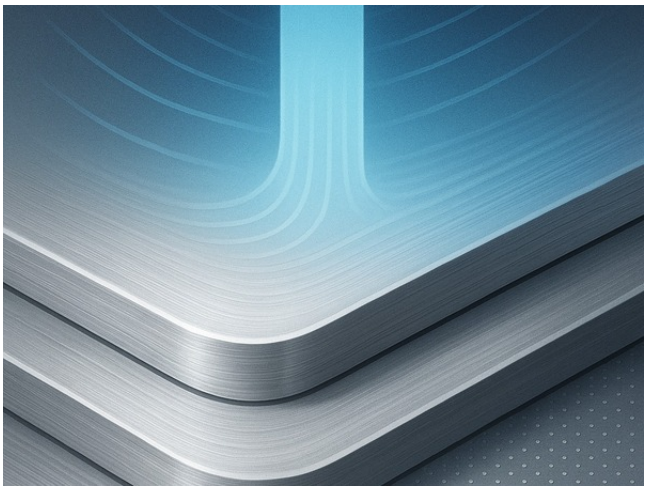
PURDUE INNOVATES | Office of Technology Commercialization

Method of Cryogenic Quenching in the Surface Treatment of Aluminum Alloys

Cryogenic quenching delivers T6-like hardness to aluminum alloys without furnaces, enabling efficient tempering and cladding.



Researchers at Purdue University have developed a method of cryogenic quenching in the surface treatment of aluminum alloys. This technique uses high cooling rates to allow for a surface hardness similar to that of a T6 temper without the need to heat the workpiece in a high temperature furnace. In addition to heat treatment, this method can also be used to cool the alloy following laser material deposition. This technology represents a step forward for the surface treatment of high hardness aluminum alloys.

Advantages:

- Similar hardness to a T6 temper

- Does not require a high temperature furnace

- Can be used for surface buildup via material deposition

Applications:

- Tempering aluminum alloys

Technology ID

2021-SHIN-69286

Category

Materials Science & Nanotechnology/Composites & Hybrid Materials

Chemicals & Advanced Materials/Materials Processing & Manufacturing Technologies

Authors

Corbin Grohol

Yung C Shin

Further information

Aaron Taggart

adtaggart@prf.org

View online

- Laser cladding of aluminum alloys

Technology Validation:

This technology has been validated through laboratory validation.

TRL: 4

Intellectual Property:

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