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Applications of Power Beams: Translation of Research Outcome into Industrial Solutions

New inventions and technologies are conceived every day, yet many remain dormant within the laboratory. Whether by oversight or missed connections, we often fail to breathe life into these innovations and bridge the gap to industrial application. Ultimately, process efficiency, environmental sustainability, and economic viability are the pillars that determine a product's marketability and demand. Guided by these principles, our team at Bharathiar University has targeted specific research areas designed for direct translation into industrial solutions. In this presentation, I will demonstrate how we have leveraged our research to develop market-need technologies through few case studies in the area of "waste to wealth"and advanced manufacturing:

1. Waste to wealth

i. Plasma-based reclaiming of gold and silver from jewellery wastes

ii. Plasma-assisted conversion of grinding sludge into value-added products

iii. Plasma processing of aluminum dross to produce micro- and nano- alumina

2. Advanced Manufacturing

i. Development of a laser and plasma-based wire-feed 3D printer

ii. Plasma assisted production of specialized metal powders for 3D printing

Author: KANDASAMY, RAMACHANDRAN (DEPT OF PHYSICS, BHARATHIAR UNIVERSITY, COIMBATORE)

Presenter: KANDASAMY, RAMACHANDRAN (DEPT OF PHYSICS, BHARATHIAR UNIVERSITY, COIMBATORE)