

Nanotechnology and Advanced Materials research in H2020 and Horizon Europe (H-EU)

Strategic planning, impact, governance and public engagement

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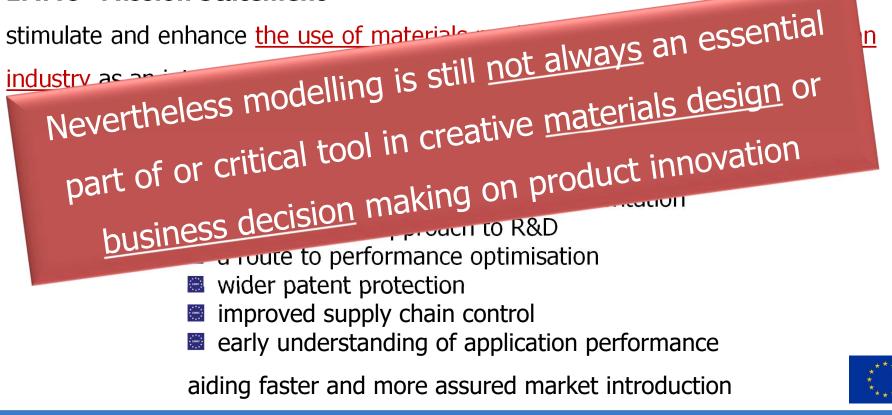
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The European Materials Modelling Council Motivation www.emmc.info

<u>New & improved materials</u> are significant <u>innovation driver</u> in Europe <u>Materials modelling</u> is a key enabler of <u>R&D efficiency and innovation</u>

EMMC Mission Statement





The European Materials Modelling Council Future opportunities for materials modelling

<u>Industry 4.0</u>: materials innovation by modelling and multi-scale simulation tools incl. <u>virtual design</u> on all scales and <u>virtual testing</u> (digital twins), high-performance computing.

Optimisation of

- materials' production
- life-cycle assessment
- degradation and ageing processes

This should be based on <u>standardised materials' databases and the exchange of</u> <u>data</u> (use of date to develop new materials).

<u>Integration</u>: connect <u>modelling and characterisation expertise to production</u> <u>facilities</u>; combined with <u>artificial intelligence and semantics</u> can drive faster development of materials

Education and training: personnel to translate the industrial problem into modelling one and to understand the generated related data





- Materials Modelling Marketplaces (innovation hubs) and Interoperable • <u>Repositories</u> enable more rapid innovation
- Interoperability: ٠
 - work on <u>semantic foundations and standardisation</u>, i.e. build the European Materials Modelling Ontology (EMMO) and make it operable
 - drive cross boundary developments that integrate vertical industries and digital providers
 - develop and manage interfaces between different domains and systems
 - Enable <u>data exchange</u> and <u>data ownership</u> and <u>digital trust</u>
 - Establishment of an open translation environment to link materials modellers ٠ with translators and end-user industry
 - To implement modelling as a standard tool for Business Decision Support ٠ System (BDSS)
 - To promote <u>knowledge-based modelling</u> as an effective way to boost the ٠ application of Artificial Intelligence (AI) in materials development industrial use.





The European Materials Modelling Council



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