

## **European Materials Acceleration Center for Energy (EU-MACE)**

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Materials have played a decisive role in nearly all rupture technologies in the industrial history of our society. Faced with the current climate, geopolitical and humanitarian crisis, many international and regional entities (political, industrial and scientific alike) recognize the importance of a strong materials innovation ecosystem for driving the clean energy transition. In response, self-driving laboratories (SDL) (a.k.a. MAPs – materials acceleration platforms) are created at institutional, regional and international levels. SDLs integrate combinatorial synthesis, high-throughput characterization, automated analysis and machine learning for fast-track discovery and optimization of advanced materials. While these platforms are proving their effectiveness in producing advanced materials with targeted functionalities and physical properties, a large margin of improvement still exists. Streamlining materials integration into components and to safe and sustainable products is one example challenge in order to enable rupture technology. Another challenge is that of geographical concentration of MAPs that practically excludes a substantial fraction of research labs and tech-companies in Europe from contributing and benefiting from such platforms. Finally, next generation material science researchers need to develop new skills to be able to integrate such systemic and automated approach into their future R&D framework.

To this end, EU-MACE will become an ecosystem for accelerated materials development at the user end, gathering researchers and stakeholders with state-of-the-art digital and material competences combined with the market/social pull. Our inclusive & systemic approach will lay the foundation for a future centre of excellence for advanced functional materials to assist transition toward a united and stronger EU.

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