Efficient Hydrogen Sulfide Treatment by Hydrogensulfide: Fe-EDTA Fuelcell

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Purpose Claus Process is renowned for treating hydrogen sulfide, a toxic substance that is very dangerous to human causing bronchial, heart diseases, or even death when exposed to a high concentration. However, due to the complexity of the process, it requires high installation costs, high temperature, high pressure, and additional power. Our research team has designed a fuel cell expected to be solving theses problems as well as safely disposing of hydrogen sulfide, the by-product, with high efficiency. Procedure Variables that effects the fuel cell's efficiency is temperature, and ph of anode and cathode of the cell. to find the optimal condition we've variated the temperature of the cell with temperature controller, and the concentration of each NaOH, and HCl on anode, and cathode. After finding the optimal condition, we've compared the amount of the electron that flowed during the operation. Observations/Data/Results power density didn't increased over HCl 2M, NaOH 2M so it's clear to think that the optimal condition is Anode NaOH 2M, Cathode 2M, 70°C Comparing two conditions, optimal condition, and null condition, optimal conditions movement of electrons were 3.48 times greater. Conclusions This fuel cell could help reducing the air pollution, solving the problem of the current hydrogen sulfide treatments, which were superfluous sulfur, requiring high pressure and temperature at the optimal condition of Anode NaOH 2M, Cathode 2M, 70°C.