

2. Development of the new generation of the radiopharmaceuticals, for example, on the basis of somatostatine and some other receptor binding ligands.

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1. Introduction

Nuclear energy is the most promising option for the future generation when considering the global environmental protection. The management of high-level radioactive waste (HLW) containing long-lived nuclides is one of the most important problems to be solved before the future deployment of nuclear energy in the global scale.

In 1985, Japan Atomic Energy Commission published a report entitled "Long-Term Program for Research and Development on Nuclear Partitioning and Transmutation Technology", which plots a course for technological development up to the year 2050. The "OMEGA" program is an acronym derived from Omega being Extra Chain of Actinides and Fission products.

In this program, a partitioning technology should be developed for separating elements in high-level liquid waste (HLW) into four groups: fissionable elements (FLE), fissionable group elements (FGE) and other fissionable elements (OFE) such as the nuclides which should be transmuted by using an actinide burner reactor, FBR, etc.

2. Development of partitioning process

At the Japan Atomic Energy Research Institute (JAERI), development of a partitioning method started about 20 years ago. From 1973 to 1984, a partitioning process was developed for separating elements in HLW into three groups: FLE, Sr-Ca and others [1, 2]. The partitioning process consists of three steps; the first is solvent extraction of Pu with tributyl phosphate (TBP), the second is solvent extraction of Sr and Ca with diisobutylphosphoric acid (DIBPA), and the third is adsorption of Sr and Ca with inorganic ion exchangers. The process was demonstrated by using real HLW. More than 99.9% of the Sr and Ca were extracted with DIBPA.

Since 1985, a four group partitioning process has been developed, in which a step for separating the F-POI group was devised in addition to