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Biogeochemical Biogeochemical Investigations of Granitic Groundwater from the Grimsel Test Site, Switzerland

Uta Konno^{1*}, Mariko Kouduka¹, Yohey Suzuki¹, Ito Kazumasa¹, Yoshio Watanabe¹

¹AIST

As collaborative efforts between Nagra and AIST, we investigated biogeochemical properties of granitic groundwater from the Grimsel Test Site, Switzerland. We selected 5 boreholes depending on flow rate and hydrogeological unit, and total cell counting, metabolic activity measurements, DNA-based analysis for microbial populations and analyses for stable isotopic compositions of gases were performed in addition to basic geochemical analyses. For quality control, it is necessary to flush, at least, three borehole volumes before sampling. This is because stagnant water in a borehole could be colonized by distinct microbes from those in formation water. As microbes initially colonized in a borehole would also be of our interest, we sampled groundwater at the beginning and at the end of flushing. In this presentation, biogeochemical profiles and microbial populations found from the granitic groundwater will be shown to discuss their generic and site-specific features.

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