Development of Passive Diffusion Samplers for $^{14}CO_2$, Tritium in Water Vapor, and Molecular Hydrogen in Air and Their Applications

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Abstract

A passive diffusion sampler is a device for obtaining trace substances from gaseous media based on molecular diffusion without controlled conveyance of the gas to be investigated, and it needs no electricity for sampling. We developed passive diffusion samplers for $^{14}CO_2$, tritium in atmospheric water vapor, and molecular hydrogen in air. The developed passive diffusion samplers for $^{14}CO_2$ in air showed good reproducibility and accuracy. However, the passive diffusion samplers for tritium in atmospheric water molecular hydrogen did not work well, and they need improvement.

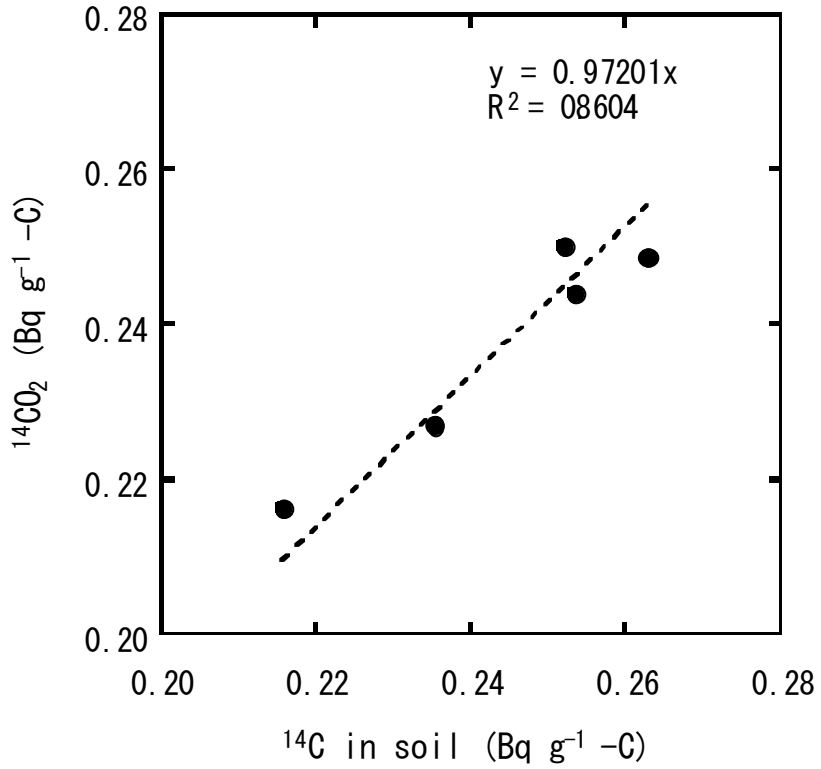

Fig. 1 Comparison between 14C concentration in soil collected at Rokkasho, Aomori in 2006 and 14C concentration in carbon dioxide (14CO2) generated from the soil samples after 3 d incubation