

## **Progress in the Development of Lead-cooled Fast Reactors**

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Lead alloy coolant, which is lead or lead-bismuth eutectic (LBE), has several advantages as a coolant of fast reactors, i.e. it has high boiling point, is chemically inert with water and air, is possible to make the neutron spectrum hard, has cooling capability in atmospheric pressure and natural circulation. In the practical use, the issue of corrosion and erosion of steel needs to be considered. In the LBE, production of polonium is other issue which should be considered. The Lead-cooled Fast Reactor (LFR) is one of the reactor types in the Generation IV International Forum (GIF). Japan, EU, Russia, Korea, USA, and China are the member states of provisional Staring Committee of LFR and performing international collaborative activity for LFR development. In Japan, the fundamental studies for the reactor concept and the oxidization characteristics are in progress. In EURATOM, the conceptual studies of ALFRED and MYRRHA are performed. In Russia, the BREST-OD-300 is planned to be constructed. In Kores, the conceptual study for MNERVA is performed. In China, the Conceptual and experimental studies for Accretor Driven System (ADS) are performed. In Tokyo Tech, new Breed and Burn reactor concept is studied using the LBE coolant, by which the excellent neutron economy can be expected.

### **Key Words**

Lead-cooled Fast Reactor, Lead coolant, Lead-bismuth eutectic coolant, Generation IV International Forum, Breed and Burn fast reactor