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AMAZEMET – your advanced manufacturing partner

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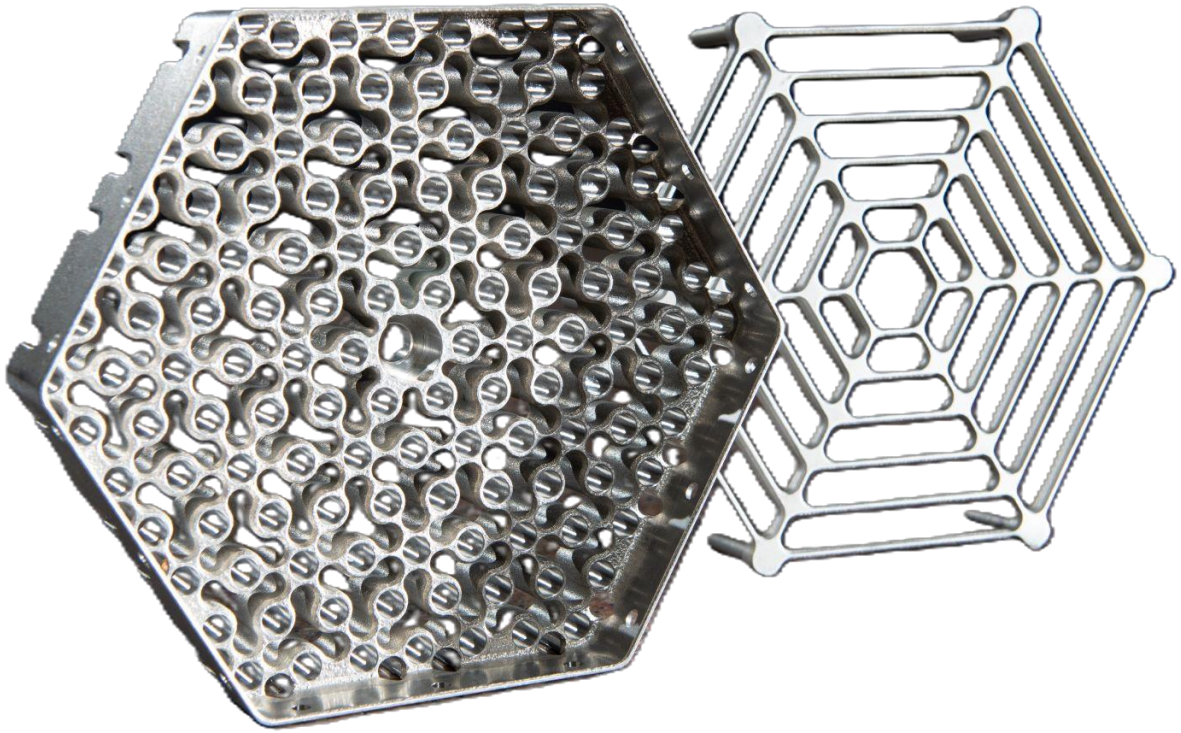
AMAZEMET, CEO
Carnegie Mellon University, Adjunct Professor

Why additive manufacturing aka metal 3D-printing?



Expensive materials requires ”*the best*” manufacturing method.

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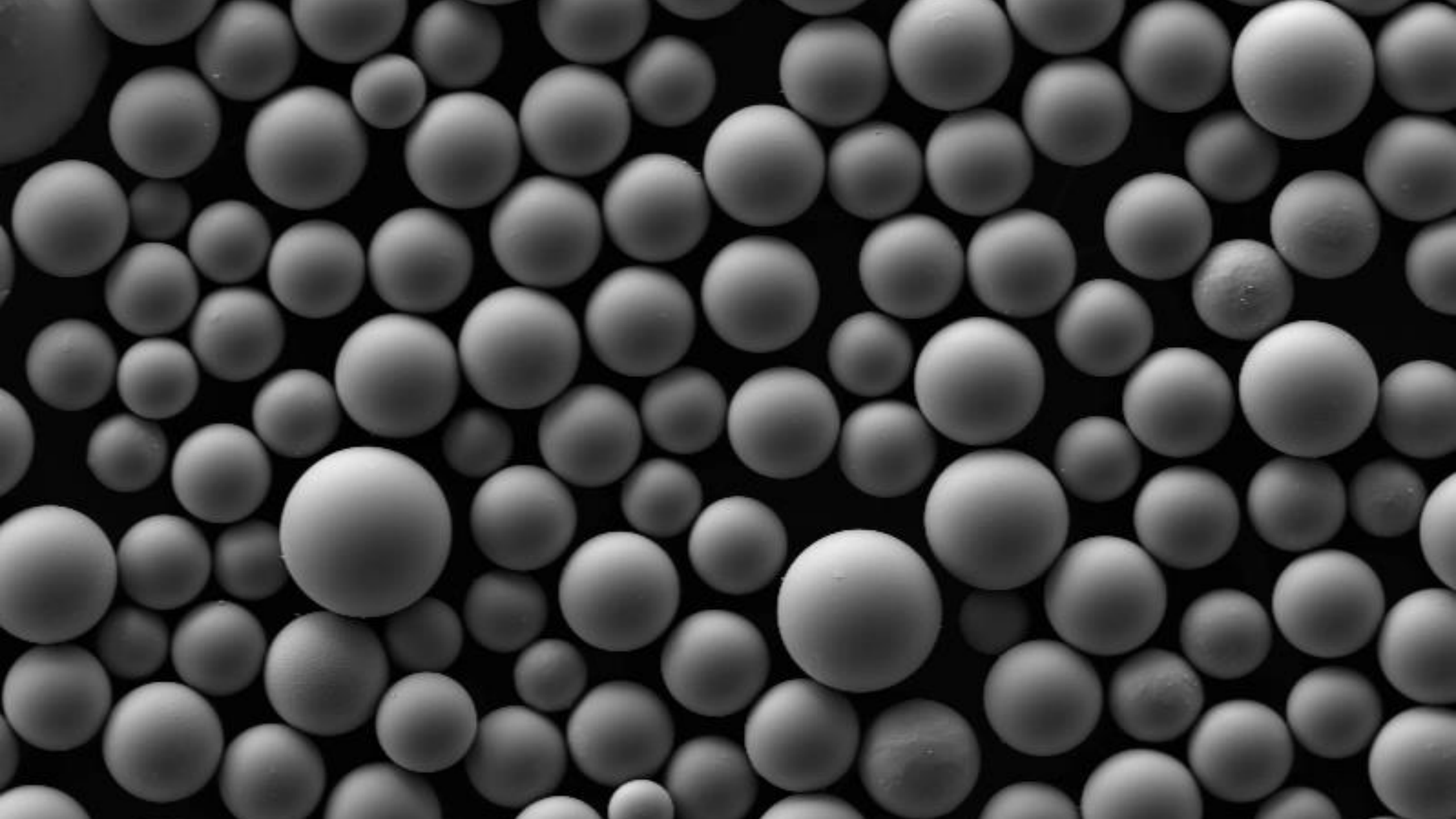
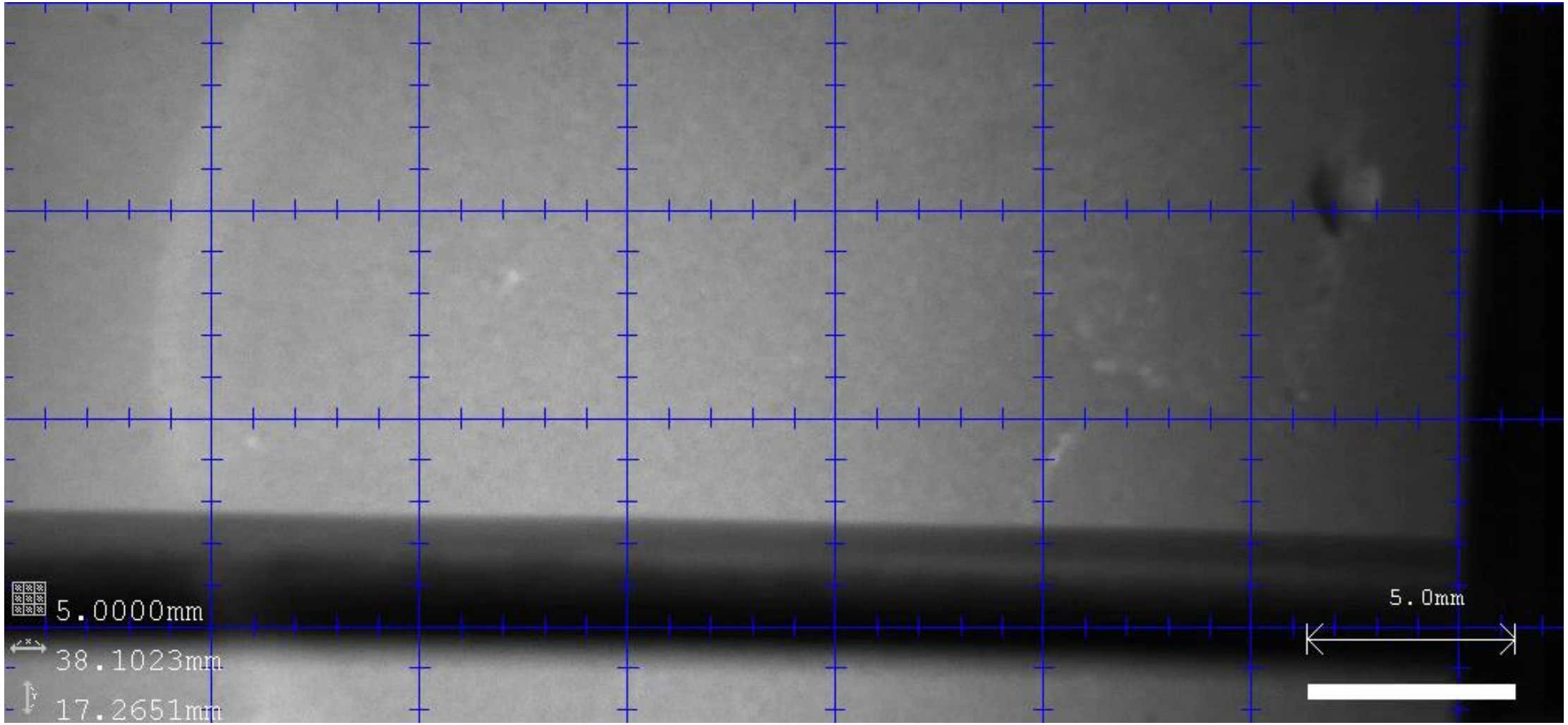
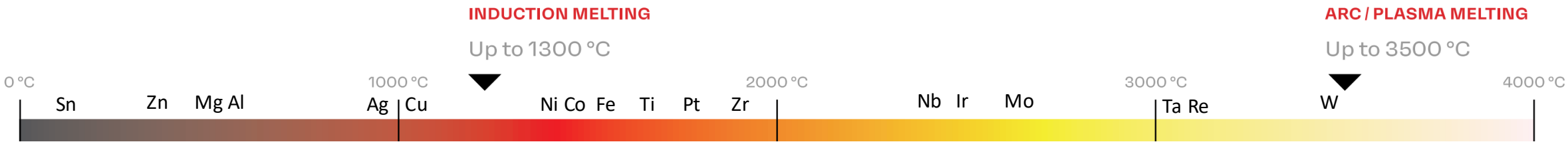
Expensive manufacturing requires “*the best*" materials. ← **our job**

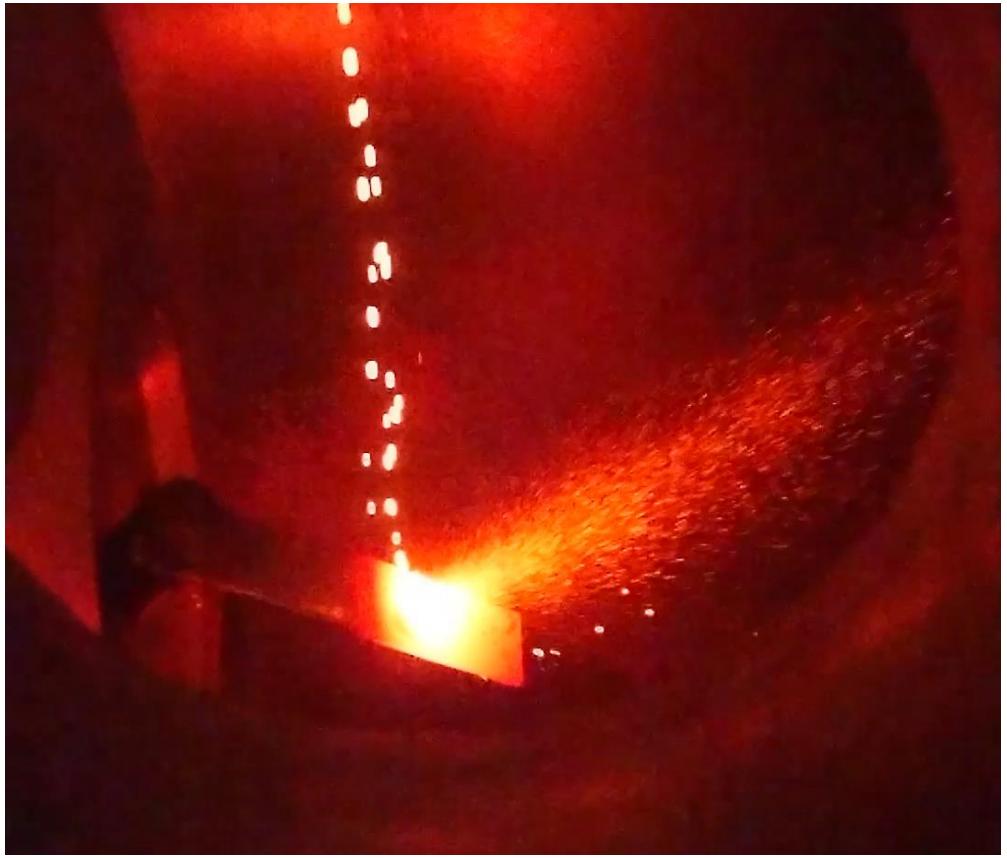


ULTRASONIC ATOMIZATION – HOW IT LOOKS LIKE?

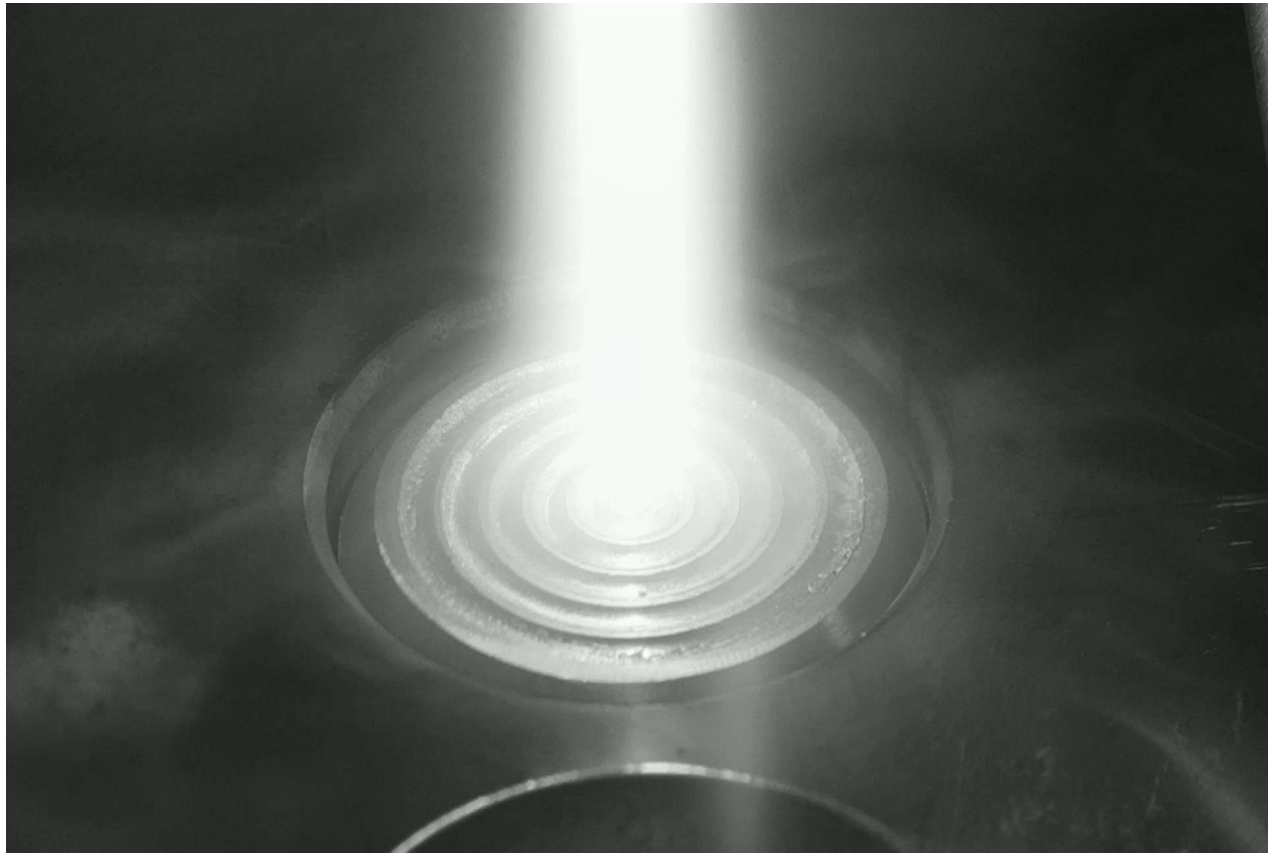


ULTRASONIC ATOMIZATION





Induction (Pat. US12416067)



Plasma (Pat.US11938557)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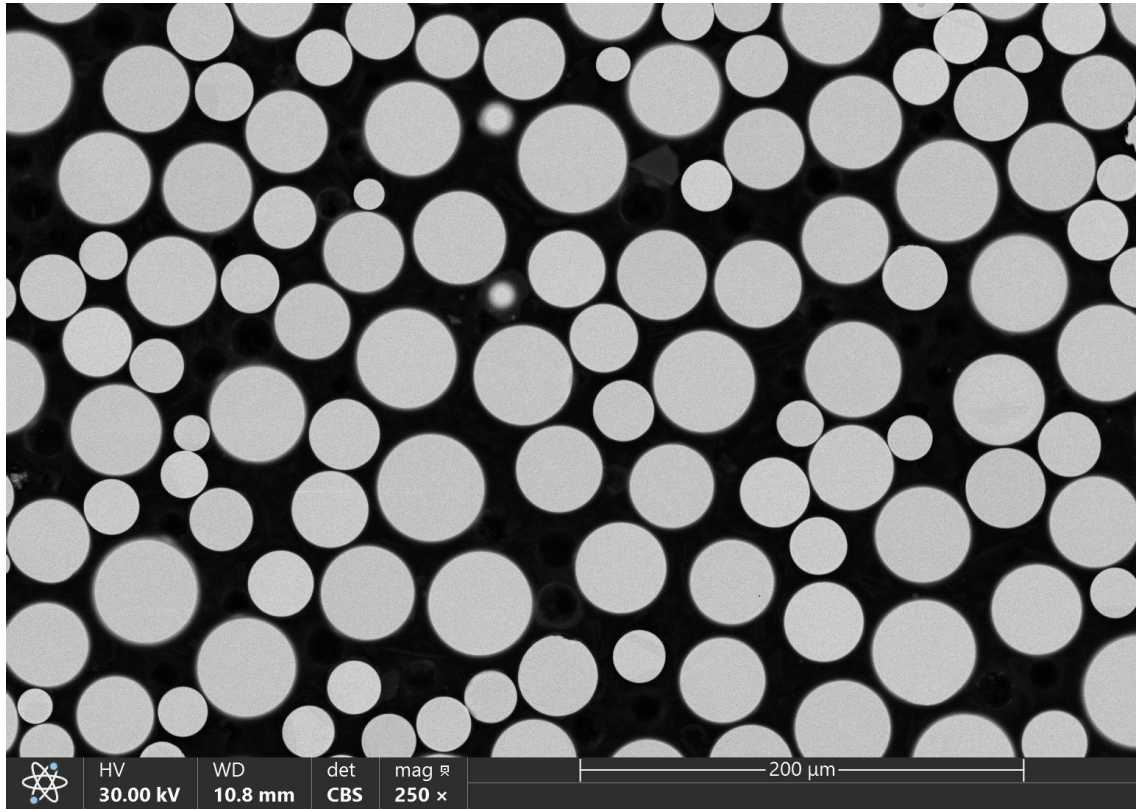
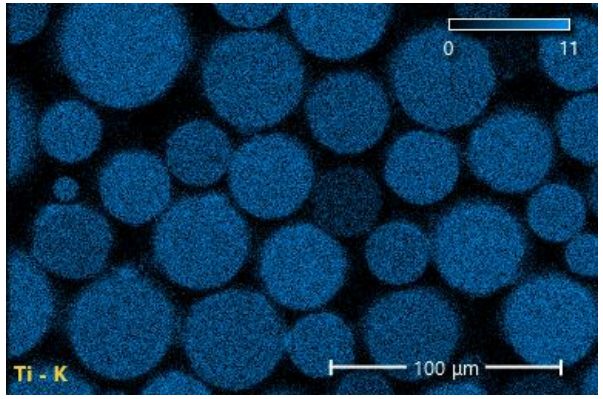
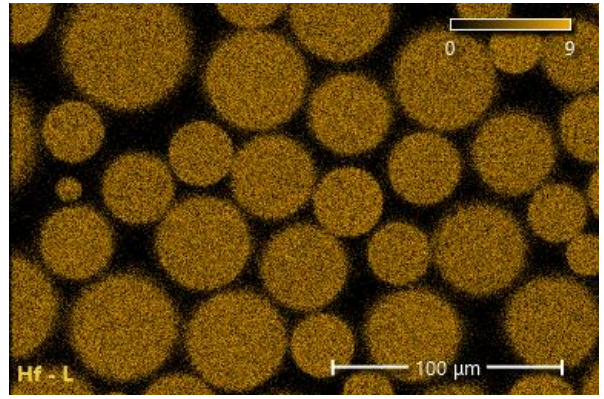
powder2POWDER

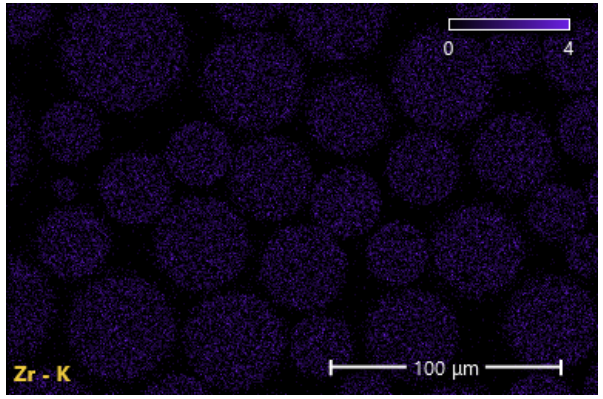
New material development – high entropy alloys

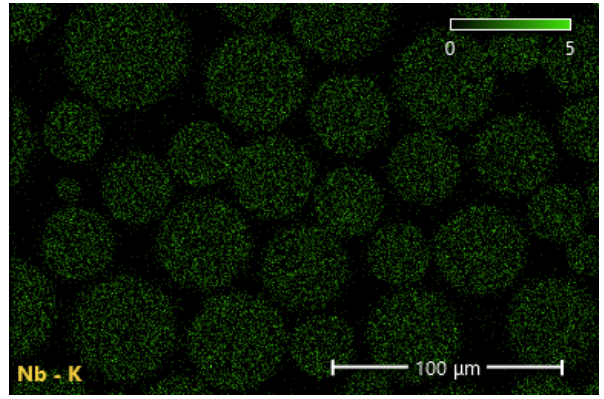
NbZrHfTi equimolar alloy (Nb: 22.64 wt% Zr: 22.22 wt% Hf: 43.48 wt% Ti: 11.66 wt%)



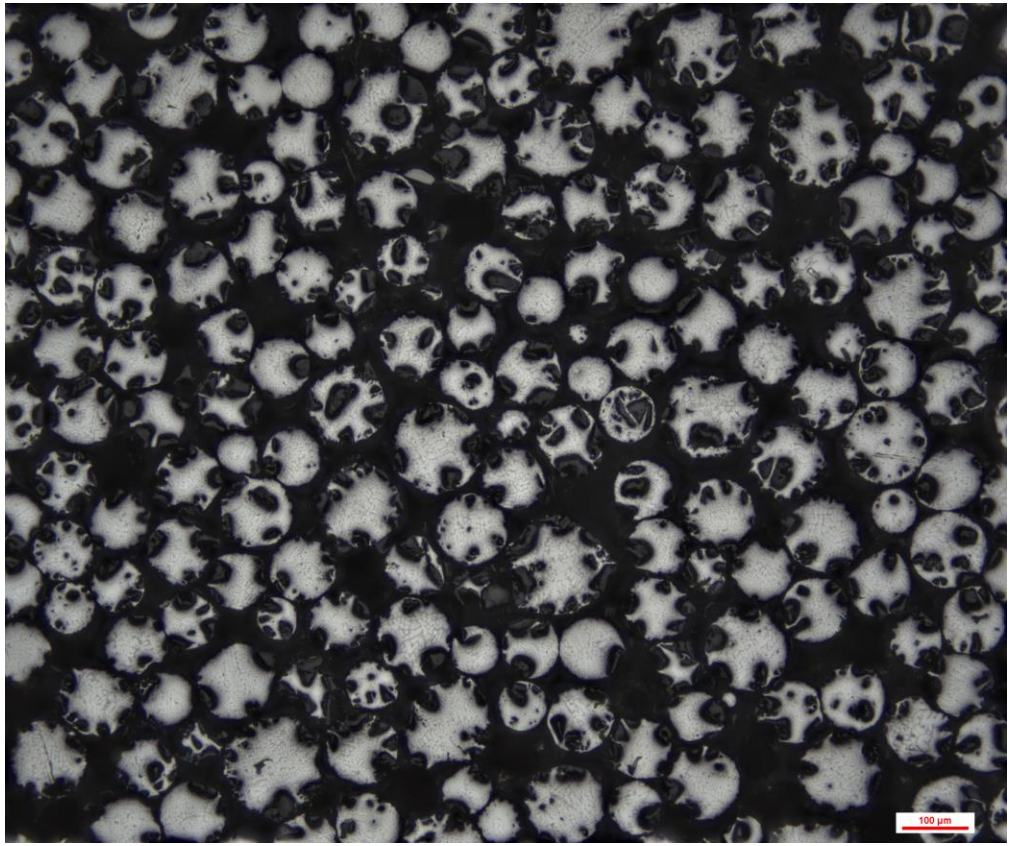


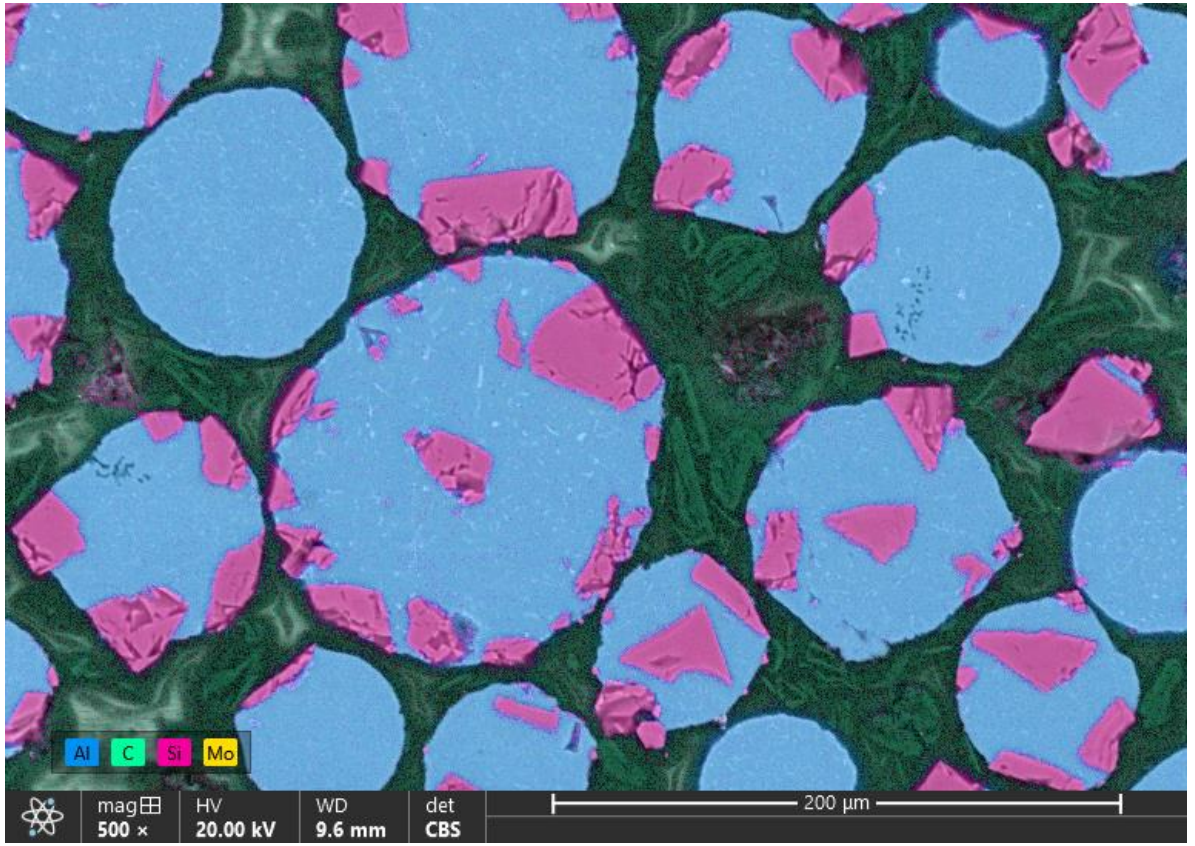




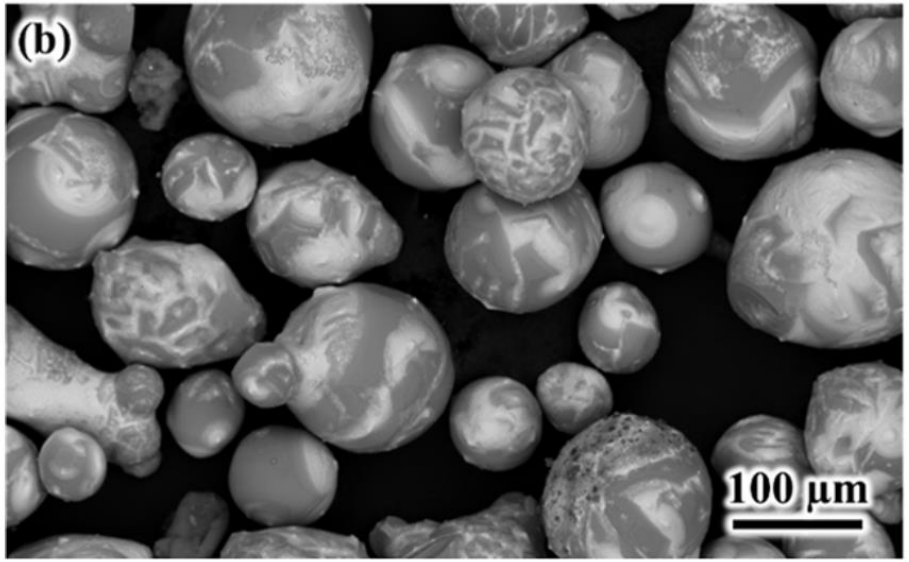


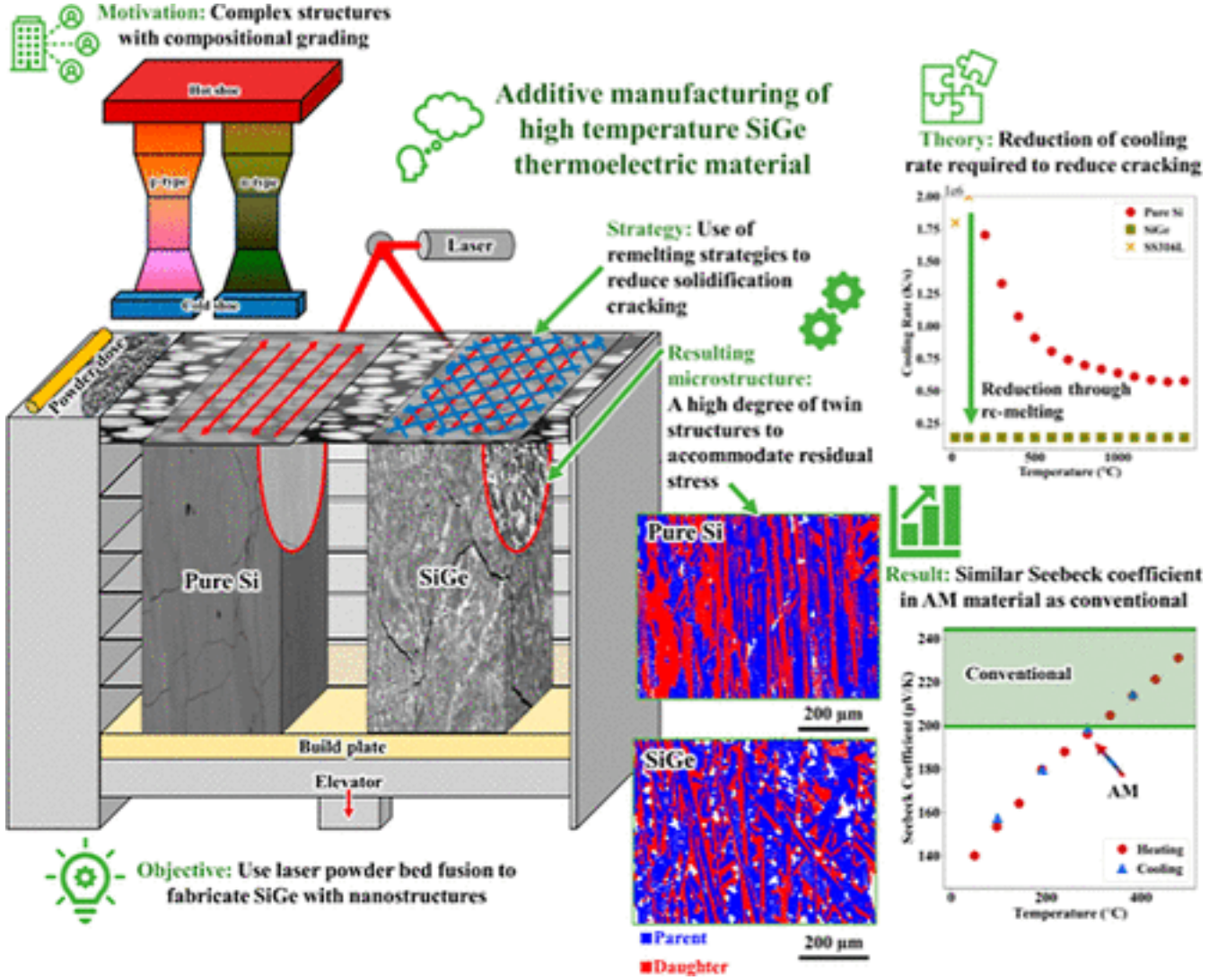
METAL MATRIX COMPOSITES



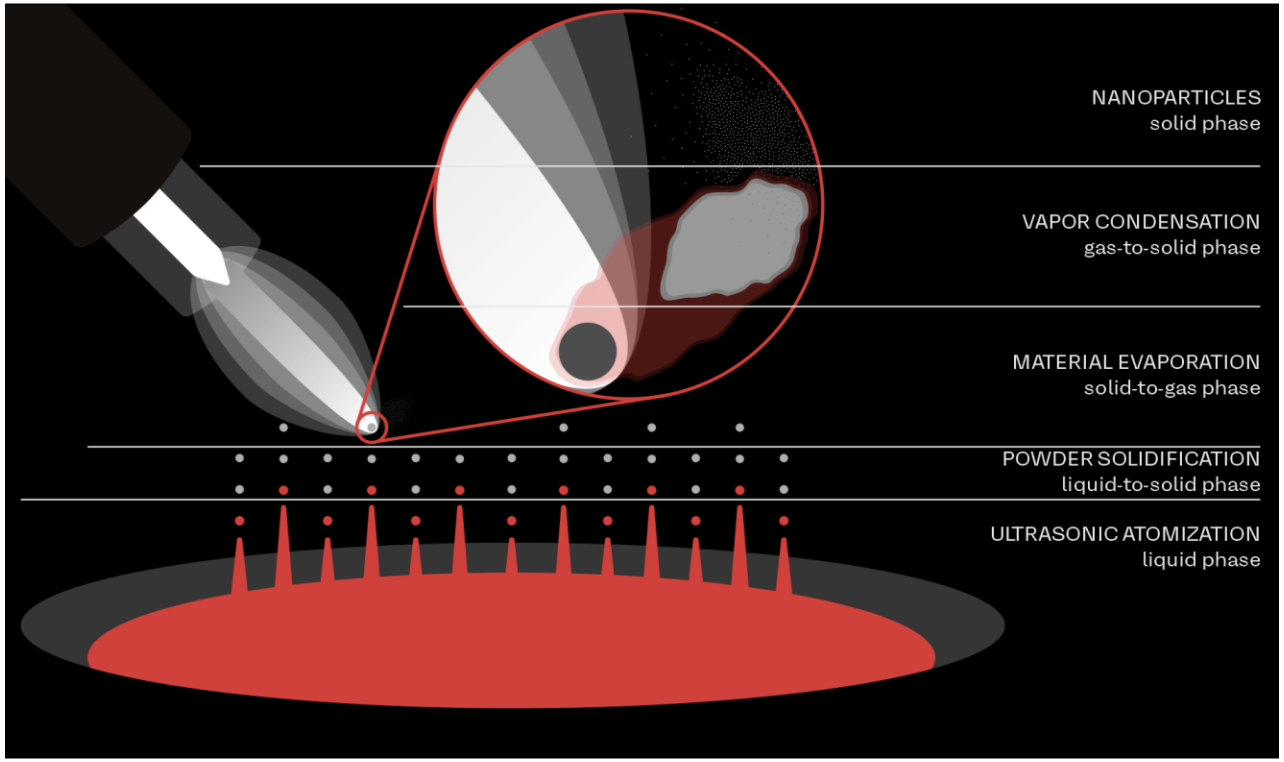


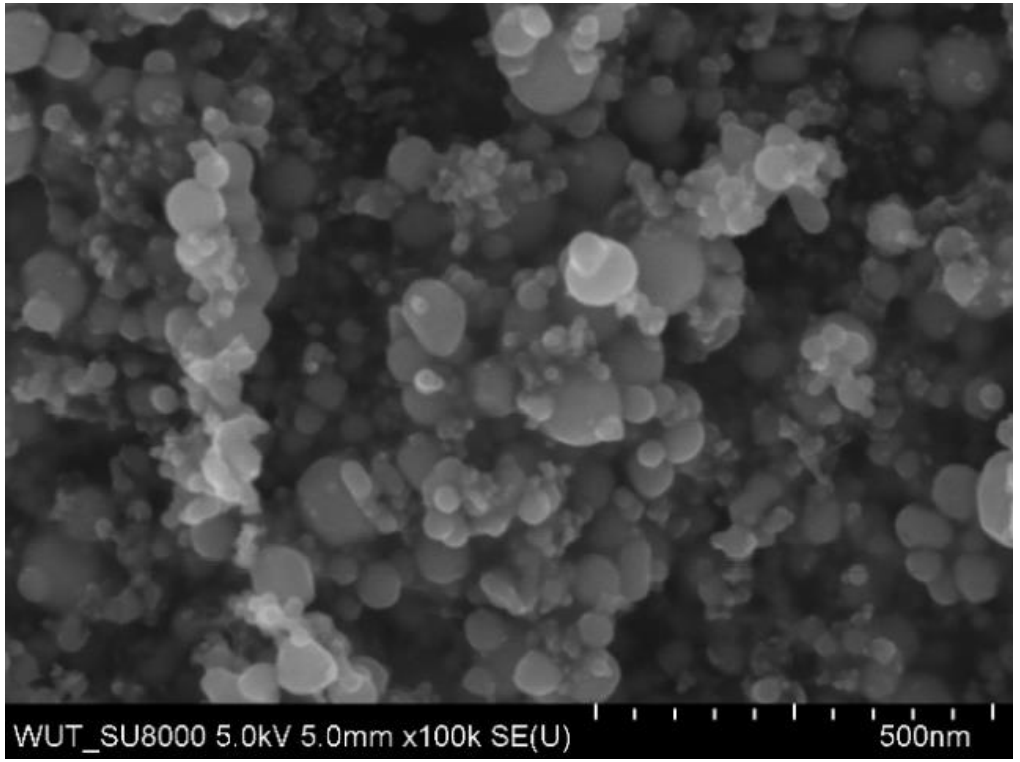
THERMOELECTRIC MATERIALS – SI AND SIGE WITH ORNL



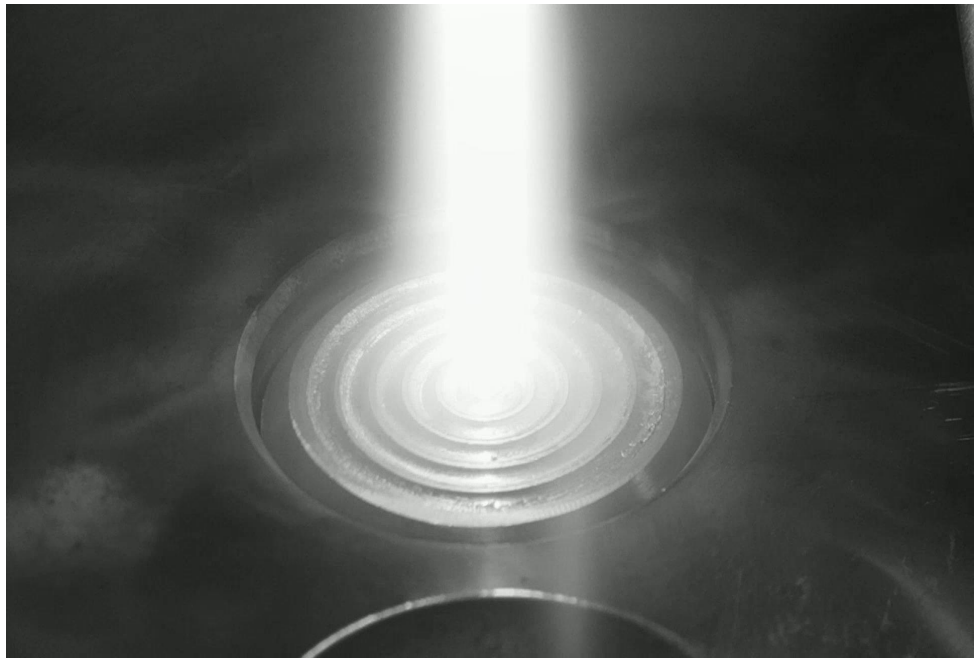


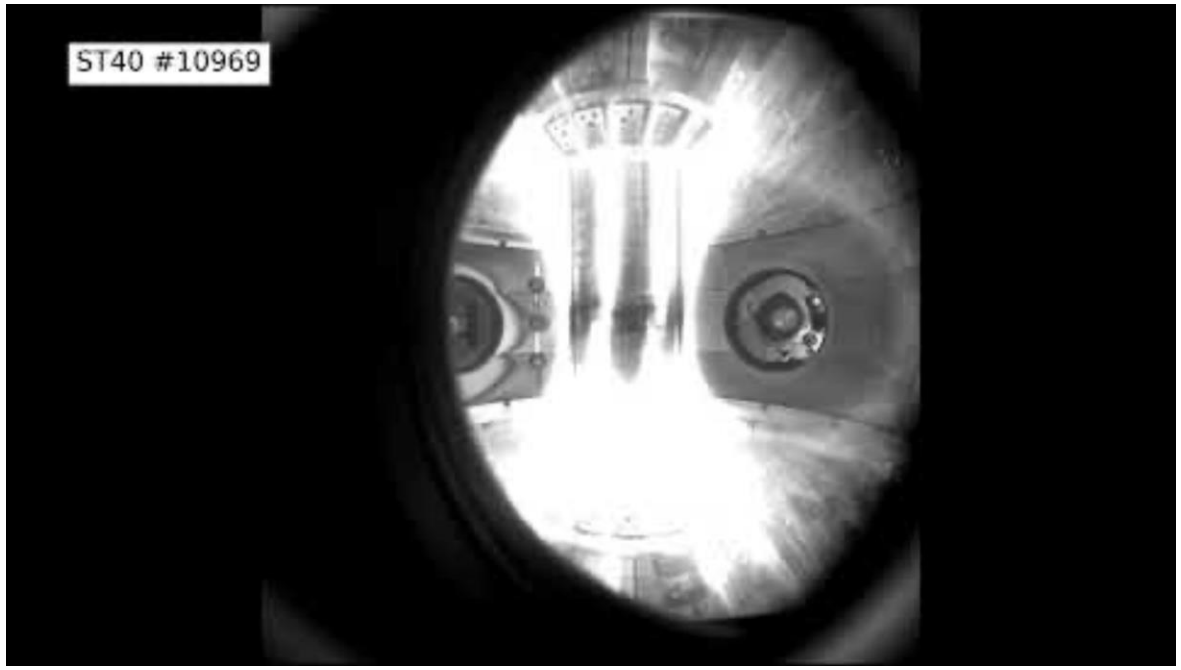
Nanoparticles for non-LPBF AM and propulsion





Plasma facing materials – rePowder and Tokamaks

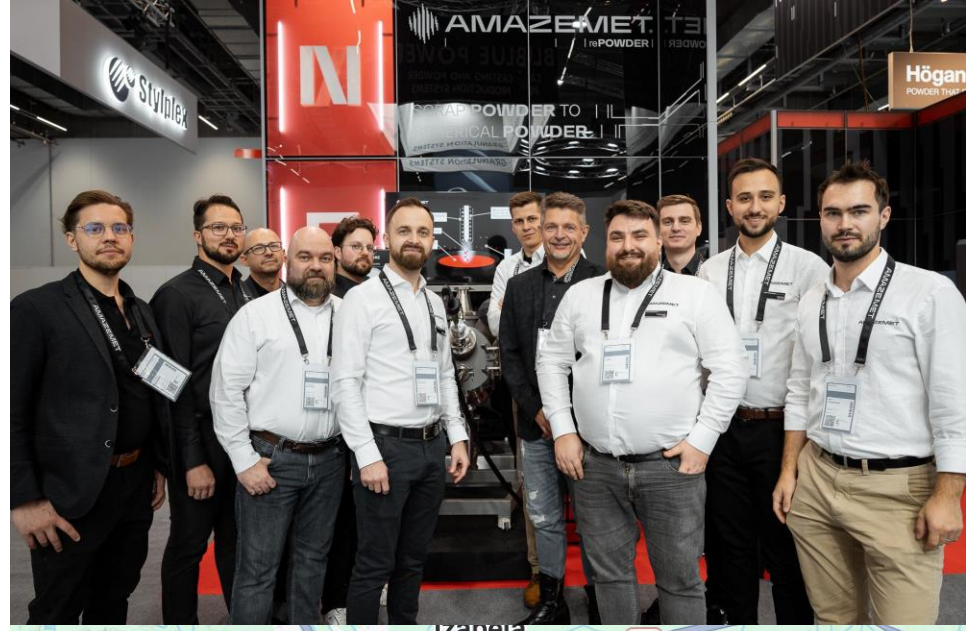


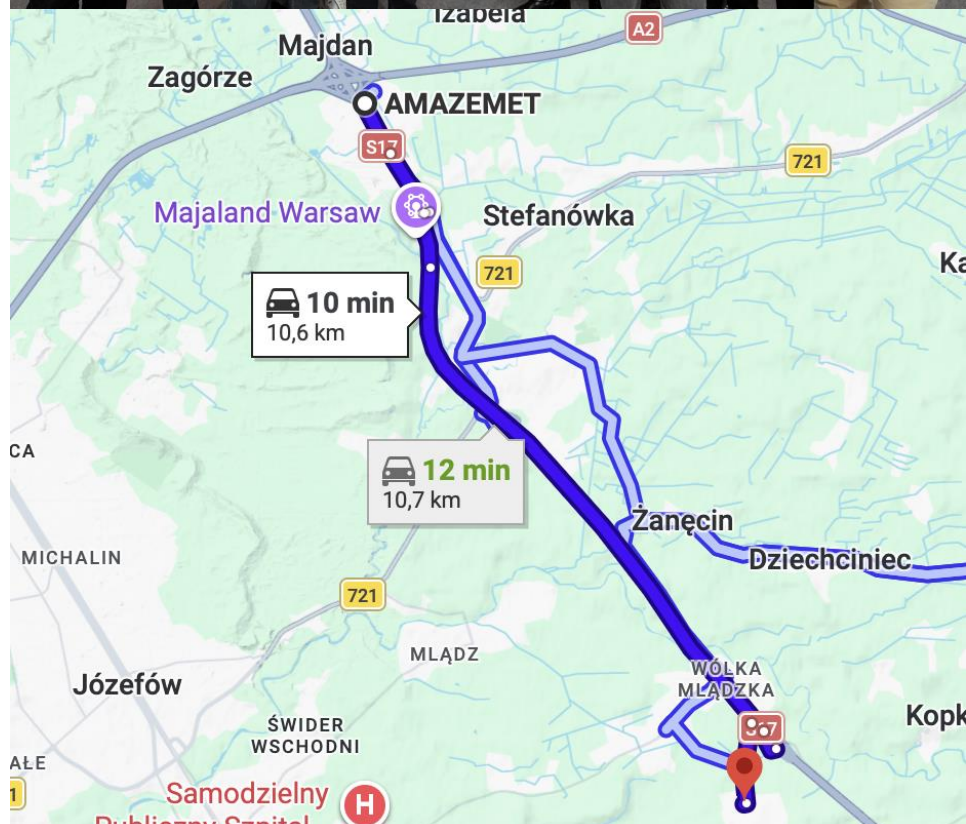


ITER works were relevant to our development – now it is time to give it back to community

THE COMPANY & NEIGHBOUR

- 64 employees including:
  - 2 PhDs
  - 5 PhDs studnets
- Recognized scientific contributions of our team:
  - Over 100 scientific publications
  - 12 ongoing joint R&D projects with leading EU scientists
- IP protected by 18 patents an applications
- Poland-based production facility and own lab equipped with modern apparatus and equipment
- Vertically integrated production line
- US-based distribution company in the process of being integrated into the company's structure





OUR APPROACH – MACHINES AND MATERIALS

We use **patented ultrasonic technology** to produce and recycle critical materials powders. This approach minimizes energy use and costs while addressing the challenges of traditional methods. Business scaling relies on material recycling services.

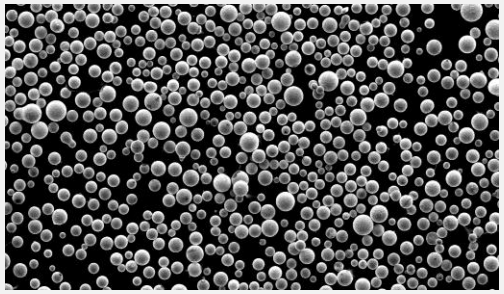
EQUIPMENT

Problem: Large-scale equipment makes powder production inaccessible for small-scale applications, hindering R&D in advanced manufacturing

Solution: Our **rePowder R&D device** to address internal supply chain challenges, providing an in-house solution for powder production

Customers: R&D institutions and specialized production centers

MATERIALS

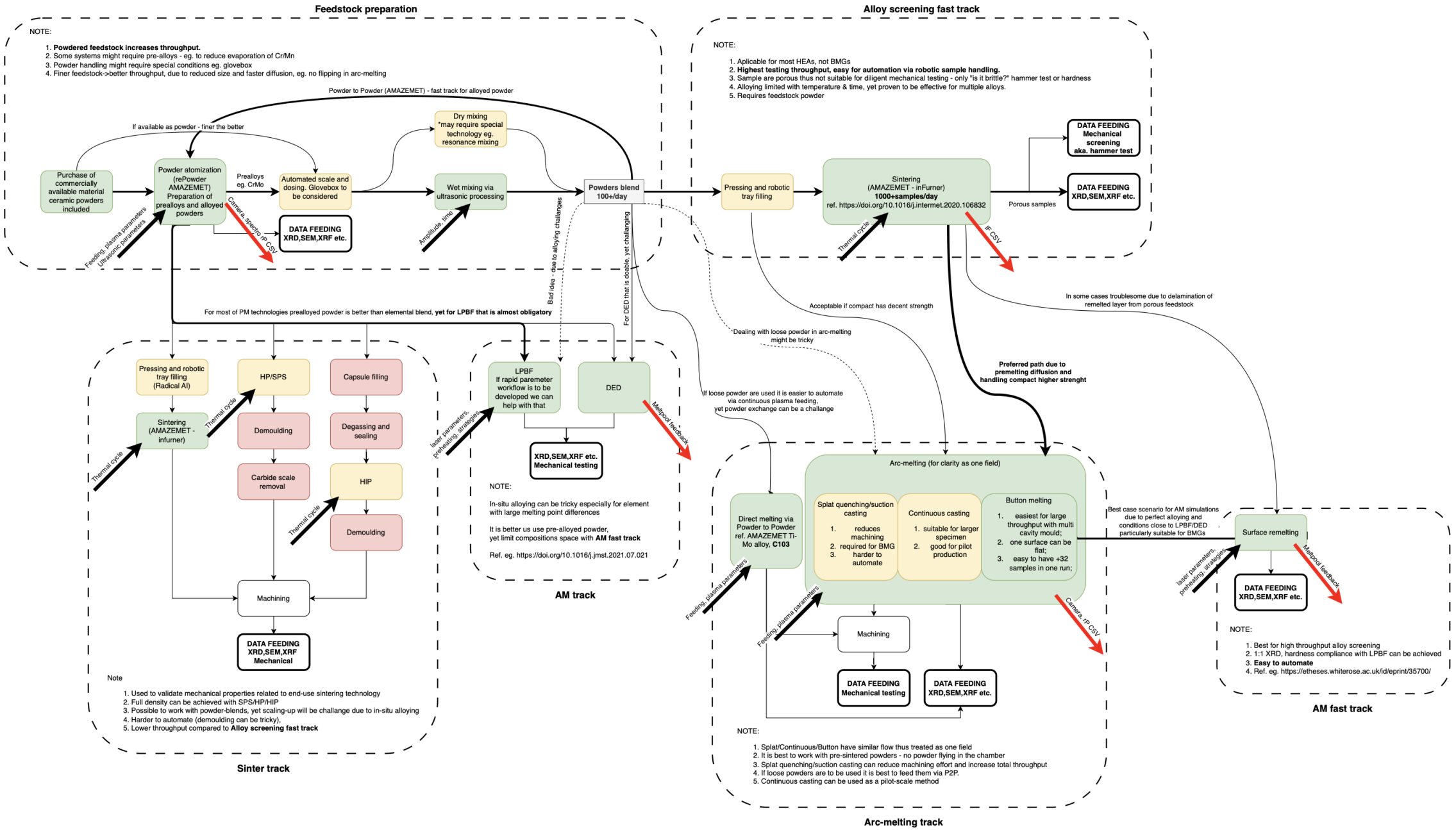


Problem: Out-of-specs powder cannot be recycled and is stockpiled by users and producers

Solution: Our Powder2Powder technology significantly reduces production costs enabling cost-effective powder recycling

Customers: Service providers and powder manufacturers

INTEGRATED DEVELOPMENT WORKFLOW



OPEN FOR R&D COLLABORATIONS

CUSTOMERS

PARTNERS

OPEN FOR R&D COLLABORATIONS

10 GRANTED International PROJECTS

- **AM2SoftMag** - Additive Manufacturing of Amorphous Metals for Soft Magnetics [EIC Pathfinder]
- **3D-BioMg**- Development of additively manufactured magnesium-based biodegradable scaffolds and implants for orthopedic applications [POLTUR]
- **IronWorkCoat** - Development of High-Manganese steels for coating systems by work hardening for sustainable wear protection applications [M-ERA.NET]
- **NewAIMS** - New Approach to Additive Manufacturing of Microstructurally Optimized Steels [Research Fund for Coal and Steel]
- **HighMag** - High-energy, low-cost, and scalable generation 5 magnesium-based batteries for mobility applications [HORIZON-RIA]
- **Sunflower** - Sustainable Near-net-shape Fabrication of Low Environmental impact Receiver materials [Clean Energy Transition Partnership]
- **Global AM** - Enabling Laser Powder Bed Fusion for Large Scale Production of Multi-Material Components [HORIZON-CL4-2023-TWIN-TRANSITION-01]
- **BIOMET4D** - Smart 4D BIOdegradable METallic Shape-shifting Implants for Dynamic Tissue Restoration [EIC Pathfinder]
- **Core-H2storage** – resource-efficient storage of hydrogen at ambient temperaturę – HEAs - TiVZrNbHf [Clean Energy Transition Partnership]
- **AM4Plasma** - Laser powder-bed-fusion Additive-Manufacturing of complex Multi-material Refractory-Copper Plasma generation devices [EUREKA]

AMAZEMET – partner for materials development

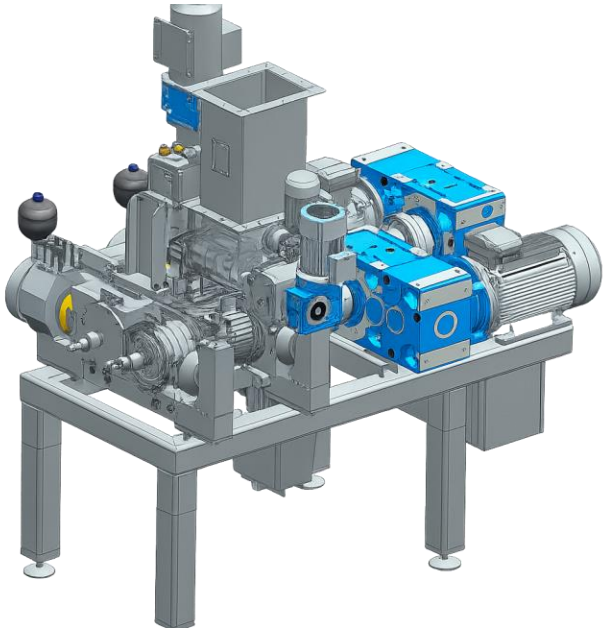
Looking for partners:

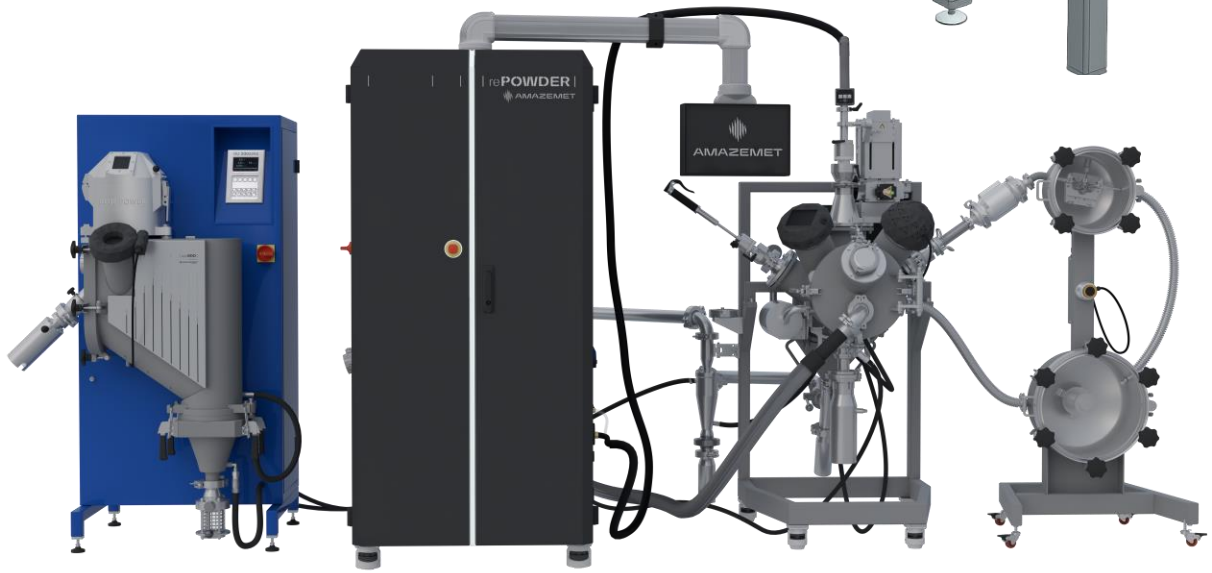
- Clope-loop of critical materials processing
- In-house small scale atomization
- New alloy development
- Powder storage reduction
- Powders for propulsion and energetics

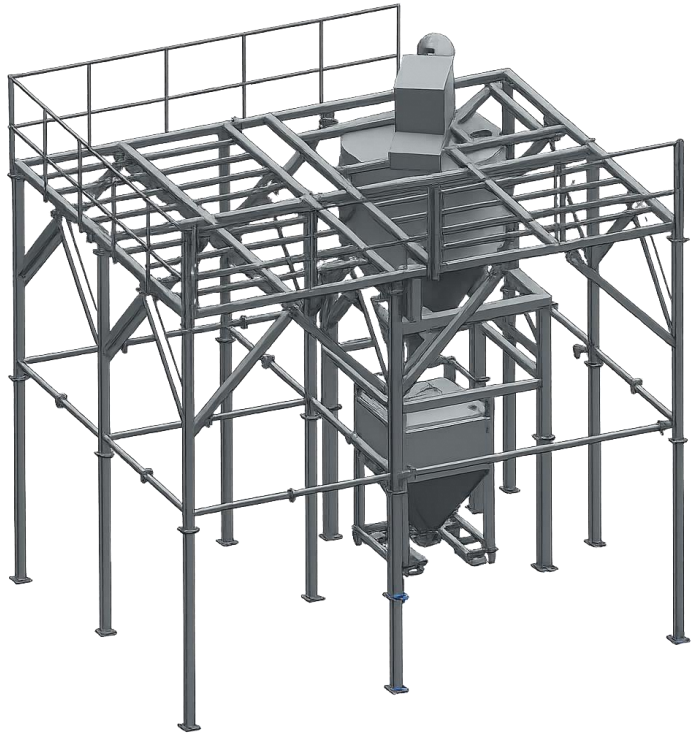
AMAZEMET – partner for desing and manufacturing

Providing services:

- **Advanced manufacturing**
- **Industrial desing**
- **Big science projects**
- **Vacuum components**







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THANK YOU!

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