

# On Software Tools Which Assist Electron Microscopists with Sharing Metadata and Numerical Results in Accordance with the FAIR Data Stewardship Principles (12 min talk + 3 min discussion)

*Thursday, 15 April 2021 15:00 (15 minutes)*

Microscopy and spectroscopy experiments and the associated computational and theoretical analyses of data from such experiments are the resources of laboratory and data-processing workflows that yield numerical data and contextualization through metadata. The purpose of such experiments is ideally accurate and precise delivery of quantitative evidence in support of or against a formulated set of research hypotheses.

Faced with a large variety of hardware and software tools, and individually larger and faster acquirable data, makes a comprehensive documentation of data and metadata a challenging task. These challenges have consequences for how findable, accessible, interoperable, and how reproducible research with experiments at present is; and thus how efficiently such data can be exchanged between scientists.

To take action the German Research Foundation has made a cross-disciplinary call to form a number of national consortia to work on the building of a national research data infrastructure for experimentalists. One proposed consortium is FAIRmat, whose aim is the building of such an infrastructure for methods of the condensed-matter physics community.

In this talk, I will report an example of the methods used and the software tools which FAIRmat will develop. Specifically, the example will be on how we organize metadata of electron microscopy experiments using a common metadata schema. We will report on the role and value of parsers as tools within automated protocols for filling in the respective metadata schema. Our results support that it is possible to find a common schema to store detailed microscopy (meta)data.

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**Session Classification:** Session IV