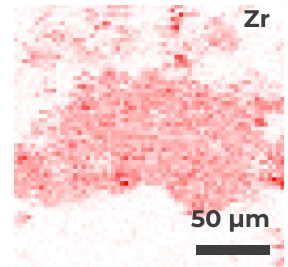
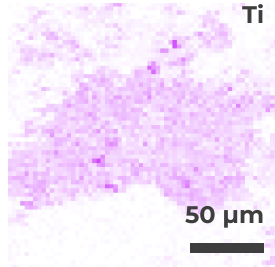
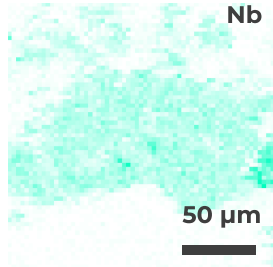
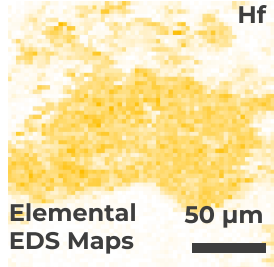
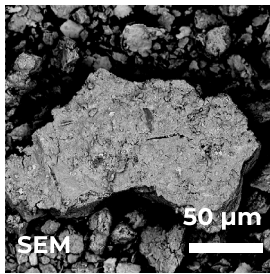
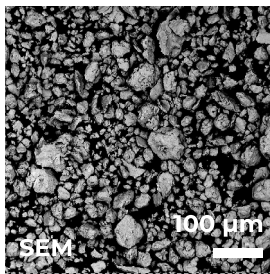
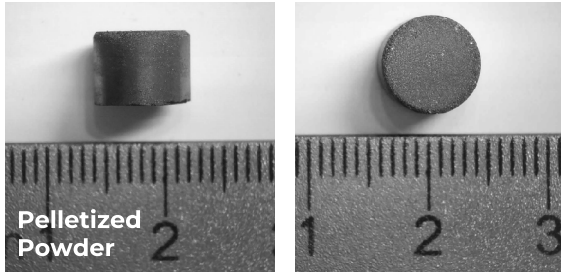


Typical Morphology and EDS Maps of Mechanically Alloyed Hf, Nb, Ti, Zr



Equi-Atomic Hafnium, Niobium, Titanium, Zirconium

Refractory high entropy alloy (RHEA) powder based on the quaternary HfNbTiZr series of HEAs are reported extensively in literature to have excellent mechanical properties, especially at elevated temperatures, and to possess a single phase bcc structure.

This mechanically alloyed powder material is available in bulk and may be manufactured into articles using powder metal-based processes, such as hot isostatic pressing (HIP) and additive manufacturing (AM).

Handling Recommendations: Store received material in the original container in a dry location. Open containers should be stored in an inert environment such as a glove box.

The standard composition is 25% of each Hf, Nb, Ti, Zr. Standard packaging is 100g, 500g, and 1 kg. Other compositions and quantities are available upon request.

MATERIAL INFORMATION

TEST	RESULTS**	NOTES
Tap Density	3.705 g/ml	
Specific Gravity (Pycnometer)	8.2045 g/cm ³	
Powder Size (PSA)	D ₁₀ [μm] 12.696 D ₅₀ [μm] 38.363 D ₉₀ [μm] 93.044	Mean size [μm] 52.738 Span 2.090 D [5,3] [μm] 71.863 Fit error 0.00018
Surface Area (BET)	0.160 m ² /g	
Crystal Structure	Amorphized bcc	(Supplementary details available upon request)

**Actual results may vary