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Exploring the Stability of SF_5CF_3 as a Tracer to Determine Transport of Fluids
with High CO_2 and H_2S Concentrations Sequestered into a Geothermal
Formation in Iceland

Global climate change is one of the major challenges facing society today. A major source of global climate change is the anthropogenic release of greenhouse gases into the atmosphere, primarily caused by the burning of fossil fuels. A viable way to mitigate greenhouse gas emissions is geologic CO_2 storage (GCS), which stores CO_2 in geologic formations as stable carbonate minerals. CarbFix I, a collaborative industrial-academic pilot project that began in 2007, has successfully demonstrated GCS in basaltic rocks in Southwest Iceland. The CarbFix II Project seeks to expand upon CarbFix I by significantly increasing the amount of CO_2 injected into the subsurface, and by co-injecting other greenhouse gases such as H_2S . The conservative tracer SF_5CF_3 is used to track the transport of injected CO_2 . Because of the geothermal conditions at the project site, SF_5CF_3 is not remaining stable and therefore cannot be used as a reliable conservative tracer. This project seeks to understand the stability of SF_5CF_3 by conducting several experiments to measure the rate of SF_5CF_3 degradation under various temperature and geothermal conditions.