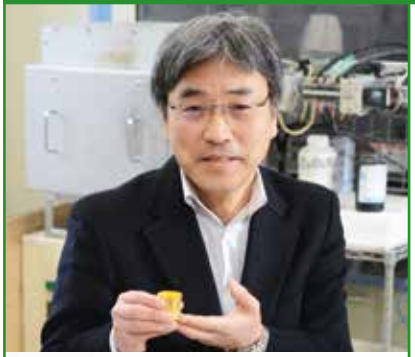

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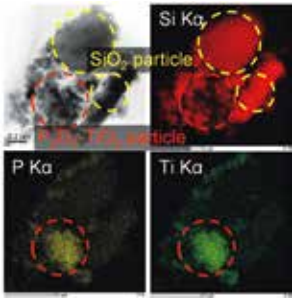
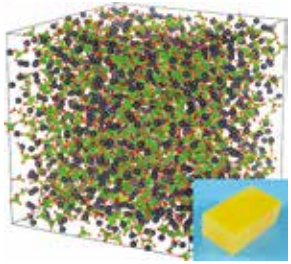
Effect of acid treatment conditions on the dissolution behavior of constituent elements in molten slags and ashes of municipal waste

In municipal waste molten slags, valuable elements such as Si, P and Ti are present. Our research group has developed a new recycling method in which P and Ti-containing SiO_2-rich solid phase is recovered after acid treatment of B_2O_3-added molten slag glasses. We also found that the SiO_2 phase is formed by dissolution reprecipitation process. It is hence expected that by changing treatment conditions, selective recovery of a specified element will be realized. Then, in this project, we are investigating elution behavior of constituent elements in molten slags and ashes of municipal waste by changing basicity of slag glass, where an alkali oxide was added to the molten slag to prepare slag glasses having different basicities.



Recovered solid after acid treatment
[DOI: 10.1016/j.jascer.2013.03.003]

Development of novel glasses for immobilization of radioactive iodine



Structure model of lead borate glass and Iodine-containing vitrified waste
[DOI: 10.1016/j.pnucene.2016.05.008]

TRU (TRans-Uranic) waste contains radionuclides such as Iodine-129. Iodine-129 has extremely long half-life of 15.7 million years, and hence it is a key nuclide at the safety assessment for the geological disposal of TRU waste. However, it has high volatility so that the conventional vitrification technique is not applicable. Then, new iodine-129 immobilization technique is required. A lead borate glass with low melting temperature is a candidate for the vitrification technique. In our research group, structure (atomic arrangement) of the iodine-containing lead borate glasses has been studied by using combination of experiments and computer simulations to clarify the relation between glass structure and iodine immobilization property.