# Decomposition of Ethylenediaminetetraacetic Acid in Supercritical Water Condition

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Experiments were conducted to decompose Ethylenediaminetetraacetic acid (EDTA) by way of supercritical water oxidation (SCWO) in a tubular plug flow reactor. These EDTA decomposition experiments were performed in the range of 387-500 ℃, 250 bar and with a stoichiometric amount of 100-400 % $H_2O_2$. The decomposition rate and efficiency were affected by the oxidant amount more significantly at lower temperatures. Andexcess oxidant played a key role in decreasing the activation energy for EDTA decomposition. The activation energy reached 41.491.96 kJ/mol for EDTA based on $COD_{Cr}$ decomposition. The nitrogen from EDTA was found to transform into $NO_3^-$-N by thermal decomposition while a portion of the nitrogen of ETDA and the $NO_3$-N was transformed into $NH_4^+$-N in the supercritical water oxidation process. The ammonia produced from the decomposition of EDTA was less than 5% of the total amount of the EDTA nitrogen because in the SCWO process most nitrogen of EDTA was finally converted to $N_2$ gas.