

Method for Creating Porous Metal Structures by Particle Expansion

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Micron sized pores can be fabricated

Technology Summary

This new technology can easily create metal foams with porosity greater than 65%, using basic powder metallurgy concepts and no specialized equipment. The process is unique in that expansion occurs within the particles, not between them. Very small pores, less than a few microns in diameter, of controlled-size can be fabricated, and overall porosity can be controlled. It is anticipated that this technology may be applied to a variety of metals and alloys, possibly including titanium. Though not necessary, cryogenic processing can create extensive nano- to micron-sized porosity in relatively short times (a few hours for alloying and expansion). The creation of small bulk parts has been demonstrated, with no fundamental limits on scale. The material can be used for advanced filters, catalyst supports, energy-absorbing components, thermal and sound insulation, and heat transfer components.

Application & Market Utility

The proposed technology requires now specialized equipment and can be tailored to create near-net shape parts with customized densities and geometries. The technology can be used to create advanced filters, catalyst supports, energy-absorbing components, thermal and sound insulation, and heat transfer components.

Next Steps

Further work on controlling the pore size and created parts of graded density are underway. Seeking licensing opportunities.

TECHNOLOGY READINESS LEVEL

4-7

Seeking

Investment | Licensing | Research

Keywords

- Metal foams
- solid-state foaming
- alloy foams
- energy absorbing
- high surface area

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