

Decomposition of EDTA and NaFeEDTA by Supercritical Water Oxidation

김종화, 이현철¹, 인정현², 이창하^{2,*}
연세대학교 신에너지/환경시스템 연구소; ¹삼성전기;
²연세대학교 화학공학과
(leech@yonsei.ac.kr*)

Ethylenediaminetetraacetic acid (EDTA) and metal complex ethylenediaminetetraacetic acid (NaFeEDTA) was decomposed by supercritical water oxidation (SCWO) with hydrogen peroxide in a plug flow reactor. The effect of oxidant amount and temperature on the decomposition rate and efficiency were more significant than that of pressure. The amount of oxidant significantly affected the decomposition rate and efficiency at lower temperature. The decomposition kinetics of EDTA and NaFeEDTA in the SCOW process was described using a global rate expression. Also, excess oxidant played a key role in decreasing the activation energy for both EDTA and NaFeEDTA decomposition. In addition, as a by-product, sphere-like Hematite (α -Fe₂O₃) in the range of 50 - 450 nm was obtained from the decomposition of NaFeEDTA by the SCWO process.