ARL Helps Develop New Process for Titanium Manufacture

ARL scientists have helped develop an innovative process that opens up new possibilities in the manufacture and use of titanium.

The Weapons and Materials Research Directorate (WMRD) was recognized with an R&D 100 award for Armstrong Process CP Titanium and Titanium Alloy Powder and Products. The awards, announced every year by R&D Magazine, recognize the most promising and technologically significant new products, processes, materials or software introduced to the market in the past year.

The Armstrong Process makes titanium and titanium alloy powders at reduced cost by replacing the conventional high-temperature melting process with a low-temperature, low-pressure continuous process that extracts titanium metal in powder form.

The reduced cost of the process is significant. Commercial titanium is most commonly used in the aircraft industry, and not in many other areas. While titanium is an excellent engineering material, the titanium industry has little incentive to drop the price of the metal.

Dr. Jane Adams, a chemist with WMRD, says the new process has a variety of advantages.

"The process is of great interest to the Army," she said. "It results in less time to get materials made, and results in less scrap when the process is finished."

The titanium powder can also be used for new processing applications that were not possible using traditional ingot metallurgy manufacturing methods.

"Titanium powder metallurgy processing lets us investigate new alloy compositions that weren't possible with the melting process," Adams noted.

ARL partnered with International Titanium Powder, Oak Ridge National Laboratory, BAE Systems, AMETEK, National Energy Technology Laboratory and Red Devil Brakes in developing the process.

First established in 1963, the R&D 100 Awards highlight innovative technologies, many of which have transitioned into everyday use. Among these are the automated teller machine, the halogen lamp, the fax machine, the liquid crystal display, the Nicoderm antismoking patch, and HDTV. The award is based on technical significance, uniqueness and utility compared to competing technologies.

Source: http://www.arl.army.mil/www/default.htm