

Mechanical and electrical performance of glass fiber reinforced plastic insulation for cryogenic application in fusion magnet irradiated in fast breeder reactor

Rajiv Sharma, V. L. Tanna, Mitul Abhangi, H.L. Swami, E. Radha, G. Raghu Kumar, KV Suresh and Alkesh M Mavani



Fixing assembly of GFRP insulation samples in Reactor

In Fusion Reactor, even after blanket shielding (includes structural materials, a neutron absorber, plasma facing armor and heat sink) the irradiation effect of neutron, γ , photons degrades the properties of insulation materials and components which overall effect the performance of fusion reactor. Glass Fiber Reinforced Plastic (GFRP) composite insulation material has developed for future fusion superconducting machines under high neutron resistance withstand capability.

- Developed insulation material irradiated has been experimentally validated up to $1.0E21$ n/m² neutron fluence and 0.5 MGy radiation dose.
- The irradiation experiment is done in FBTR fission Reactor.
- The test results shows that no significant degradation is observed in mechanical tensile, shear and breakdown strength properties of the insulation material of irradiated samples.