

Catalytic effects of corroded metal alloys on supercritical water oxidation of 2-Chlorophenol

이재혁, Tran Tan Viet, 이재욱, 이창하*
연세대학교
(leech@yonsei.ac.kr*)

Supercritical water oxidation (SCWO) has been proved to be a powerful process to remove toxic and refractory wastes. Although SCWO is a very efficient technology for the treatment of hazardous wastes and wastewater, SCWO process has serious problem such as corrosion in the decomposition of halogenated hydrocarbon. To remove such problems, it is important to understand corrosion phenomenon and the effects of the corrosion on the reaction in SCWO conditions. In this study, catalytic effect of corrosion phenomena of metal alloys by SCWO of 2-chlorophenol on the decomposition efficiency was investigated. The decomposition efficiencies were measured when various metal alloy coupons were corroded by SCWO of 2-chlorophenol in Anti-corrosive SCWO continuous reactor. Monel 400, and Zirconium were selected as target metal alloys and the decomposition efficiencies were measured by Total Organic Carbon analyzer. The SCWO experiments using each metal alloys were performed in supercritical region. At supercritical condition, it seems that plenty of oxidant was used to make metal oxide so that insufficient amount of oxidant was supplied and it contributed to lower the decomposition efficiency.