

## European digital infrastructure for advanced materials

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Advanced materials are an important factor for the competitiveness of European industries and are crucial building blocks for the EU's resilience and open strategic autonomy. The demand for advanced materials is expected to significantly increase in the coming years and should be matched by increased innovation and production in the EU. Europe must ensure it has the necessary capacities and resources to lead innovation and deployment in advanced materials. This will ensure economic security with regards to the critical technologies for today's society. In line with the Green Deal's goals and industrial policies, sustainability and circularity of advanced materials and resilience of value chains must be factored into such an approach.

The European Commission's Communication "Advanced Materials for Industrial Leadership" aims to establish a dynamic, secure and inclusive materials ecosystem in Europe that ensures leadership in research and fast-tracks innovations to market, whilst ensuring sustainability and protection of human health and the environment. To meet this challenge, EU, national, regional, and private investments must be mobilised in a coordinated approach. Following this Communication, the European Commission has created the Technology Council for Advanced Materials, which held its first meeting in November 2024. A new partnership called Innovative Advanced Materials for EU (IAM4EU) is being set up to secure and strengthen European technology sovereignty, industrial leadership and competitiveness in innovative advanced materials in strategic markets.

An important element of the Communication is the digitalisation of the R&I process. The Materials Commons for Europe will create a pioneer federated digital infrastructure for advanced materials research and development, demonstrating use cases facilitating industrial uptake and offering a feedback loop to academic research, and give researchers from industry and academia access to interoperable, heterogeneous and Findable, Accessible, Interoperable and Reusable (FAIR) data sources and computational tools that support the workflows for the design and development of advanced materials. This coincides with the Commission's strategy to increase the uptake of AI by European scientists and help set up a European AI Research Council. AI is transforming all disciplines, and materials science is an application area of AI where a major impact of this powerful technology can be expected. It will certainly play a key role in the Materials Commons for Europe.

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