

## Evaluation of Spent Fuel Properties from a Conceptual PEACER Core

Jae-Yong Lim, Myung-Hyun Kim

Kyung Hee University

Kiheung, Yongin-shi

Gyunggi-do, Korea 449-701

Chang-Hyo Kim, Il-Soon Hwang

Seoul National University

San 56-1, Silim-dong

Seoul, Korea 151-742

### Abstract

In this paper, a new conceptual core design, PEACER was evaluated in aspect of core performance and spent fuel properties. The core shape is like a pancake to increase axial neutron leakage. Square lattice array was applied which was suitable to decrease the flow speed of Pb-Bi coolant. Although over 30% TRU produced by pyroprocessing was loaded in U-Zr metal fuel, the cycle length of 1 year was achieved and the relative assembly power peaking was less than 1.3. In order to confirm nuclear performance of PEACER core design, several performance indices were adopted and developed. Simple indices such as FIR and FG were used to evaluate fissile breeding. BCM, TG, SNS, and OR calculated by plutonium composition vectors were chosen to distinguish the competency of proliferation resistance. For the estimation of transmutation capability, D-value and extended effective fission half-life time( $T_{EX}$ ) were used. According to these indices, the PEACER core had the better performance compared with other conventional reactor cores although fissile breeding was not acquired.