# Abstract Details

**AOGS 1st Annual Meeting > Ocean and Atmospheres > (OA4) Residence Times of Colloidal Po in the Coastal Ocean >**

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**Organization:** Seoul National University
**Category:** Ocean and Atmospheres
**Paper ID:** 57-OOA-A1855
**Title:** (OA4) Residence Times of Colloidal Po in the Coastal Ocean

**Abstract:** We have measured 210Po (half life = 138 days) deficit relative to its parent 210Pb (half life = 22.3 yrs) in the dissolved, particulate, and colloidal phases of coastal seawaters in the southern sea of Korea from 10 to 21 November 2003. About 20-L seawater samples were pre-filtered using 0.2 μm of Fin-L-Filter (Cole-Parmer). The pre-filtered seawater samples were separated into colloidal (10k NMW-0.2 μm) and dissolved (<10k NMW) fractions using a tangential-flow filtration system (Pelican, PLGC) with a nominal 10k Da cutoff. Then, we carried out chemical separation and measurements for 210Po and 210Pb in the dissolved, particulate, and colloidal phases. A simple steady-state multi-box model is used for calculating the residence times of Th and Po in the dissolved, particulate, and colloidal phases. The residence times of dissolved, particulate, and colloidal Po are estimated to be approximately 30, 90, 30 days in surface waters, and 50, 300, 80 days, respectively, in bottom waters. It is notable that the residence times of Po in all phases are several-fold longer than those for Th found in other areas of the coastal ocean [1]. These long residence times of Po may be associated with its efficient enrichment into bacteria and planktons and rapid turnover. In this connection, Kim [2] suggested that in productive areas of the ocean, Po resides in the water column for a much longer period as taken up by abundant free-living bacteria (non-sinking fine particles). This implies that other sulfur-group elements (i.e. S, Se, Te) may have a long colloidal residence time in the eutrophic ocean. References [1] S. B. Moran, K. O. Buesseler, J. Mar. Res. 51, 893 (1993). [2] G. Kim, Earth Planet.Sci.Lett. 192, 15 (2001).

**Presentation Mode:** Poster

**Keywords:** Polonium; Thorium; Colloid; Residence time; Tangential-Flow Filteration

**Status:** Pending.

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