Decomposition of Environmentally Persistent Perfluorooctanesulfonate (PFOS) in Subcritical Water

Perfluorooctanesulfonate (PFOS) and related chemicals have been widely used as surface treatment agents, emulsifying agents and so on. Their high stability consequently results in environmental persistence and bioaccumulation. Techniques to decompose them to harmless species at stationary sources are desired. The method should involve cleavage of the C-F bonds to form F^- ions, because a waste-treatment process for F^- was already established. PFOS and other related chemicals can be efficiently decomposed to F^- ions using iron and subcritical water. This method was also effective to PFOS contained in a coating agent used in a real manufacturing process.
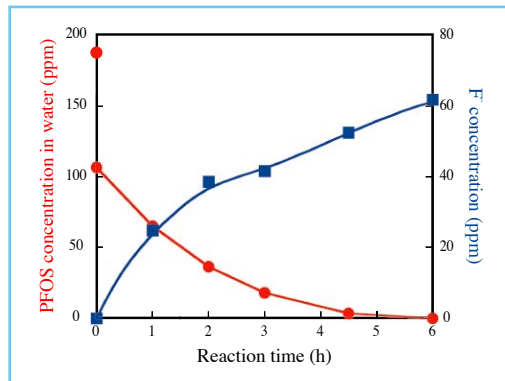
Hisao Hori
Research Institute for
Environmental Management
Technology

E-mail:
h-hori@aist.go.jp

Figure : Reaction-time dependence of the concentrations of PFOS and F^-. Initial concentration of PFOS: 186 ppm, Reaction temperature: 350°C, Reaction pressure: 23.3 MPa [Reprinted with permission from Environmental Science & Technology, 2006, 40, 1049-1054. Copyright 2006. American Chemical Society].

Concealed Median Tectonic Line in the Kanto Plain, Central Japan

Concealed Median Tectonic Line (MTL), the largest fault in Japan, was confirmed in the Kanto Plain. Geologic analyses for core samples obtained from 3500m deep bore hole of the Iwatsuki Observation Well show that MTL runs within 500m south of the Iwatsuki well. As MTL partially reactivates as active faults especially in Southwest Japan, the relation between MTL and surface Ayasegawa Active Fault should be clarified, and earthquake disaster prevention should be planned based on the relation.

Masaki Takahashi
Institute of Geology and
Geoinformation

E-mail:
msk.takahashi@aist.go.jp

mylonite (Iwatsuki borehole)

Figure : Photograph of polished slab of the mylonitic rock obtained from 3500m-deep Iwatsuki borehole.