

Advanced Materials for a Sustainable Future through Digital Technologies

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Materials Week 2024 embodies key concepts of Safe and Sustainable by Design (SSbD), Industry Commons and Materials as a Science (MaaS). These are core tenets of a novel way of developing new materials for a sustainable future in Europe and globally. Digitalization plays a critical role in realizing practical materials solutions for that future. Yet, digitalization has diverse forms, some of which are elaborated in this conference session on Materials Tools & Platforms for R&I Acceleration. The emerging premise is that Materials Acceleration Platforms (MAPs), autonomous or self-driving materials laboratories, have considerable merit in accelerating the discovery and development of novel materials and devices, embedding sustainability principles, and reaching and engaging developed and developing nations. The deployment of advanced methods including artificial intelligence, robotic automation and computational simulation and modeling will extend our capabilities beyond conventional scientific processes. And, it will do it on an accelerated time scale. The fact is that climate mitigation, geopolitical realities and scarce resources are driving us to find higher performing alternative materials for a broad set of applications. Digitally enhanced research and technology infrastructure is needed to make credible impact in health, pharma, energy and electronics, and these sectors will benefit from investment in accelerated materials discovery.

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