



PROGRAM BOOK

The 2nd International Conference on Applied Sciences, Mathematics and Informatics



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Abstract. Research on the potential of bacterial cellulose (BC) and modification of BC or cellulose acetate (CA) from tofu liquid waste as adsorbent of Cu (II) and Cr (VI) ions have been conducted. The purpose of this study was to determine the adsorption capacity (Q); isotherm models and adsorption kinetics; and which metal ions were more adsorbed by BC and CA adsorbents. The two adsorbents were used to remove Cu (II) and Cr (VI) ions from the aqueous solution under experimental conditions, e.i under various pH conditions, adsorbent doses and contact time. Based on the research results, the Q values of BC for Cu (II) and Cr (VI) were 39.562 and 21.980 mg/g, respectively, while CA 39.964 and 21.980 mg/g. Adapted adsorption isotherm models for both adsorbents are Langmuir and Freundlich isotherm models with pseudo second order models kinetics. Both of adsorbent adsorb more Cu (II) than Cr (VI) ions.

Keywords : bacterial cellulose; cellulose acetate; tofu liquid waste; copper,chromium

18. Synthesis Of ZSM-5 By Using Natural Silica From Sugarcane Bagasse Ash By Solid-State Crystallization

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Abstract. Here, we report the ZSM-5 synthesis technique using the Solid State Crystallization (SSC) method using natural silica precursor from sugarcane bagasse ash (SCBA). Natural silica was obtained by the extraction process using an alkaline NaOH solution and the formation of silica gel was carried out using HNO₃ solution. The synthesis of ZSM-5 begins with the preparation of the aluminosilicate gel by the molar ratio of Si / Al = 4,63, NaOH / Si = 0.229 and H₂O / Si = 30 reactants through a low temperature sol-gel process and subsequently evaporated to remove the solvent at room temperature. The dried gel is transferred into the teflon-lined autoclave and crystallized without addition of water and other solvents. The performance of ZSM-5 crystalline growth was observed by changing the temperature and time of synthesis. The results show that ZSM-5 based natural silica was well crystallization after heating at 150 ° C for 48 hours confirmed by XRD data. Compared with conventional hydrothermal, SSC method is an ordinary, economical and environmentally friendly synthesis technique.

Keywords : ZSM-5; Solid State Crystallization; natural silica; sugarcane bagasse ash

19. Adsorption Isotherm of Phenol and Methylene Blue in Solution by Oil Palm Shell Activated Carbon

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Abstract. In this research, it has been performed carbon activation of oil palm shells (CAC) prepared by chemical treatment as adsorbents of phenol and methylene blue (MB) in solution either in the form of single or in pair solution. The activation of carbon from the oil palm shells was done physically at a temperature of 700 °C for 1 hour continued with chemical activation using 10% H₃PO₄ for 24 hours. Identification of functional groups on the carbon from oil palm shell before and after chemically activated was performed using infrared spectrophotometer (IR) and analysis of its surface morphology was carried out using scanning electron microscope (SEM). The phenol and MB adsorption process was performed in single and binary systems using the batch method. The adsorption of phenol on CAC is optimum at pH 8 while MB at pH 11 with optimum contact time of 90 min for phenol and 120 min for MB respectively. The phenol and MB adsorption data on the CAC in the single system follow the pseudo-second-order kinetics model with the adsorption rate constant of 0.399 and 0.769 g mmol⁻¹ min⁻¹ respectively. The adsorption isotherms of phenol and MB in CAC tend to follow Freundlich adsorption isotherm pattern with the adsorption intensity factor (n) for phenol, MB, phenol/MB, and MB/phenol: 1.739, 1.341, 1.334, and 1.293 respectively. The adsorbent of CAC is effective to remove phenol and MB in solution, either in single or paired condition.

Keywords: Adsorption; activated carbon; phenol; methylene blue

20. Docking Interaction of Chromium(III) Phenylalanine with Protein Tyrosine Phosphatase

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CERTIFICATE

The organizing committee certifies that

Mita Rilyanti

has contributed as

PRESENTER

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