Faculty Member

Timken Foundation Center for Precision Manufacturing

Contact Information

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Research Interests

- Failure of Engineering Materials
- Heat Treatment of Metals, Dilatometry & Quenching
- Sheet Metal Deformation, Bulk Material Deformation, Casting, Powder Metallurgy
- Materials & Manufacturing of Automotive Parts
- Machining, Grinding and Finishing processes
- Inventive Devices using advanced materials including shape memory alloys

Sample Research I:
High Pressure Intensive Quenching

- Quenching utilizes quench media to impart specific properties to the ferrous and non-ferrous parts
- We are developing a new standard for high pressure intensive quenching where the steam vapor blanket is disrupted to impart high hardness and residual stresses to the surface. Expensive alloys can be replaced with optimized alloys because of residual stresses imparted to surface and high hardness for wear resistance.
- Ferrous & Non-Ferrous Metals, Cast, PM, Additive Manufactured Materials

Sample Research II:
Concept to Commercialization Laboratory

The C2C Lab is a “Inventive Product Space” for UA Faculty to create proof-of-concepts around their academic or NSF Funded research. The lab works with entrepreneurial faculty & industry professionals to develop proposals to fund disruptive concepts, products & prototypes with the ultimate goal of mass manufacturing and impacting society. Some examples of funded research are:

1 . A photo-debondable adhesive dressing for wound care

2. A sensor system array for smart oil condition monitoring

3. A standardized Intensive quenching system for alloys

4. An inflatable camping tent inspired by bio-mimicry