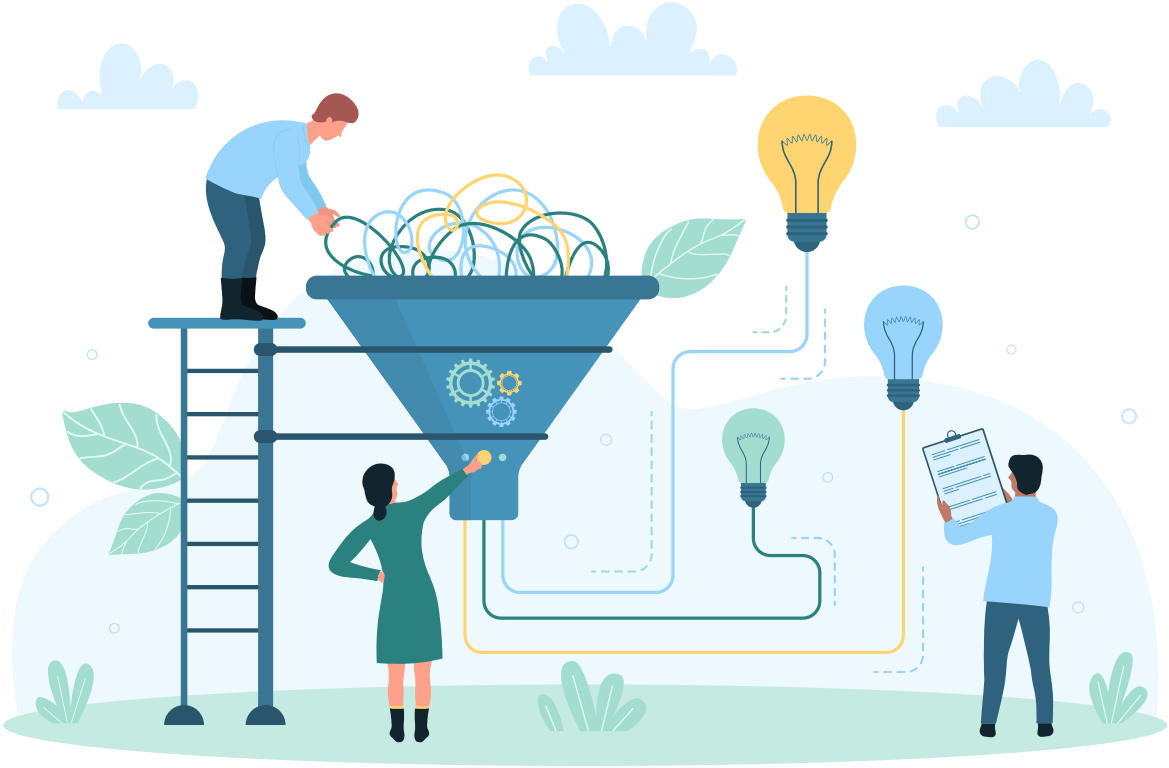
MatCHMaker
Materials Characterisation & Modelling

NEWSLETTER #5

July 2025



Open data and industry-driven environment for materials characterisation and modelling combing physics and data-based approaches

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Spotlight on our Partner: CEA (France)

From 2D models to machine learning breakthroughs, CEA is harnessing the power of data and AI to transform materials characterisation in the MatCHMaker project.

In this interview, **Geoffrey Daniel**, Research Engineer at CEA and work package project lead for MatCHMaker, explains how 2D physics-based models are used to establish equations and simulations that help interpret complex material behaviours and predict performance.

We also hear from **Kassem Dia**, Research Scientist at CEA-Liten, who focuses on machine learning and image processing. His work demonstrates how AI tools accelerate data analysis and deliver deeper insights, bringing real benefits to MatCHMaker's research goals.

Geoffrey Daniel (CEA, Paris), Research Scientist

Kassem Dia (CEA, Paris), Research Scientist

The French Alternative Energies and Atomic Energy Commission (CEA) is a key player in research, development and innovation in the areas of low-carbon energies, technological research for industry, fundamental research in the physical sciences and life sciences, and defense and security. In each of these fields, the CEA maintains a cross-disciplinary culture of engineers and researchers, building on the synergies between fundamental and technological research. CEA is the Coordinator of the MatCHMaker project.

Synergies

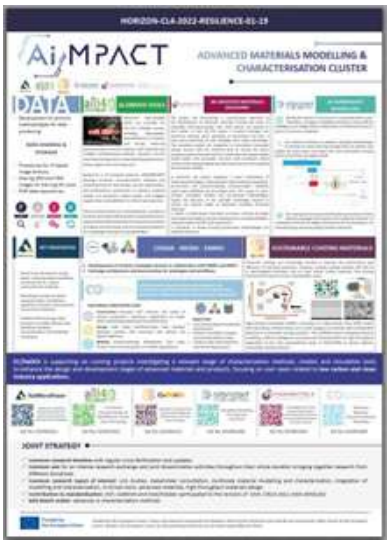
In this interview, we highlight the innovative collaboration between MatCHMaker's partner SINTEF and the DOME 4.0 Horizon 2020 project. **Bjørn Tore Løvfall**, discusses the role of ontology in DOME 4.0 (https://dome40.eu/) and how it aligns with the wider MatCHMaker Project cluster. Bjørn explains that SINTEF standardises the way materials are described and connected to ensure better synergy with sister projects like CHARISMA, OntoTrans, and NanoMECommons.

SINTEF is one of the largest European independent research organisations with international top-level expertise in the fields of technology, the natural sciences, medicine and the social sciences. Carrying out several thousand projects every year, their focus lies on Energy, industry, manufacturing, and ocean space.

MatCHMaker - A Proud Member of AiMPACT Cluster

We are excited to announce that MatCHMaker is now part of the AiMPACT cluster, a Horizon Europe alliance dedicated to advancing materials modelling and characterisation to create a more sustainable, digital and high-performance future.

This collaboration unites leading projects that share a vision, complementary expertise and a commitment to accelerating innovation through coordinated scientific and industrial efforts.



Publications

MatCHMaker Project Explores Greener Cement Alternatives

Hourly three-minute creep testing of an LC3 paste at early ages: Advanced test evaluation and theeffects of the pozzolanic reaction on shrinkage, elastic stiffness, and creep
https://doi.org/10.1016/j.cemconres.2024.107705

As part of the MatCHMaker project, researchers from TU Wien (Institute for Mechanics of Materials and Structures – IMWS) have published new findings in *Cement and Concrete Research* that deepen our understanding of sustainable cement technologies.

The researchers investigated the early-stage shrinkage, elastic stiffness and creep behaviour of limestone calcined clay cement (LC3) paste. LC3 is a climate-friendly alternative to Ordinary Portland Cement (OPC), with the potential to reduce CO2 emissions by 30-40%.

This research represents a significant advancement in understanding the mechanical properties of LC3 and supports the MatCHMaker project's broader mission to promote innovative, low-carbon construction materials.

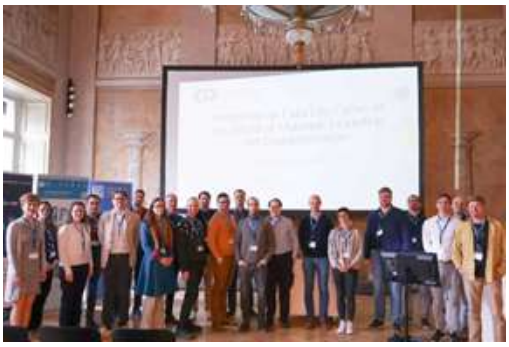
Event Highlights

MatCHMaker Workshop with EMMC & EMCC and Sister Projects

Workshop on Data Life Cycles in the World of Materials Modelling and Characteristaion
Vienna, Austria
07.04.2025
Website: https://he-matchmaker.eu/news/matchmaker-workshop-with-emmc-and-sister-projects/

On 7 April 2025, the MatCHMaker project hosted a workshop entitled 'Data Life Cycles in the World of Materials Modelling and Characterisation' at TU Wien in Vienna. Organised in collaboration with the European Materials Modelling Council (EMMC), the event brought together experts from MatCHMaker and its sister projects - AddMorePower, AID4GREENEST, CoBRAIN, D-Standart and KNOWSKITE-X - to share their approaches and best practices at every stage of the data lifecycle: planning, acquisition, processing, analysis, preservation and sharing.

This productive day of presentations and discussions paved the way for future cross-project synergies and enhanced collaboration within the European materials modelling community.



5th International EMMC Workshop 2025
Vienna, Austria
08-09.04.2025
Website: https://emmc.eu/events/emmc-2025/

From 8-10 April 2025, the MatCHMaker project took part in the International EMMC Workshop at TU Wien once again. Project partners from CEA, Heidelberg Materials, SINTEF, and TU Wien attended in person, engaging with a broad community of experts and EU projects from various disciplines. The team contributed to key sessions on data interoperability, workflow integration and sustainable materials innovation.

Project partner Alexandre Ouzia (Heidelberg Materials) presented the results of a cross-project survey on characterisation and modelling workflows, as well as the outcomes of the open workshop, Sophie Schmid gave a talk titled 'Lessons Learnt in European Cement Research Project. Potential and limitations of multiscale modelling', and Jesper Friis (SINTEF) co-moderated a session on sharing data across projects and institutions. These activities highlighted MatCHMaker's strong presence in the European materials and data community and demonstrated its commitment to advancing FAIR, interoperable, and sustainable research practices.

CHADA, CHaracterisation DATA - an introduction

online webinar
17.06.2025
Website: https://emmc.eu/events/training-chada-characterisation-data-an-introduction/

MatCHMaker and the EMMC hosted a training webinar titled 'CHADA - CHaracterisation DATA - an introduction'

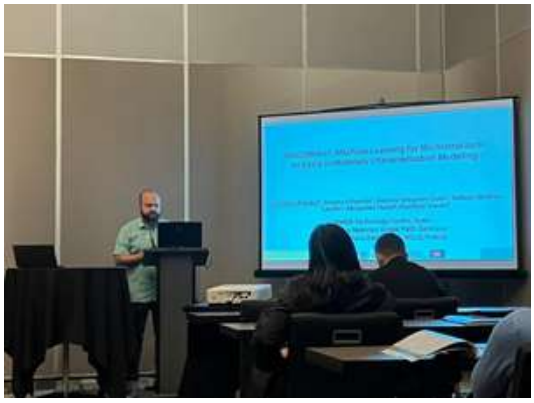
On 17 June 2025, the MatCHMaker project, together with the European Materials Modelling Council (EMMC), organised an online training webinar titled 'CHADA: CHaracterisation DATA – An Introduction'. Led by Alexandra Simperler from the EMMC, the session introduced participants to the updated CHADA framework, which is aligned with the CEN Workshop Agreement CWA 17815, and covers the standardised documentation of materials characterisation workflows. Designed for professionals in academia, research and technology organisations, and industry, the training covered the modular CHADA template, practical guidance on CWA 17815, and the use of Business Process Model Notation (BPMN) for visual workflow representation. The webinar builds on MatCHMaker's mission to enhance transparency, reproducibility and integration across Europe's materials data ecosystem.

GENVIA represent MatCHMaker at Hannover Messe 2025

Hannover, Germany
08-09.04.2025
Website: https://www.hannovermesse.de/en/hannover-messe-2025/

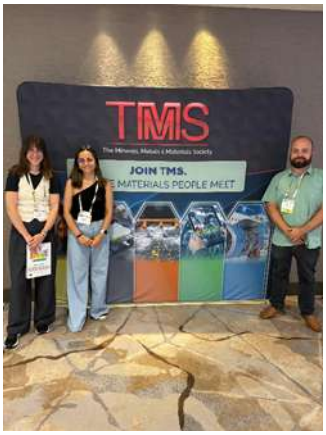
MatCHMaker, represented by Patrice Tochon from Genvia, presented recent developments in solid-oxide electrolysis cell (SOEC) technology and engaged in discussions on collaboration and innovation in materials research.

MatCHMaker at AIM 2025



Anaheim, USA
15-19.06.2025
Website: https://www.tms.org

The MatCHMaker project was represented by our partner Christian Precker from AIMEN at the TMS Specialty Congress 2025 during the 3rd World Congress on Artificial Intelligence in Materials & Manufacturing (AIM 2025) in Anaheim, CA. His presentation, part of the session 'Development of Novel ML Methodologies III', focused on AI-driven microstructural analysis for materials design.



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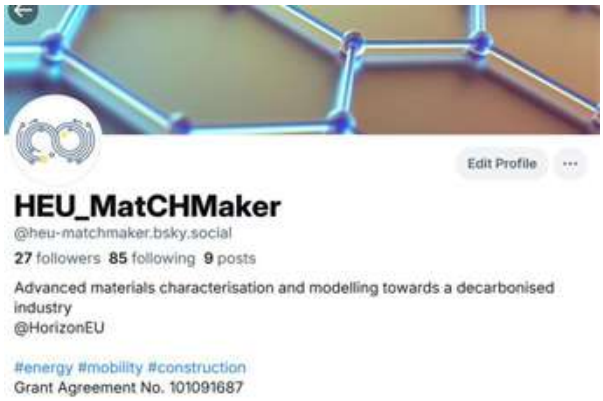
Empowering Women and Girls in Science

In celebration of the International Day of Women and Girls in Science (11 February 2025), the MatCHMaker Project released a special media highlight video featuring Sophie Schmid, a PhD student at TU Wien's Institute for Mechanics of Materials and Structures (IMWS). In the video, Sophie shares her experiences as a young researcher in civil engineering, offering insights into her research journey and the importance of women's representation in STEM subjects. Her story is a powerful reminder of the value of diverse voices in science and the need to support and inspire the next generation of researchers.

Bluesky Launch



The MatCHMaker Project is now officially part of Bluesky, a new platform for open, federated dialogue.
We will be sharing news, project milestones, highlights of our collaborations, and insights into the world of materials modelling and characterisation. Follow us to stay up to date and connect with the MatCHMaker community as we drive innovation in sustainable materials research.

Bluesky

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