

NE-26-40474 Validation of BNNT Gaskets for High-Temperature Molten Salt Nuclear Systems

BNNT Materials, located in Newport News, VA, manufactures boron nitride nanotubes (BNNTs) and develops commercial products using these advanced materials. Its mission is to use BNNTs to enhance material performance across multiple markets, including nuclear energy.

BNNT Materials is developing BNNT-based gaskets for molten salt reactor systems, where high temperatures and corrosive salts create significant sealing challenges. The company needs specialized testing to demonstrate that its gaskets can withstand molten fluoride and chloride salts while maintaining sealing performance, chemical stability, and durability under reactor-relevant conditions.

BNNT will partner with Oak Ridge National Laboratory (ORNL) to test and characterize the BNNT gaskets under molten salt conditions. ORNL's extensive molten salt facilities and expertise will enable high-temperature exposure, leakage, permeability, thermal cycling, and material compatibility testing needed to validate the technology for nuclear applications. The project will provide the nuclear industry with a more durable and reliable gasket for high-temperature molten salt systems, potentially reducing leakage, maintenance, and costly downtime.