

## VI. KESIMPULAN DAN SARAN

### 6.1 Kesimpulan

Berdasarkan dengan uraian sebelumnya tentang perlakuan kimia serat sabut kelapa maka dapat disimpulkan bahwa:

1. Perlakuan NaOH menurunkan kadar lignin dan selulosa, menyebabkan terjadinya kristalisasi, dan meningkatkan kekasaran permukaan. Perlakuan  $\text{KMnO}_4$  melarutkan sodium sehingga menghilangkan kristalisasi, membersihkan serat hingga bagian dalam serat sehingga timbul alur-alur seperti parit, tonjolan-tonjolan yang mengakibatkan kekasaran permukaannya berbeda dengan perlakuan lain. Perlakuan  $\text{H}_2\text{O}_2$  menimbulkan gumpalan-gumpalan yang memanjang pada permukaan serat, dan munculnya kembali kristalisasi, meskipun tidak sama dengan kristalisasi pada perlakuan NaOH. Perlakuan-perlakuan tersebut dapat mengubah bentuk morfologi permukaan serat sabut kelapa menjadi tidak rata, berlubang, dan beralur sehingga mampu meningkatkan kemampuan perikatan serat sabut kelapa dengan matriks poliester. Perlakuan kimia mampu meningkatkan kekasaran permukaan S2K, dan nilai kekasaran permukaan S2K tanpa perlakuan yaitu  $1,62 \mu\text{m}$  sedangkan S2K dengan perlakuan, nilai kekasaran tertinggi diperoleh pada perlakuan NaOH 5% yaitu  $3,96 \mu\text{m}$ .
2. Perlakuan N4 (NaOH 20%), K2 (NaOH 10% kemudian  $\text{KMnO}_4$  0,5%), dan H2 (NaOH 10% kemudian  $\text{KMnO}_4$  0,5% kemudian  $\text{H}_2\text{O}_2$  10%) meningkatkan kekasaran permukaan serat dibandingkan dengan serat tanpa perlakuan sehingga kekasaran permukaan tersebut dapat meningkatkan kemampuan perikatan antara serat dengan matriks masing-masing  $3,09 \text{ N/mm}^2$ ,  $2,82 \text{ N/mm}^2$ , dan  $4,1 \text{ N/mm}^2$ . Perlakuan N4 (NaOH 20%), K3 (NaOH 15% kemudian  $\text{KMnO}_4$  0,75%), dan H2 (NaOH 10% kemudian  $\text{KMnO}_4$  0,5%

kemudian  $\text{H}_2\text{O}_2$  10%) menyebabkan terjadinya perubahan kandungan hemisellulosa, selulosa dan lignin dimana hemisellulosa merupakan senyawa yang bersifat non kristalin, mudah larut dalam alkali, dan sulit larut dalam asam, selulosa merupakan senyawa yang bersifat kristalin, mudah larut dalam asam, dan sulit larut dalam alkali, lignin merupakan senyawa yang bersifat amorf, terlarut dalam asam sehingga dapat meningkatkan kekuatan tarik serat masing-masing  $280,94 \text{ N/mm}^2$ ,  $195,37 \text{ N/mm}^2$ , dan  $219,69 \text{ N/mm}^2$  dibandingkan dengan kekuatan tarik serat tanpa perlakuan yaitu  $186,42 \text{ N/mm}^2$ .

## 6.2 Saran

1. Untuk mendapatkan hasil yang akurat dengan validasi data yang tinggi :
  - a. Spesimen harus sesuai dengan standar, minimal 3 spesimen tiap perlakuan
  - b. Pastikan semua alat uji dalam kondisi baik
  - c. Pastikan semua alat uji masih dalam kondisi terkalibrasi
  - d. Gunakan data hasil penelitian lain yang relevan sebagai pembanding dari hasil penelitian yang diperoleh.
2. Penelitian perlakuan kimia terhadap permukaan serat sabut kelapa dengan perendaman dalam larutan N4 (NaOH 20%), dan H2 (NaOH 10% kemudian  $\text{KMnO}_4$  0,5% kemudian  $\text{H}_2\text{O}_2$  10%), masih perlu dikembangkan dan dilanjutkan pada variasi lama perendaman, berhubung dalam penelitian ini lama perendaman belum divariasikan.

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