

## **Session Chair /Organizer**

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## **Digitally-Enabled Sustainable Manufacturing for Advancing Circular Economy**

Digital transformation offers great opportunities for manufacturing creating sustainable value along economic, environmental and social criteria. Advanced technologies support the creation of sustainable products, processes and services with fewer resources in order to increase the use of resources in multiple life-cycles. Total life-cycle considerations for products and the manufacturing processes have emerged as an effective means to achieve Circular Economy (CE) with economic, environmental and societal benefits. Technological elements of CE are built on the 6Rs (Reduce, Reuse, Recycle, Recover, Redesign and Remanufacture). The majority of industry and academic leaders predict digitalization as one of the major enablers of human-integrated and sustainable manufacturing. Its benefits include increased flexibility and productivity, enabling more people to fulfil a variety of complex tasks at reduced costs, with lower reduced resource utilization. Methodologies for decision-making for and application of new technologies, e.g., additive manufacturing and assembly for customized products or spare parts, require a digital support.

The session is aimed at demonstrating the recent developments in digitally-enabled sustainable manufacturing showing the integration of its technological elements with the human interface, applied to manufacturing activities for advancing CE.

The chairs invite researchers and practitioners from academia, industry, and government to contribute theoretical and applied research papers in areas including, but not limited to, the following topics:

- Digitalization-driven product/process innovation for sustainable manufacturing
- Human integration into digital manufacturing
- Digital interfaces for sustainable manufacturing
- Data analytics and Big Data for sustainable value creation
- Digital support and training for manufacturing operations, quality control, assembly, maintenance and post-use end-of-life activities
- Human-IT-interfaces at semi-/automated manufacturing activities
- Advanced digital technologies for customized products or spare parts
- Digital architecture for sustainable product/process/system development
- Digital technologies in 6R applications for Circular Economy

Keywords:

Sustainable manufacturing  
Industry 4.0  
Decision support system