Horizon Europe MatCHMaker Project

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Abstract

The MatCHMaker project [1] is determined to support excellence in research on methods and tools for advanced materials development. MatCHMaker will enable the integration and interoperability of complex Characterisation & Modelling (C&M) workflows matching the needs of EU manufacturing industry. Requirements on multiphase and multiscale materials coming from Construction, Energy and Mobility sectors will be translated into specific innovation challenges that can be addressed by an integrated approach combining characterisation and (physics and data-based) modelling for establishing the process-microstructure-macroscopic properties correlation in advanced materials in a reproducible and efficient way reducing development costs, time and risks while improving sustainability.

Knowledge transfer, data sharing and full interoperability between C&M "communities" will be facilitated using data-related standards (Materials Characterisation Data – CHADA, Materials Modelling Data – MODA, Elementary Multiperspective Material Ontology – EMMO) and by the creation of an open repository with connection to design and manufacturing processes. The repository will be based on Semantic Web to represent rich and complex ontologies. EMMO is the starting point, domain and application ontologies related to MatCHMaker use cases. It provides a fully semantical vocabulary to describe the produced C&M data. Standardisation of MatCHMaker ontologies, data documentation and domain ontologies will be sought via engagement in specific activities.

The ambition of MatCHMaker is to validate project results on three Use Cases (UC) representatives of low carbon and clean industry: UC1\Construction\Cement; UC2\ Energy\ Solid Oxide Fuel Cells/Solid Oxide Electrolysis Cells (SOFC/SOEC); UC3\ Mobility\Proton-Exchange Membrane Fuel Cells (PEMFC).

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References

[1] MatCHMaker website, https://he-matchmaker.eu/