Dissolved Gas Analysis Using Diffusion Sampler

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Introduction

Dissolved gas in groundwater was intriduced by rain, so it contains atmosphere and biogeochemical information when it cultivated in groundwater. We have developed a new sampler for use in dissolved gas studies. This passive sampler was designed to meet the stringent requirements of dissolved gas sampling. Our sampler has passively samples the dissolved gases in a water sample, maintains the total dissolved gas pressure, and greatly extends the depth range and precision of passive sampling. And to know the performance condition, dissolved gas was sampled from some groundwater well and analyzed gas chromatograph. And also, noble gas analysis result was compared with conventional Cu-tube sampling method.

Results and Discussion

Diffusion sampler performance was tested by soaking it in pressuring water bath. Dissolved gas was analyzed by GC with time pass to ensure equilibration. Dissolve gas sampling by diffusion sampler in groundwater was reached in equilibrium about 2 days by the equilibrium experiment.

Noble gas was sampled with conventional Cu tube method and diffusion sampler. And the analytical result is compared.

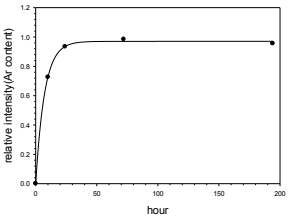

Fig. 1. Pressure equilibrium time inside sampler.

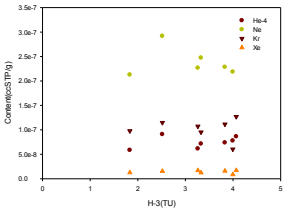

Fig.2. H-3 and noble gas content relationship.