BAB V

KESIMPULAN DAN SARAN

5.1 Kesimpulan

Dari hasil penelitian yang telah dilakukan, terdapat beberapa kesimpulan yang dapat diambil yaitu:

1. Keempat metode yang digunakan tidak dapat menghasilkan CNT. Hanya terbentuk CNS pada metode karbonisasi hidrotermal yang dilanjutkan dengan aktivasi kimia dan pirolisis. CNS yang dihasilkan membentuk suatu aglomerasi dan memiliki diameter rata-rata 60 nm.
2. Metode dua tahap pirolisis menghasilkan perolehan massa karbon aktif yang lebih besar dari metode karbonisasi hidrotermal yang dilanjutkan pirolisis. Rata-rata perolehan massa karbon aktif yang kemudian diproses untuk menghasilkan sampel CNT-R2, CNT-R3, CNT-R4 secara berurutan yaitu 18,33; 12,93; dan 9,66 %.
3. Metode tiga tahap pirolisis menghasilkan perolehan massa karbon nano terhadap mikroalga dan terhadap karbon aktif yang paling tinggi daripada metode yang lain yaitu berturut-turut 16,08 dan 88,18 %.
4. Penggunaan aktivator H_3PO_4 menghasilkan perolehan massa karbon aktif dan karbon nano yang lebih tinggi dari aktivator KOH, namun menghasilkan CNS dengan morfologi yang kurang sempurna daripada penggunaan aktivator KOH.
5. Keempat sampel cenderung memiliki struktur amorf yang lebih dominan daripada struktur kristalin. Persen kristalinitas sampel CNT-R1, CNT-R2, CNT-R3, CNT-R4 secara berurutan yaitu 19,76; 18,67; 21,32; dan 20,95 %.

5.2 Saran

Saran yang dapat dipertimbangkan untuk kepentingan pengembangan penelitian selanjutnya adalah sebagai berikut:

1. Perlu dilakukan karakterisasi lebih lanjut terhadap *hydrochar* dan karbon aktif yang dihasilkan dengan SEM, XRD, dan BET agar dapat diketahui perubahan yang terjadi dari proses karbonisasi dan aktivasi yang dilakukan. Selanjutnya, hasil karakterisasi dari *hydrochar* dan karbon aktif dapat digunakan untuk mengetahui perubahan yang terjadi dari proses pirolisis yang dilakukan.

2. Perlu adanya *support* katalis lain untuk membantu proses dekomposisi karbon nano seperti Al_2O_3, SiO_2, dan MgO.

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