure determination is in progress. The crystal structures of **GAVR48** & **GAVR49**, measured in September, are now solved.

Sample **LA342** is ternary intermetallic with La. This sample contains three (or even more) crystalline phases, two of which are known, and the 3rd one needs to be established. Synchrotron pattern allowed us to index the 3rd phase now.

Sample **HOF50** is HOF based on palladium porphyrinylphosphonate.

Samples **VERA33** & **VERA34** are new MOFs with La.

Three latter patterns are under consideration in the search for possible unit cells (indexing).

Finally, we estimate the obtained synchrotron patterns as very informative and thank the ID22 staff for their high-quality work in this remote mail-in experiment.

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