

ABSTRAK

ISOLASI SELULOSA DARI LIMBAH SERABUT KELAPA MUDA (*COCOS NUCIFERA L*) SEBAGAI ADSORBEN ION LOGAM TEMBAGA(II) , TIMBAL(II) DAN BESI(III)

Telah dilakukan penelitian isolasi selulosa dari limbah serabut kelapa muda yang digunakan sebagai adsorben ion logam tembaga(II), timbal(II) dan besi(III) menggunakan metode delignifikasi dengan NaOH 20%, 1 liter aqua demineralisasi sebagai pereaksi yang kemudian di *bleaching* menggunakan H₂O₂ 50% sebanyak 30 mL untuk memutihkan selulosa. Setelah didapat selulosa kemudian di karakterisasi dengan instrumen FTIR untuk mengetahui gugus fungsi selulosa didapat hasil pengujian FTIR adsorben selulosa memiliki 3 gugus fungsi utama, yaitu gugus alkana, gugus hidroksil dan gugus karbonil. Selulosa dikarakterisasi kembali dengan instrumen SEM untuk mengetahui morfologi pada selulosa dan memiliki permukaan yang kasar dengan rongga berbentuk spiral. Setelah dikarakterisasi, selulosa dicek daya serap dengan melakukan adsorpsi terhadap logam besi(III), tembaga(II), dan timbal(II) yang kemudian dihitung nilai adsorpsinya menggunakan AAS dan didapat hasil dari hasil AAS dan perhitungan kemampuan adsorpsi selulosa terhadap logam besi yaitu 80%, tembaga 89% dan timbal 90%. Ditentukan pula model isoterm adsorpsi yang cocok untuk adsorben selulosa yaitu model isoterm *Freundlich*.

Kata Kunci : adsorben selulosa, adsorpsi, logam besi(III), logam timbal(II), logam tembaga(II), isoterm adsorpsi



ABSTRACT

Isolation Of Cellulose From Waste Coconut Fiber (*Cocos Nucifera L*) As Adsorbent Of Metal Of Copper(II) , Lead(II) , And Iron(III)

Research has been done to isolate cellulose from young coconut fiber waste which is used as an adsorbent of copper(II), lead(II) and iron(III) metal ions using the delignification method with 20% NaOH, 1 liter of demineralized aqua as a reagent which is then bleached using H₂O₂ 50% as much as 30 mL to whiten cellulose. After obtaining cellulose, it was then characterized by FTIR instruments to determine the functional groups of cellulose, the results of the FTIR test of cellulose adsorbents had 3 main functional groups, namely alkane groups, hydroxyl groups and carbonyl groups. Cellulose was re-characterized with SEM instruments to determine the morphology of cellulose and has a rough surface with spiral-shaped cavities. After being characterized, the absorption of cellulose was checked by adsorption on iron(III), copper(II), and lead(II) which then calculated the adsorption value using AAS and the results obtained from the AAS results and the calculation of the adsorption ability of cellulose to ferrous metal was 80 %, copper 89% and lead 90%. A suitable adsorption isotherm model for cellulose adsorbent was also determined, namely the Freundlich isotherm model.

Keywords: Cellulose adsorption, adsorption, ferrous metal(III), lead metal(II), copper metal(II), adsorption isolation

