

Study on relationship between pathway of groundwater and mass transport, and cooling process of granitic rock

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Fractures in the crystalline rock (e.g. granite) can act as the pathways for groundwater flow and mass transport. Therefore, understanding of the fracture distribution is an important subject for the disposal of high-level nuclear waste. The authors studied the relation between the formation of fracture and infilling mineral, and geological history from the emplacement to present in the Toki granite, Tono district, central Japan (Sasao et al., 2015). Ishibashi et al. (2016a) found that the micropores are selectively formed in plagioclases due to deuteric alteration and that those have the potential of acting as matrix diffusion paths. These results suggest that the magma cooling process played a significant role for the formation and development of the pathways for groundwater flow and mass transport.

The authors studied cooling process of granitic magma in the Toki granite, distributed in the southwestern part of Gifu Prefecture, central Japan, based on petrological, mineralogical and thermochronological methodologies. We also discussed the relationship between magma cooling process, and fracture distribution and alteration of biotite and plagioclase (Yuguchi et al., 2019a, 2019b, 2015, 2012, Ishibashi et al., 2016a, 2016b, 2014). In this study, We present the relationship between formation of the pathway of groundwater and mass transport, and cooling process of granitic rock.

Reference

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