Degradasi limbah cair fenol dan logam Cr (VI) menggunakan metode contact glow discharge electrolysis dan penambahan ion Fe2+ = Degradation of phenol and Cr (VI) wastewater with contact glow discharge electrolysis method and additive of Fe2 +

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Abstrak

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Fenol dan logam Cr VI merupakan limbah organik dan logam berat berbahaya yang dihasilkan dari berbagai macam proses industri seperti industri tekstil, cat, pewarna, dan lain lain. Untuk itu diperlukan teknologi pengolahan limbah yang efektif, salah satunya yaitu Contact Glow Discharge Electrolysis CGDE . Metode ini dapat menghasilkan spesi reaktif seperti radikal hidroksil sehingga mampu untuk mendegradasi limbah fenol dan Cr VI secara efektif. Penelitian ini bertujuan untuk mendapatkan kondisi optimum dalam mendegradasi limbah fenol dan Cr VI secara simultan melalui pengujian konsentrasi awal limbah fenol, penambahan aditif Fe2 , serta penambahan gelembung udara. Degradasi limbah diukur absorbansinya melalui alat spektrofotometer UV-Vis. Kondisi maksimum tersebut diperoleh pada tegangan 600 Volt, Na2SO4 0,02 M, kedalaman anoda 1,5 cm, penambahan Fe2 40 ppm dan penambahan gelembung udara selama 30 menit dengan persentase degradasi fenol sebesar 99,47 dan Cr VI 76,75 serta energi spesifik sebesar 344,473 kJ/mmol. Kata kunci : CGDE, limbah fenol dan Cr VI , aditif Fe2 dan gelembung udara
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ABSTRACT
Phenol and Cr VI is an organic waste and dangerous heavy metals which generated from a wide variety of industrial processes such as textiles, paints, dyes, and others. For that reason, we need effective waste treatment technologies, one of them is Contact Glow Discharge Electrolysis CGDE . This method produce reactive species such as radical hidroxyl so as to be able to degradate phenol and Cr VI wastewater effectively. This research aims to obtain optimum condition in degradation of phenol and Cr VI wastewater simultaneously through variations such as initial concentration of phenol wastewater , the additive Fe2 , and bubbler addition. Waste degradation is measured its absorbances with UV Vis spectrophotometer. The maximum condition was obtained at a voltage of 600 Volt, Na2SO4 0.02 M, anoda depth 1.5 cm, additive Fe2 40 ppm and bubbler addition for 30 minutes with percentage of phenol is 99.47 , Cr VI 76.75 , and specific energi of 344.473 kJ mmol. Keywords Addition of Fe2 and bubbler, CGDE , Phenol and Cr VI wastes, Reactive species.