Technology Opportunity

Fabricating a Crucible Wall Protective Coating Incorporating Multi-Use Channels

Researchers at NASA's Marshall Space Flight Center have patented a method for simultaneously fabricating a protective coating for a crucible and creating multi-purpose channels within the coating. The innovation allows a metal coating with a uniform, desired thickness to be deposited on a crucible in a three-step process. The coating protects the generally brittle crucible and the resultant channels can be used for a variety of purposes, such as pathways for solid objects and flow paths for liquid or gas coolants. In some instances, the channels can be filled with known gases and then sealed so that crucible failure is indicated by instruments that detect the gases.

Benefits

- **Strong**: Reinforces brittle crucibles, such as those made of ceramics, quartz, and glass
- **Multi-functional**: Creates ideal passages for solid objects, including thermocouples and heat-transfer strips, or flow paths for liquid and gaseous coolants
- **Effective**: Reveals crucible failure if gas-filled channels break and gas is detected by specialized instruments

Commercial Applications

- Microgravity flight experiments
- Metallurgic and crystal-growing processes

Licensing and Partnering Opportunities

This technology is part of NASA's technology transfer program. The program seeks to stimulate development of commercial uses of NASA-developed technologies. NASA is flexible in its agreements, and opportunities exist for licensing and joint development. MSFC is interested in a partnership to commercialize the technology.

Patents

U.S. Patent Number: 6,802,999

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