BAB V
KESIMPULAN DAN SARAN

V.1 Kesimpulan

Berdasarkan hasil penelitian, komposit mRGO/Co yang dikombinasikan dengan Co dapat mengadsorpsi metilena biru dengan waktu setimbang yang singkat yaitu <30 menit. Hasil kinetika adsorpsi komposit tersebut sesuai dengan model kinetika order satu semu yang berarti adsorpsi terjadi secara fisik. Nilai Q_e pada suhu 303 K dinyatakan oleh persamaan order satu semu sebesar 56,115 mg/g. Nilai Q_{max} dari persamaan langmuir menyatakan kapasitas adsorpsi maksimum sebesar 180,313 mg/g pada suhu 323 K. Percobaan adsorpsi isoterm sesuai dengan model Sips dan Redlich Peterson yang berarti melibatkan adsorpsi monolayer dengan adanya permukaan yang homogen dan juga heterogen. Nilai negatif dari ΔG^0 dan ΔH^0, serta nilai positif dari ΔS^0 menunjukkan karakteristik spontan dan eksotermik dari proses adsorpsi metilena biru menggunakan mRGO/Co.

V.2 Saran

Penulis merekomendasikan beberapa saran untuk penelitian mRGO/Co dengan *green reductor* di masa depan. Pertama, untuk mendapatkan pemahaman yang lebih baik tentang adsorpsi isoterm, disarankan untuk melakukan lebih banyak variasi konsentrasi metilena biru. Variasi konsentrasi metilena biru dapat memperjelas jenis isoterm adsorpsi yang sesuai untuk sistem ini.

Dalam penelitian ini, model isoterm Langmuir, Freundlich, Redlich-Peterson, dan Sips telah digunakan untuk menganalisis data adsorpsi. Namun, selama percobaan, penulis mengamati bahwa ada beberapa ketidakpastian dalam penyesuaian model dengan data, yang mungkin disebabkan oleh kompleksitas sistem adsorpsi yang melibatkan metilena biru dan mRGO/Co.

Oleh karena itu, penulis merekomendasikan penggunaan model isoterm yang berbeda dalam penelitian selanjutnya. Salah satu persamaan yang dapat dipertimbangkan adalah model isoterm BET. Model BET mempertimbangkan adsorpsi *multilayer*, yang mungkin memberikan penjelasan yang lebih baik dalam kondisi ketika metilena biru menempel pada lapisan mRGO/Co yang sudah mengadsorpsi molekul lain.

Sebagai alternatif lain, penulis juga merekomendasikan penggunaan model isoterm Temkin dalam penelitian selanjutnya. Model ini mempertimbangkan efek interaksi antara adsorbat dan adsorben, dan mungkin memberikan penjelasan yang lebih baik tentang proses adsorpsi di permukaan mRGO/Co.

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