**RDF Proposal: Acquisition of a Hybrid Manufacturing Setup for an Advanced Manufacturing Facility (AMF)**

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# Total Requested Amount: $1,150,000

# Summary

A multidisciplinary team of PIs from the advanced manufacturing group representing 3 colleges at Texas A&M University (TAMU), namely, Engineering, Architecture and Science, request research development funds (RDF) towards procuring a **hybrid manufacturing setup**.

Hybrid manufacturing, which combines additive manufacturing with subtractive material removal and other material transformation modes, has been noted as the “next big advancement” in manufacturing following additive manufacturing (colloquially known as 3D printing). The proposed investment would be the chief showpiece, alongside $4.5M of equipment and instruments pooled from participating departments and colleges at a state-of-the-art advanced manufacturing facility (**AMF**) developed in the Emerging Technology Building. The user group includes the growing number (35+) of faculty engaged in manufacturing research, and their collaborating faculty members (~100) of the TAMU system.

The proposed RDF investment and AMF would position TAMU to (a)engage in sustained **large-scale integrated research** **in science and engineering,**  thereby establishing TAMU as the leader in a nascent area of advanced manufacturing, (b) address the strategic **R&D, training, innovation and workforce gaps** of the regional and national industry, namely in, custom design, planning and manufacturing of components for extreme environments, material genome initiative, as well as technologies and systems to assure quality and durability of custom-made products, and (c) develop **center-level proposals** (e.g., NSF STC, EFRI, DOE/DOD NNMI, DOD MURI) that builds on recent successes in initiating interdisciplinary research efforts in advanced manufacturing, especially towards transforming product realization from one of merely designing and controlling geometries into an integrated, concurrent process-material-microstructure-shape-surface design process. Physical realization of customized functionally graded components with excellent control at sufficiently large scales and realistic geometry remains a grand challenge of modern science.