



Contribution ID : 90

Type : **Oral Presentation**

Volume reduction of uranium catalyst waste used for production of acrylonitrile

A large volume of problematic radioactive waste of spent uranium catalyst, which was used to produce acrylonitrile for fabrication of synthetic fibers, was generated by a private company in Korea until 2004. This has been stored onsite awaiting a management strategy that is to minimize the volume/cost requirements for the final disposal. This work will introduce a process to greatly reduce the waste volume to be disposed. The process consists of several steps including the selective dissolution of the SiO₂ support, precipitation of dissolved silicon ions including purification, treatment of uranium-containing effluent formed during the process before released, and solidification of final solid uranium waste to be disposed, etc. Also various chemical characteristics of uranium, and other elements relevant to the process will be evaluated and discussed.

Summary

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Track Classification : Methods of processing challenging waste constituents