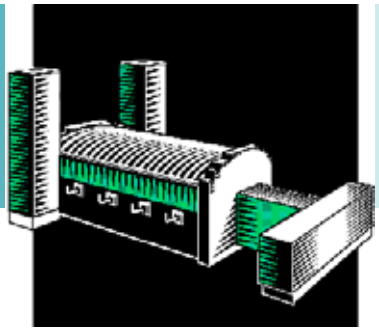
GLASS

Project Fact Sheet



Advanced High-Temperature Materials for Glass Applications

Benefits

- Reduced energy consumption using molybdenum disilicide-based materials in industrial applications (up to 0.2 quad/yr)
- Improved product quality and yield
- Increased refractory life
- Reduced need for disposal of environmentally hazardous refractories

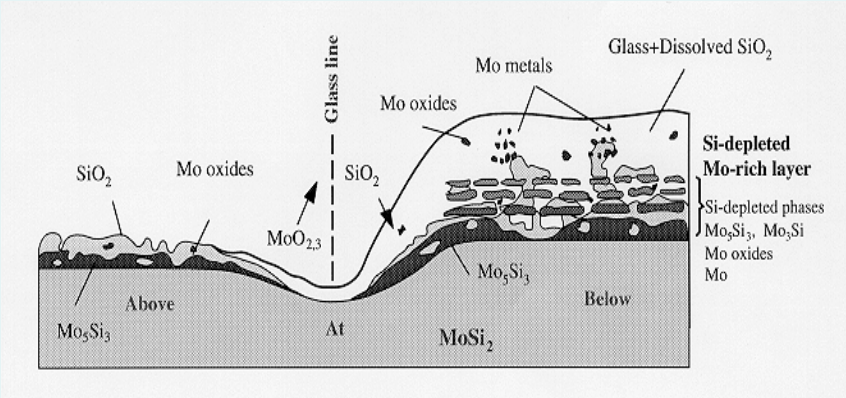
Applications

Once commercialized, these advanced materials will improve the glass melting process, allowing the U.S. glass industry to increase its competitiveness in the world market. In addition, this advanced technology could potentially be applied to all segments of the glass industry, as well as other sectors (e.g., commercial, transportation, military).

Advanced materials will improve production process while reducing energy consumption

Developing improved refractory materials that can better withstand the harsh environments of the melting process has been deemed a high priority by glass manufacturers. Researchers at Los Alamos National Laboratory have teamed with Johns Manville Corporation to develop advanced, high-temperature materials that are more corrosion-resistant in fiberglass production. The molybdenum disilicide-based materials being investigated and tested have superior corrosion-resistant characteristics both above and below the glass line, which will prolong refractory life, improve production efficiency, and lower production costs. Further improving the materials' performance at the glass line is an additional goal of this project.

Corrosion Characteristics of Molybdenum Disilicide-Based Materials



Researchers are working to optimize the corrosion behavior of molybdenum disilicide-based materials at the glass line in a melting environment.

Project Description

Goal: Develop molybdenum disilicide-based, high-temperature materials and components for fiberglass processing applications.

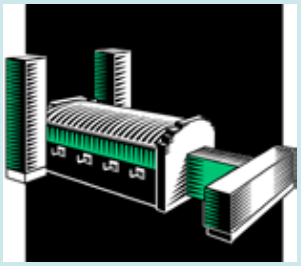
This project is a Cooperative Research and Development Agreement (CRADA) between Los Alamos National Laboratory and Johns Manville Corporation. Researchers are currently working to improve the glass-line corrosion behavior of molybdenum disilicide-based materials in molten glass using three approaches: composite, alloy, and anodic protection.

Progress and Milestones

Characterization of the corrosion behavior of molybdenum disilicide-based materials in molten fiberglass compositions was completed in FY99.

Additional studies of the performance of molybdenum disilicide-coated refractory bricks in industrial oxyfuel melting furnaces (Johns Manville Corporation) were performed.

The CRADA will be completed in FY99.



Project Partners

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