Area H

Symposium H5: *Critical raw materials in a data-driven world*

Title		
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Abstract

Data generation, harvesting and storage, electronic devices, smart sensors and grids: they all use critical raw materials such as Rare Earth Elements, cobalt, lithium, tantalum, gallium, or germanium – to name just a few. Critical raw materials are the physical foundation of the digitalization of industries and of digital technologies that allow for collecting and using data intelligently to fuel societal progress and facilitate the transition towards regenerative and efficient energy systems and a more circular economy.

Conversely, information technologies are a crucial driver for raw materials management. This concerns on one hand intelligent material composition, industrial processing, and fabrication. On the other hand, data could be the key enabler for managing materials in a more efficient, circular, and sustainable manner. Data collection and sharing can enable efficiencies such as: tracking materials' origins to ensure responsible sourcing; locating products for refurbishment and reuse; informing about product composition facilitating recycling; and mapping materials stocks and flows to reduce wastes and mitigate potential supply risks. Blockchain and other ledger technologies might facilitate the collection and sharing of raw material data across the supply chain in the future, while protecting personal, commercial, and governmental confidentiality.

The session welcomes international contribution from areas at the intersection of critical raw materials, digital technologies and data science: e.g. digital and information technologies concerned with an increasing raw materials use, data-assisted materials and

product design and management, environmental sciences assessing impacts with data-based systems, efforts towards utilizing data for more transparent supply chains, and related topics.

The session will be organized as a hybrid event; virtual attendance and contributions are welcome. The submission of research papers alongside the oral contributions, to be published in the new European Journal of Materials, is encouraged.

(Brett, would it be possible to add an option in the abstract submission system people can select in order to indicate that they would be willing to submit papers?)