
[JJ] Evening Poster | H (Human Geosciences) | H-CG Complex & General

[H-CG27]Nuclear Energy and Geoscience

convener:Eiji Sasao(Tono Geoscience Center, Japan Atomic Energy Agency), Tsutomu Sato(Faculty of Engineering Hokkaido University), Ryuta Hataya(一般財団法人 電力中央研究所)

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Handling of geological hazard assessments represent a major environmental concern in the modern society due to constructing nuclear facilities and their radioactive wastes, and also related to the management of contaminated biosphere after nuclear disasters. The session rational is to provide a forum to deal with various aspects of scientific and engineering aspects of nuclear power. The session in this year focuses on radioactive waste disposal and covers not only scientific aspect such as characterization of geological environment but also engineering aspects such as microbe-nuclide, mineral-water, and cement-water interactions. In addition to this, themes on seismic hazards at nuclear facilities, environmental behavior of radionuclides emitted from disabled nuclear plants, and volume reduction and reuse of cesium contaminated soils are welcomed.

[HCG27-P06]Variation of redox condition in groundwater during excavation

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In the geological disposal of high-level radioactive waste, a disposal facility will be constructed in depths deeper than 300 m. The hydrochemical environment after the facility closure may change from the initial condition before the construction. In particular, the redox condition and pH of groundwater are important factors affecting the behavior of radionuclides. It is indispensable to understand the hydrochemical changing process and stable condition after the facility closure. In this study, the simulated experimental drift was constructed in the granite of 500 m depth at Mizunami Underground Research Laboratory, and the hydrochemical process after the drift closure was observed. The groundwater chemistry around the drift was oxidized due to the infiltration of oxygen from the drift into the rock. After closing the drift, the redox potential of the groundwater decreased. In addition, it was suggested that the redox condition in groundwater was controlled by redox reaction of ferrous ion with iron hydroxide.