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## THE EM GLOSSARY: A COMMUNITY RESOURCE PROVIDING HARMONISED TERMINOLOGY IN ELECTRON MICROSCOPY

With the EM glossary initiative, our goal is to harmonize terminology in the field of electron and ion microscopy so humans, devices and algorithms can exchange data easily and collaborate more efficiently and effectively.

We achieve this through the following measures:

1. moderation of a community collaboratively harmonising terminology,
2. provision of a machine-readable OWL artifact, [1]
3. provision of a human-readable web app - the EM Glossary explorer; [2]
4. support and counselling for application-level adoption of the resource.

The Helmholtz Metadata Collaboration (HMC) [3] is coordinating the EM glossary initiative. This includes a group of volunteers, with scientists from more than 23 institutions across Switzerland, Austria, and Germany, as well as representatives of the FAIRmat [4] and the NFDI-MatWerk [5] consortia, who meet every two weeks to discuss and achieve consensus on the definitions of terms commonly used in electron and ion microscopy. We aim to produce concise, unpacked definitions with rich annotations in accordance with semantic best practices. New participants are warmly welcomed.

Doing so we have, to date, generated harmonized definitions for more than 65 terms. These are provided as a machine accessible resource [1] in the web ontology language (OWL). The artifact offers stable domain-level semantics and is regularly updated based on progress in our community group. By aligning with, or adopting the artifact in application-level metadata, intra- and inter-disciplinary interoperability is improved.

Terminology adopters include the NFDI consortia FAIRmat, and NFDI-MatWerk, the NFFA-Europe Pilot (NEP) [6], the Joint Lab 'Integrated Model and Data-driven Materials Characterization' (JL-MDMC) [7], and the research data management platform NOMAD [8]. New adopters are encouraged and welcomed. We provide detailed support and counselling for potential adopters upon request.

In addition to technical adoption there is scientific value in the glossary itself: Easy browsing of the glossary is provided by the EM Glossary Explorer [2] to facilitate the use of the resource for technical writing or for teaching purposes.

In conclusion, through a consensus-based process we have produced a resource for the entire electron and ion microscopy community. Application-level semantics can be aligned with its machine-readable implementation which acts as a semantic glue within the field. In addition, the human-readable resource reduces ambiguity in communication within the field.

Interested in getting involved? Send an email to [hmc-matter@helmholtz-berlin.de](mailto:hmc-matter@helmholtz-berlin.de) or [hmc@fz-juelich.de](mailto:hmc@fz-juelich.de) to get in touch!

References:

- [1] EM Glossary OWL artifact base URI: <https://purls.helmholtz-metadaten.de/emg/>
- [2] EM Glossary Web Explorer: <https://emglossary.helmholtz-metadaten.de/>
- [3] Helmholtz Metadata Collaboration: <https://helmholtz-metadaten.de/en>
- [4] FAIRmat project: <https://www.fairmat-nfdi.eu/>
- [5] NFDI-Matwerk: <https://nfdi-matwerk.de>
- [6] NFFA-Europe Pilot : <https://nffa.eu>
- [7] JL-MDMC : <https://jl-mdmc-helmholtz.de>
- [8] NOMAD research data management platform: <https://nomad-lab.eu/>

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