

BAB V

KESIMPULAN DAN SARAN

5.1 Kesimpulan

Berdasarkan penelitian yang dilakukan, dapat disimpulkan beberapa hal sebagai berikut:

1. Kinerja koagulasi limbah sintetik zat warna kongo merah menggunakan koagulan *PAC* dan magnetit sangat dipengaruhi oleh pH limbah; kondisi terbaik pH 3 dan pH 4 melalui mekanisme netralisasi muatan menghasilkan persen *removal* zat warna sebesar 95,8 dan 96,7% serta volume *sludge* sebesar 68 mL/L dan 38 mL/L.
2. Peningkatan dosis magnetit pada koagulasi limbah sintetik zat warna kongo merah hingga dosis tertentu akan meningkatkan kinetika koagulasi namun tidak mempengaruhi persen *removal* zat warna dan perolehan volume *sludge*. Dosis terbaik magnetit sebesar 37,50 ppm dengan dosis *PAC* 25 ppm; nilai parameter kinetika k_2 variasi dosis magnetit paling tinggi yaitu 1,2263 g/mg.min.
3. Peningkatan dosis natrium alginat sampai dosis tertentu akan meningkatkan persen *removal* dan volume *sludge* akibat adsorpsi dan *bridging* yang terjadi antar flok semakin banyak hingga titik di mana penambahan dosis alginat tidak akan meningkatkan kinerja koagulasi lebih lanjut. Dosis alginat optimum sebesar 0,50 ppm menghasilkan persen *removal* sebesar 81,7% dan volume *sludge* sebesar 45 mL/L; meningkat 1,7 kali lipat dibandingkan tanpa koagulan pembantu.
4. Model kinetika yang cocok pada koagulasi limbah zat warna kongo merah menggunakan koagulan magnetik *MPAC* dan koagulan pembantu natrium alginat adalah *pseudo* orde 2 dengan adsorpsi yang terjadi adalah *chemisorption*.

5.2 Saran

Berdasarkan penelitian yang dilakukan, terdapat beberapa saran untuk penelitian lanjutan:

1. Perlu dilakukannya analisis lebih lanjut mengenai struktur flok yang dihasilkan oleh koagulasi menggunakan koagulan magnetik *MPAC* dengan bantuan natrium alginat sebagai koagulan pembantu.
2. Perlu dilakukannya analisis lebih lanjut dengan memvariasikan dosis limbah zat warna untuk mengetahui pengaruhnya terhadap proses koagulasi.

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