



Contribution ID: 67

Type: **Contributed Oral**

M1Or4B-02: Dynamic Thermal Conductivity of Polyimide Aerogels at Cryogenic Temperatures

Monday 19 May 2025 16:45 (15 minutes)

Aerogels are suitable for use as a thermal insulation material in both evacuated and non-evacuated applications at cryogenic and room temperatures. Polymer aerogels, in particular, exhibit thermal insulation properties similar to other types of aerogels while offering polymer-based structural integrity and toughness, vital for cryogenic insulation requirements. Among all polymer aerogels, polyimide aerogels stand out due to their exceptional onset decomposition temperature and environmental resilience. Here in this study, various polyimide aerogels with distinct chemical compositions were investigated. Their dynamic thermal conductivities were measured using transient plane source method at room temperature. Finally, the optimized polyimide aerogel materials were characterized by measuring their dynamic thermal conductivities at liquid nitrogen cryogenic conditions. This investigation aims to identify the most suitable polyimide aerogels for critical cryogenic insulation applications, including those pertaining to cryogenic tank insulation.

Author: MALAKOOTI, Sadeq (NASA Glenn Research Center)

Co-authors: VIVOD, Stephanie (NASA Glenn Research Center); JOHNSON, Wesley (NASA Glenn Research Center); LVOVICH, Vadim (NASA Glenn Research Center)

Presenter: MALAKOOTI, Sadeq (NASA Glenn Research Center)

Session Classification: M1Or4B - Insulation & Impregnation Materials: Polymeric Materials