In-situ formation of metal oxide in supercritical water oxidation process

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The decomposition of total organic carbon (TOC) in the acrylonitrile wastewater was performed in supercritical water oxidation (SCWO). In this study, hydrothermal synthesis in supercritical water was used to make metal oxide that can effect SCWO as a catalyst. Using this process, metal oxide nanoparticles were observed and also total organi carbon(TOC) was decreased during supercritical water oxidation (SCWO) of this mixed wastewater. The results of this study showed the mixing of acrylonitrile wastewater and metal nitrate solution achieved both enhanced decomposition rate TOC and the recovery of various compounds.