

An ontology for physical metallurgy

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SFI PhysMet - Centre for Sustainable and Competitive Metallurgical and Manufacturing Industry [1] is a newly funded Norwegian centre for research-based innovation lasting from 2020 to 2028. The aim is to accelerate the transformation of the national metallurgical and manufacturing industry towards more sustainable and cost-efficient production and future material products, solutions, and improved processing methods. To integrate models and tools, an ontology dedicated to metallic alloys microstructure and properties will be developed. The ontology will be released under a creative commons license (CC-BY 4.0).

The goal is to develop an EMMO-based [2] domain ontology for microstructure and connect it to process and characterization ontologies.

This ontology dedicated to physical metallurgy will strongly focus on microstructure, defined as a “state” of a material from which properties can be extracted and which can be altered by “processes”. While focusing mostly on aluminium and ferrous alloys, this work will contribute to a more generic microstructure Domain Ontology providing a common representational language for describing microstructures of metallic and non-metallic materials (polymers, ceramics etc.), including all aspects needed to support connecting microstructure characterisation to data processing and through-scale and through process modelling by close collaboration with the EMMC task group.

REFERENCES

[1] <https://www.ntnu.edu/physmet>

[2] <https://emmc.info/emmo-info/>.