

Nuclear fuel cycle using molten salt and its converging technology

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Nuclear fuel cycle refers to the lifetime of nuclear fuel including mining, processing, use in a reactor and disposal. When nuclear fuel is not recycled, it is called an open fuel cycle, and when it is recycled, it is called a closed fuel cycle. Regardless of which cycle is chosen, the safe treatment and disposal of spent nuclear fuel is task for the nuclear power-using country. PUREX enables the realization of a closed nuclear fuel cycle by chemically extracting uranium and plutonium as a commercialized spent fuel treatment method. However, Korea cannot adopt PUREX process using chemical treatments because plutonium can be separated from the fuel. Recycling nuclear fuel using molten salt has attracted attention as an alternative technology. Spent nuclear fuel consists of various fission products as well as uranium, plutonium and minor actinide elements. Several fission products can be separated in molten salt using their chemical and thermodynamic characteristics. In this presentation, the separation technologies of fission products using molten salt are introduced. In addition, applications of the separation technologies in industries other than nuclear fuel cycle are also introduced.

References

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