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Abstract

Dissolution of silica from glass bottle sometimes influences accuracy of precision analysis of sea water, e.g. density and pH. We assessed and developed inside-coated glass vials to avoid dissolution of silica from glass at least $< 1 \mu\text{M}$ for seawater sample storage. Seawater storage experiments using specially-treated vials available commercially (sulfur treatment, coating with fluoro-resin or inorganic-organic hybrid material or silicone) suggests that dissolution of silica decreases by up to 60–70% related to that in uncoated glass vial at 25–40°C. As a result of storage experiments using test product of thick fluoro-resin coated vials, we found that dissolution of silica from glass can be avoided by repeating coating process (application and calcination) at least 10 times. We made trial products of thick fluoro-resin coated vials by this coating process. The results of seawater storage experiments showed that this newly developed vials can avoid dissolution of silica from glass surface at least 163 days at 25–40°C.