Degradation of Linear Alkylbenzene Sulfonate (LAS) by Using Multi-Contact Glow Discharge Electrolysis (m-CGDE) and Ion Fe\textsuperscript{2+} as Catalyst

Tri Sutanti Budikania\textsuperscript{1} --- Candra Irawan\textsuperscript{2} --- Kartini Afriani\textsuperscript{3} --- Foliatini\textsuperscript{4} --- Nelson Saksono\textsuperscript{5}

\textsuperscript{1,2,3,4}Polytechnic of AKA Bogor, Bogor, Indonesia
\textsuperscript{5}The Department of Chemical Engineering, Faculty of Engineering, University of Indonesia Depok, Indonesia

Abstract

Multi-Contact Glow Discharge Electrolysis (m-CGDE) technique have successfully degraded linear alkylbenzene sulfonate (LAS) surfactant with high efficiency. The degradation process was conducted in 0.02 M electrolyte solution NaOH with electrical voltage at 800 V and anode at 1 mm depth. The anode number and addition of Fe\textsuperscript{2+} ion greatly influenced the efficiency of the degradation. In the experiment using number of anode of 4, the percentage of LAS degradation achieved approximately 99.46\% in 90 minutes, with energy consumption of 721.06 kJ/mol. The addition of Fe\textsuperscript{2+} ions will increase the LAS degradation, by using 40 mg/L of Fe\textsuperscript{2+} ions in the reactor, LAS was degraded approximately 97.95 \% and 807.82 kJ/mol energy consumed during the operation.

Keywords: Electrolysis, Linear alkylbenzene sulphonate (LAS), Multi-contact glow discharge electrolysis (m-CGDE).