

Energy Chemical Engineering Radiochemistry, QSE (IMRAM)



Prof. KIRISHIMA Akira, Assist. Prof. AKIYAMA Daisuke

Research on Nuclear Waste Management and Nuclear Facility Decommissioning by Radiochemistry

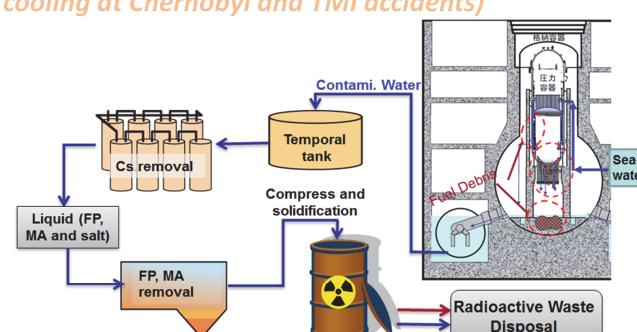
Nuclear energy is one of the most important energy resource of our modern society, therefore, it is strongly demanded to make nuclear fuel cycle more reliable. Also, decommissioning of the severely damaged reactors by Fukushima NPP accident in 2011 and recovery of the contaminated environment, are urgent issues in Japan. To respond these demands, our group investigate chemistry of nuclear fuel debris and leaching behavior of actinides in it by synthesizing simulated fuel debris with actinide tracers. Furthermore, we develop novel and unique nuclear waste solidification processes using functional aluminum silicate minerals as fixation agent.

Research for radioactive waste management and environmental recoverability on NPP accident

[Question]

What happens when **seawater** contacts with fuel debris?

(Seawater was not used for cooling at Chernobyl and TMI accidents)

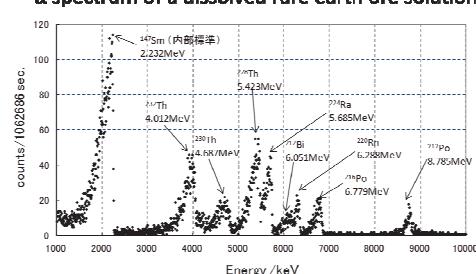
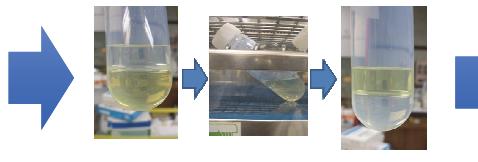
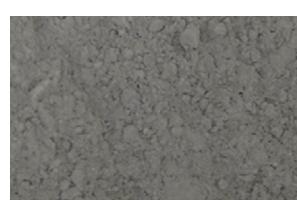


[key to solution]

• Understanding of **Solubilities and Chemical Speciation** of FP, MA, U and Pu in this reaction system.

Development of green process for rare metal resources coexisted with radioactive materials

α spectrum of a dissolved rare earth ore solution.



Research Topics

- Research for radioactive waste management and environmental recoverability on Fukushima NPP accident in 2011
- Solution chemistry research on Protactinium
- Research for front and back end chemistry on nuclear fuel cycle
- Research on Naturally Occurring Radioactive Materials (NORM) existing in materials and products