BAB V
KESIMPULAN DAN SARAN

V.I Kesimpulan

Sebuah komposit bentonit yang dimodifikasi surfaktan memiliki efek signifikan pada struktur lapisan 2:1 bentonit. Bentonit dalam komposit memiliki struktur mesopori. Kemampuan adsorpsi dan degradasi fotokatalitik dari komposit diuji terhadap larutan Rhodamin B. Percobaan adsorpsi fase cair dilakukan dengan atau tanpa radiasi sinar UV, didapatkan bahwa adsorpsi maksimum terjadi pada pH 4 dengan waktu kesetimbangan selama 120 menit. Baik isoterm adsorpsi Langmuir, Freundlich maupun Sips dapat mewakili data percobaan dan memberikan representasi dengan baik. Karakteristik ruang antarlapisan (d001) dari bentonit Persamaan Langmuir dan Sips lebih sesuai dalam menggambarkan adsorpsi Rhodamin B pada bentonit termodifikasi, dengan kecenderungan monolayer pada permukaan homogen. Kapasitas adsorpsi maksimum Rhodamin B pada masing-masing komposit bentonit yaitu qmax komposit Be-SKS DDAC WO_3 260,256 mg/g dan nilai qmax komposit Be-SKS DODMAC WO_3 206,2691 mg/g. Karena pH air lebih tinggi dari pH_{pzc} komposit bentonit, hal ini meningkatkan kapasitas adsorpsi komposit bentonit melalui mekanisme pertukaran ion. Berdasarkan uji kinetika, *Pseudo Second Order* juga dapat mewakili data kinetika dengan baik untuk adsorpsi Rhodamin B.

V.II Saran

Penulis menyarankan agar penelitian selanjutnya melakukan variasi suhu dalam proses adsorpsi untuk memperoleh data termodinamika yang lebih komprehensif. Pendekatan ini penting untuk memahami secara menyeluruh aspek spontanitas, sifat energi, perubahan keteraturan, serta mekanisme proses adsorpsi. Selain itu, penulis merekomendasikan pelaksanaan karakterisasi tambahan menggunakan metode *Nitrogen Sorption* untuk menentukan luas permukaan, volume pori, distribusi ukuran pori, dan karakteristik pori material. Karakterisasi ini akan memberikan informasi penting mengenai struktur pori dan kapasitas adsorpsi material. Selanjutnya, penggunaan *Transmission Electron Microscope* (TEM) juga disarankan guna mengamati morfologi, ukuran, distribusi partikel atau pori, serta struktur mikro dan nano material secara detail. Kombinasi kedua teknik karakterisasi tersebut akan memperkaya pemahaman tentang hubungan antara struktur fisik material dan performa adsorpsinya.

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