



## Zirconium-Rich Bulk Metallic Glass Alloys

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**WARF: P04251US**

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**The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing improved zirconium-rich bulk metallic glass alloys.**

### Overview

Bulk metallic glasses (BMGs) exhibit unique properties including high strength, excellent wear and corrosion resistance, high resistance to fractures and outstanding castability. They are also inexpensive to prepare and fabricate, making them extremely attractive for use in many applications. One of the few commercially available metallic glasses is Vitreloy, which contains zirconium, titanium, copper, nickel and beryllium; however, beryllium is toxic and costly.

### The Invention

UW-Madison researchers have developed improved zirconium-rich bulk metallic glass alloys. The alloys contain zirconium, aluminum, titanium, copper and nickel, but do not require the addition of beryllium to provide high quality BMGs.

### Applications

- Sporting goods such as golf clubs
- Watches and other small-scale mechanical parts
- Other military, aeronautical and medical applications

### Key Benefits

- Alloys form BMGs with large (over five mm) diameters, a significant improvement over other zirconium-rich BMGs.
- Substantially free of dopants such as beryllium or tantalum, unlike other zirconium-rich BMGs
- Substantially free of other transition metals
- Possess high strength and high resistance to fractures
- Good castability
- Have excellent wear and corrosion resistance
- Do not require post-casting processing

#### Tech Fields

- [Materials & Chemicals : Other materials & chemicals](#)

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