

## BAB V

### KESIMPULAN DAN SARAN

#### 5.1 Kesimpulan

Berdasarkan hasil dari penelitian yang telah dilakukan, maka dapat ditarik beberapa kesimpulan sebagai berikut.

1. Metode karbonisasi hidrotermal dan aktivasi kimia mampu menghasilkan karbon aktif yang menyerupai karbon aktif komersial dengan % amorfous di atas 60%, serta komposisi atomik unsur karbon di atas 90%.
2. Metode aktivasi kimia dengan activating agent KOH menghasilkan morfologi permukaan yang lebih berpori, % kristalinitas yang lebih rendah dibandingkan aktivasi kimia dengan activating agent  $H_3PO_4$ .
3. Semakin tinggi rasio *activating agent* baik KOH ataupun  $H_3PO_4$  dalam tahap aktivasi kimia akan menghasilkan morfologi permukaan dengan jumlah pori-pori yang lebih banyak, struktur pori-pori yang lebih terbuka, dan unsur C yang lebih tinggi.
4. Metode difusi lebur dalam sintesis komposit karbon sulfur mampu menghasilkan komposit karbon sulfur dengan komposisi atomik yang didominasi oleh sulfur sebesar 67,87% wt. Hasil XRD komposit karbon sulfur menunjukkan puncak-puncak tajam dan tinggi yang mengindikasikan struktur kristalin pada komposit karbon sulfur dengan % kristalinitas sebesar 47,5%.
5. Karbon aktif dengan luas permukaan tertinggi beserta jenis pori yang terbentuk perlu menunggu hasil analisis BET.

#### 5.2 Saran

Berdasarkan penelitian yang telah dilakukan, masih terdapat beberapa masalah yang dialami. Oleh sebab itu, terdapat beberapa saran yang dapat diberikan apabila penelitian ini akan dilanjutkan atau dilakukan kembali yaitu:

1. Dalam tahap aktivasi kimia, dapat dilakukan variasi temperatur pada *furnace* untuk mengetahui pengaruh temperatur terhadap karbon aktif yang dihasilkan.
2. Dalam analisis karbon aktif, dapat dilengkapi dengan analisis BET untuk mengetahui luas permukaan dari pori-pori karbon aktif yang dihasilkan. Analisis BET akan

membantu dalam pemilihan karbon aktif dengan luas permukaan tertinggi untuk disintesis menjadi komposit karbon sulfur.

3. Dalam tahap sintesis komposit karbon sulfur, dapat dilakukan variasi rasio massa sulfur dalam metode difusi lebur untuk mengetahui pengaruhnya terhadap komposit karbon sulfur yang dihasilkan.
4. Komposit karbon sulfur yang diperoleh dapat dilanjutkan dengan analisis SEM untuk mengetahui morfologi permukaan dari komposit karbon sulfur yang dihasilkan.

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