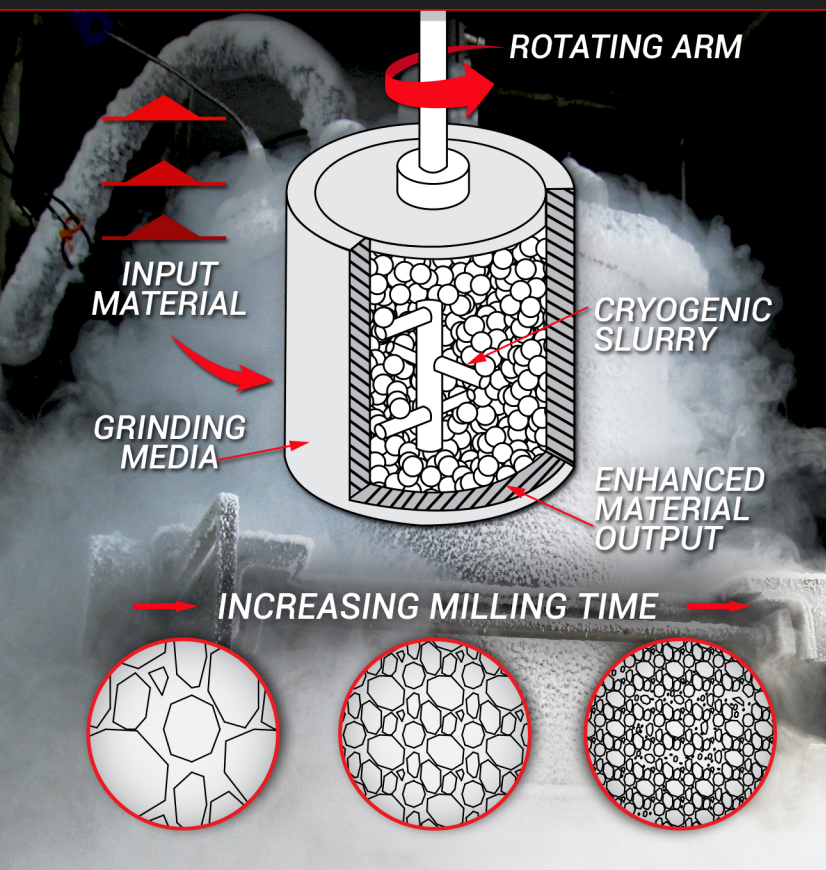




# CRYOMILLING SERVICES

Cryogenic Milling has been proven to be one of the best techniques to produce large quantities of nanostructured/nanocrystalline materials which greatly improves the mechanical properties compared to their conventional counterparts. Cal Nano's facilities include multiple cryomilling systems designed to safely process materials such as elemental metals, metal matrix composites, intermetallic compounds and more.



## CAL NANO'S CRYOMILL DIFFERENCE

- ▶ Typical applications for cryomilling are improving material strength through grain refinement, metallic alloying, particle size reduction and homogenization.
- ▶ During cryomilling the material is fully submerged in liquid nitrogen or liquid argon, making it ideal for moisture sensitive or materials prone to smearing.
- ▶ Cal Nano has recently received a patent securing key techniques allowing for safe and cost effective large scale commercial cryomilling.
- ▶ Inert atmosphere suited for processing hazardous materials containing volatile components.

### CRYOMILL BATCH SIZES

R&D – 500 grams and 1 kilogram  
Pilot-Scale – 7-10 kilograms

### TYPICAL MATERIALS

**Metallics** – Magnesium, Aluminum, Titanium, Iron, Nickel, and their alloys  
**MMC's** – Metal with Al<sub>2</sub>O<sub>3</sub>, B<sub>4</sub>C, YSZ, and more