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Electrocoagulation of Simulated Quick Service Restaurant Wastewater using Aluminum-Iron Electrode Pair

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Abstract: With the rapid increase in the number of Quick service restaurants (QSR) in the Philippines, they altogether pose threats to the environment as wastewater discharged from these establishments are heavy on soluble organics and animal and vegetable fats and oils. However, the small space and low initial capital requirement on QSRs deters the possibility of using conventional biological and chemical treatment technologies. This study investigated on the use of electrocoagulation (EC) technology for the treatment of simulated QSR wastewater using vertically oriented Aluminum-Iron electrode pair in a compact reactor. The simulated QSR wastewater has a COD range of 1500 to 2000 mg/L, FOGs of 1000 to 2300 mg/L and TSS of 380-490 mg/L. The effects of operating parameters such as inter-electrode distance and recirculation flow rates were observed with chemical oxygen demand (COD), total suspended solids (TSS) and fats, oil and grease (FOGs) as wastewater quality indicators. The behavior of pH during the EC process was also monitored.

Key Words: electrocoagulation, aluminum, iron, QSR