Corrosion- and Wear-Resistant Coating for Vessels, Equipment and More

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View U.S. Patent No. 7,618,500 in PDF format.

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a metal-ceramic coating that can be sprayed on surfaces to prevent corrosion.

OVERVIEW

Corrosion costs the United States billions of dollars every year. As one example, approximately 345 million square feet of structures aboard naval ships and crafts require costly corrosion control measures. Finding a way to prevent the continuous degradation of this massive surface area would be extremely valuable.

THE INVENTION

UW–Madison researchers and others have developed a new composite coating made of amorphous metal and ceramic particles. The coating can be applied to seagoing vessels, containers and any other surface to prevent corrosion.

Suitable metals for amorphous alloys may be iron-based and include other elements (yttrium, chromium, molybdenum, tungsten, boron or carbon). The ceramic particles are produced by a partial nanocrystallization reaction. They range in size from nanometers to microns, and are used to improve hardness and wear resistance while maintaining corrosion resistance.

The coating can be applied to surfaces by cold spray, thermal spray, physical vapor or other deposition technique.

APPLICATIONS

• Corrosion and wear resistance
• Protection for hulls, ballast tanks, piping, radioactive waste containers, drilling and construction equipment, planes, military gear, etc.
KEY BENEFITS

• Helps prevent costly corrosion and wear
• Produced by standard methods
• Can be used on large surface areas

ADDITIONAL INFORMATION

Related Technologies
WARF reference number P110178US01 describes oxidation-resistant coatings for ultra-high temperature ceramic-based materials.
WARF reference number P96265US describes a method for producing amorphous alloys dispersed with nanocrystals.

Tech Fields
Materials & Chemicals - Metals
Materials & Chemicals - Ceramics & glasses

CONTACT INFORMATION

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