BAB V
KESIMPULAN DAN SARAN

Yield Y-BDC lebih kecil dibandingkan Y-BTC, sesuai dengan berat molekul ligan. Spektrum XRD dan analisis SEM menunjukkan kemiripan material Y-BDC dan Y-BTC dengan referensi Ce-BDC. Identifikasi peak XRD mengkonfirmasi keberadaan ligan BDC dan logam Y dalam Y-BDC, serta 1,3,5-benzena asam trikarboksilat dalam Y-BTC. Setelah adsorpsi fosfat, kristalinitas Y-BDC menurun lebih banyak dibandingkan Y-BTC. FTIR menunjukkan interaksi signifikan antara PO_4 dan gugus fungsional MOF. adsorpsi. Pada sampel Y-BDC, kandungan fosfor sangat rendah (0,12% atomik), namun pada sampel Y-BDC+ PO_4 terjadi peningkatan fosfor (2,90% atomik) yang menunjukkan bahwa ion fosfat berhasil teradsorpsi ke dalam material Y-BDC. Pada sampel Y-BTC, kandungan fosfor rendah (0,11% atomik), namun pada Y-BTC+ PO_4 terjadi peningkatan fosfor (1,04% atomik) yang menunjukkan bahwa ion fosfat berhasil teradsorpsi ke dalam material Y-BTC. Adsorpsi PO_4 pada Y-BDC sesuai model Langmuir (lapisan tunggal), sedangkan Y-BTC sesuai model Freundlich (heterogen, multilayer). Peningkatan suhu meningkatkan kapasitas adsorpsi PO_4 pada Y-BDC, namun menurunkannya pada Y-BTC. Kinetika adsorpsi mengikuti model Pseudo Second Order, menunjukkan interaksi kimia kuat. pH optimal untuk adsorpsi fosfat pada kedua MOF adalah sekitar 6. Kedua MOF mempertahankan kapasitas adsorpsi sekitar 83-86% setelah lima siklus, dengan Y-BDC sedikit lebih baik. Hasil ini penting untuk aplikasi praktis karena kedua MOF dapat digunakan ulang, meskipun terjadi penurunan efisiensi.

Saran untuk penelitian ini ada pada pembuatan reagen dan larutan induk untuk adsorpsi sebaiknya dilakukan dalam sekali eksperimen, karena akan didapat hasil yang berbeda jika tidak dalam sekali jalan untuk proses adsorpsi dan sebagai pengalaman kita menggunakan air khusus yang diperoleh dari OneMed (waterone) yang akan membantu dalam proses pembuatan reagen. Untuk larutan yang sudah dipakai atau anlisa sebaiknya tidak dibuang pada wastafel secara langsung, karenma larutan tersebut mengandung fosfat yang dapat mencemari lingkungan perairan dan untuk melakukan metode adsorpsi ini diperlukan ketekunan dan kesabaran dalam praktikum

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