



# Additive Manufacturing: A Renaissance for Powder Metallurgy Research

Additive manufacturing (AM) is a process of joining materials to form a final shape through the successive addition of material layer by layer. This process is also known as 3D printing. AM is a rapidly growing technology that is revolutionizing the manufacturing industry. It offers many advantages over traditional manufacturing processes, such as the ability to create complex geometries, reduce waste, and shorten lead times. AM is also becoming increasingly important in the field of powder metallurgy research.

Powder metallurgy (PM) is a process of producing metal parts from a powder mixture. It involves the mixing of metal powders, compaction, and sintering. PM has been used for decades to produce a wide range of metal parts, from simple gears to complex turbine components. However, the traditional PM process is often limited by the complexity of the parts that can be produced and the high cost of tooling. AM offers a promising alternative to traditional PM, as it allows for the production of complex parts with minimal waste and lower tooling costs.

The combination of AM and PM is creating a new renaissance for powder metallurgy research. Researchers are exploring a wide range of new materials and processes for AM, including laser powder bed fusion, electron beam powder bed fusion, and selective laser melting. These new processes are enabling the production of parts with improved properties and complex geometries that were previously impossible to manufacture.

This special issue of *J Powder Metall Min* focuses on the latest research in AM and PM. It includes a variety of articles that explore the fundamental principles of AM, the development of new materials, and the optimization of AM processes. The articles in this issue provide a comprehensive overview of the current state of AM and PM research and offer valuable insights into the future of this exciting technology.

We hope that you will find this special issue of *J Powder Metall Min* to be a valuable resource for your research and a source of inspiration for your work.

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