

## 研究論文

アルカリ溶融を用いた砕石微粒分からのゼオライト系物質の製造  
—各種砕石微粒分からのフォージャサイトの生成—和嶋隆昌<sup>1</sup>, 今井敏夫<sup>2</sup>, 佐野 奨<sup>3</sup>Synthesis of Zeolitic Material from Stone By-product using Alkali Fusion  
—Synthesis of Faujasite from Various Stone By-product—Takaaki WAJIMA<sup>1</sup>, Toshio IMAI<sup>2</sup> and Susumu SANO<sup>3</sup>

During the production of crushed stone, stone by-product, which is originated from various types of stone and is collected by some processes, is discharged as an industrial waste. In this study, we attempted to convert siliceous stone by-products into zeolitic material using alkali fusion. Eight different stone by-product samples discharged in Japan were used in this study, and faujasite-type zeolite can be synthesized from all samples using alkali fusion method. The crystallinities and cation exchange capacities of the product depend on the contents of Si and Al in chemical composition of raw by-product. Regardless of mineralogical composition of raw by-product, amorphous precursor was prepared from all samples using alkali fusion, and was crystalized into faujasite zeolite. The observed concentrations of Si and Al in the solution during the reaction explain the crystallization of the zeolite phase in the product. These results suggested that faujasite zeolite can be synthesized from various types of stone by-product using alkali fusion.

**Keywords** : Stone by-product, Alkali fusion, Faujasite, Cation exchange capacity, Mineralogical composition, Chemical composition