

Bibliographic study in Additive Manufacturing

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Abstract

As mass production has migrated to developing countries, European and US companies are forced to rapidly switch towards low volume production of more innovative, customized and sustainable products with high added value. To compete in this turbulent environment, manufacturers have sought new fabrication techniques to provide the necessary tools to support the need for increased flexibility and enable economic low volume production. One such emerging technique is Additive manufacturing (AM). AM is a method of manufacture which involves the joining of materials, usually layer-upon-layer, to create objects from 3D model data. The benefits of this methodology include new design freedom, removal of tooling requirements, and economic low volumes. AM consists of various technologies to process versatile materials, and for many years its dominant application has been the manufacture of prototypes, or Rapid prototyping. However, the recent growth in applications for direct part manufacture, or Rapid Manufacturing, has resulted in much research effort focusing on development of new processes and materials. This study focuses on the implementation process of AM and is motivated by the lack of socio-technical studies in this area. It addresses the need for existing and potential future AM project managers to have an implementation framework to guide their efforts in adopting this new and potentially disruptive technology class to produce high value products and generate new business opportunities.

Selected applications demonstrate how polymer-based AM is being exploited in lightweight engineering, architecture, food processing, optics, energy technology, dentistry, drug delivery, and personalized medicine. Unparalleled by metals and ceramics, polymer-based AM plays a key role in the emerging AM of advanced multifunctional and multimaterial systems including living biological systems as well as life-like synthetic systems.

Keywords : AM Additive manufacturing ; low volume production ; RP Rapid Prototype .

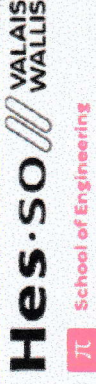
Acknowledgement:

This study was funded by Scientific Research Project (PRFU) approved by the Algerian Ministry of Higher Education and Scientific Research

Project number: B 00L01UN280120230004. Under the title: Study of the influence of synthesis conditions on the physicochemical properties of a mixed oxide based on lanthanum, copper and cobalt

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In the Advances In Additive Manufacturing conference, AIAM'2023
held from 18th to 20th May 2023 in Le Paradis Palace Hotel
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