

Degradasi fenol dalam limbah cair dengan metode contact glow discharge electrolysis (CGDE) menggunakan larutan elektrolit Na<sub>2</sub>SO<sub>4</sub>  
= Phenol degradation in waste water by contact glow discharge electrolysis (CGDE) using Na<sub>2</sub>SO<sub>4</sub> electrolyte

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Abstrak

Penelitian ini bertujuan untuk mendegradasi fenol dengan metode Contact Glow Discharge Electrolysis (CGDE) yang telah terbukti mampu mendegradasi beberapa macam polutan organik melalui mekanisme pembentukan radikal hidroksil. Radikal tersebut diperoleh melalui penguraian molekul H<sub>2</sub>O akibat adanya eksitasi elektron. Dari penelitian ini diperoleh kondisi optimum untuk degradasi fenol melalui pengujian pengaruh tegangan, konsentrasi Na<sub>2</sub>SO<sub>4</sub>, kedalaman anoda, dan penambahan Fe<sup>2+</sup> terhadap persentase degradasi fenol dan konsumsi energi yang dihasilkan. Kondisi optimum tersebut diperoleh pada tegangan 700 Volt, Na<sub>2</sub>SO<sub>4</sub> 0,03 M, kedalaman anoda 5 mm, penambahan Fe<sup>2+</sup> sebanyak 20 ppm selama 15 menit dengan persentase degradasi sebesar 92,57 % dan konsumsi energi sebesar 36,3 kJ/mmol.

*This research aims to remove phenol contaminants using Contact Glow Discharge Electrolysis (CGDE) method which has been approved to remove some organic pollutants through hydroxyl radical formation mechanism. Those radicals were acquired from H<sub>2</sub>O molecules decomposition that caused by electron excitation. Optimum conditions for phenol degradation were obtained by known the influence of applied voltage, Na<sub>2</sub>SO<sub>4</sub> concentration, depth of the anode, and Fe<sup>2+</sup> addition toward percentage of phenol degradation and energy consumption. Optimum result of phenol degradation was 92,57 % which gets from applied voltage 700 volt, Na<sub>2</sub>SO<sub>4</sub> 0,03 M, 5 mm anode depth, and additon of 20 ppm Fe<sup>2+</sup> during 15 minutes process with energy consumption as 36,3 kJ/mmol.*