

Department: ME | Date: 19 December 2020

**One-Day Online Guest Lecture
on**

**"METAL ADDITIVE MANUFACTURING - SCOPE FOR RESEARCH AND
FUNDING OPPORTUNITIES"**

19th December 2020

A recent advent of the additive manufacturing route is quite promising to provide the solutions to several challenges such as long development cycle time, cost, and more wastage experienced in the traditional manufacturing processes. Additive Manufacturing (AM) is a promising technique to fabricate the complex shaped special alloys such as Ti alloys, nickel-based super alloy, special steels, and Al alloys components. Among various AM techniques, Laser Powder Bed Fusion (L-PBF) is commercially very successful due to the advantages of greater design flexibility, reduction in overall production time, eliminating tooling and machining cost. L-PBF is a three-dimensional (3D) metal printing technique that involves layer by layer fabrication of a component to achieve near-net-shapes without any complications.

In this technique, the user-defined 3D CAD data is fed into the system. The system converts it to a machine-readable file that decides the laser path. The laser selectively scans the powder bed and forms the shape, layer by layer with a large degree of design flexibility. With this objective, an online guest lecture on "METAL ADDITIVE MANUFACTURING - SCOPE FOR RESEARCH AND FUNDING OPPORTUNITIES" was organized in the department on 19th December 2020. Dr. T. Ram Prabhu, Deputy Director/Scientist, Defense R and D Organization, India, was the resource person.

Dr. T. Ram Prabhu delivered a lecture on "Proposal Ideas - Metal Additive Manufacturing" in which he explained the concepts of history of Additive Manufacturing (AM), principles, types of AM processes, metallurgical concepts as well as the current importance of AM in various application sectors. He emphasized the need and development made in manufacturing sectors, and major influencing parameters to be considered while performing the AM processes.

Further, Dr. T. Ram Prabhu discussed the highlights and various grades available in aluminium alloys, titanium alloys, super alloys, special steels and its applications in AM. He raised awareness of real time AM applications in defense sector among students and emphasized the challenges and opportunities available in the field of AM processes. Finally, Dr. T. Ram Prabhu explored the applications and future scope in AM processes employable to various industries. 32 members of faculty benefited from the lecture.