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Progress of TMSR structural materials research

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As one of the six most promising Generation IV fission reactors, the Molten Salt Reactor (MSR) will be able to not only produce electric power, but allow for re-burning, deep burning, and nuclear transmuting of radioactive waste.The structural materials of MSR will be subjected to the extreme environments, i.e., high temperature, high neutron doses and corrosive coolant. Thus, the research and development of qualified materials is very important for the development of MSR technology. In this presentation, the research and development progress of two key structural materials of molten salt reactor, high temperature nickel-based alloy and ultra-fine grain nuclear graphite, and their comprehensive performance evaluation (mechanical properties, molten salt corrosion properties, neutron irradiation properties) will be introduced. The acquisition of a large number of material engineering data has laid a solid foundation for the construction of our experimental reactor.
In addition, we have carried out a lot of research on the key scientific issues in the research of molten salt reactor materials, such as the service behavior of materials under extreme environments and related damage mechanisms. our latest research findings will be also briefly reported in this presentation.

Abstract Type

Talk

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