LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : JURNAL ILMIAH

Judul Jurnal Ilmiah (Artikel)	:	Isotherms and Capacity Adsorption Of Fe(Iii) Onto Duck Feather Modification Using CH3OH and HCl Solution		
Jumlah Penulis	:	3 orang (U. B. L. Utami, **B. Cahyono** and H. Susanto)		
Status Pengusul	:	penulis ke-2		
Identitas Jurnal Ilmiah	:	a. Nama Jurnal	:	Rasayan Journal of Chemistry
		b. Nomor ISSN	:	ISSN : 0974-1496, e-ISSN : 0976-0083
		c. Vol, No., Bln Thn	:	Volume 13, Number 4, October - December (2020)
		d. Penerbit	:	Rasayan Journal
		e. DOI artikel (jika ada)	:	http://dx.doi.org/10.31788/RJC.2020.1345508
		f. Alamat web jurnal	:	https://www.rasayanjournal.co.in/current-issue.php
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		g. Terindex	:	Scopus, Q2

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b. Ruang lingkup dan kedalaman pembahasan (30%)	10,00	11,00	10,50
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Total = (100%)	**33,40**	**39,00**	**36,20**
Nilai Pengusul = (40% x 36,20)/2 = 7,24			

Semarang, 15 Desember 2020

Reviewer 2

Prof. Dr. Istadi, S.T., M.T.
NIP. 197103011997021001
Unit Kerja : Teknik Kimia FT UNDIP

Reviewer 1

Prof. Dr. Widayat, S.T., M.T.
NIP. 197206091998031001
Unit Kerja : Teknik Kimia FT UNDIP

12-04-2022
Nilai akhir terkoreksi atas reviewer II sebesar 4 poin
Nilai perolehan menjadi 0.4(33.4 + 35)/4= 6.84

DocuSigned by:
5D535F69BD8D411...

Prof. Han Ay Lie
NIP 19561109 198503 2 002
PAK Universitas Diponegoro

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Total = (100%)	**40,00**			**33,4**
Nilai Pengusul = (40% x 33,40)/2 = 6,68				

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1. **Kesesuaian dan kelengkapan unsur isi jurnal**: Artikel ditulis lengkap dan sesuai template yang terdiri dari pendahuluan, metode hasil dan pembahasan serta referensi. Artikel berisi tentang pembuatan adsorbent dari bulu bebek dan uji dalam pengolahan limbah.
2. **Ruang lingkup dan kedalaman pembahasan:** Ruang lingkup adalah proses adosorpsi logam aktif dan pembuatan adsorbent dari bulu bebek, kebaruan sangat minim. Penulisan dalam metode sangat minim, demikian juga dengan pembahasan komparasi dengan literature lain sudah ada namun masih minim.
3. **Kecukupan dan kemutakhiran data/informasi dan metodologi** : Abstrak dan kesimpulan singkat, jumlah referensi 33 dan 60% referensi terkini
4. **Kelengkapan unsur dan kualitas terbitan:** Jurnal Rasayan, termasuk jurnal internasional terindeks scopus dalam bidang kimia. Penerbit dari India, Jurnal termasuk Q2 jika bidangnya farmakologi, Q3 jika kimia. Penelitian adalah bidnag kimia

Semarang, 12 Desember 2020
Reviewer 1

Prof. Dr. Widayat, S.T., M.T.
NIP. 197206091998031001
Unit Kerja : Teknik Kimia FT UNDIP

LEMBAR
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c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	12,00			12,0
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12,00			12,0
Total = (100%)	**40,00**			**39,0**
Nilai Pengusul = (40% x 39,0)/2 = 7,80				

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1. **Kesesuaian dan kelengkapan unsur isi jurnal:**
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2. **Ruang lingkup dan kedalaman pembahasan:**
   Artikel sudah cukup mendalam kajiannya dari aspek molekular. Hipotesis kajian sudah dituliskan dengan jelas di pendahuluan. Metode sudah cukup jelas dituliskan termasuk merk dan tipe peralatan analisisnya. Pembahasan juga disupport oleh data-data penelitian yang mencukupi dari hasil karakterisasi dan analisis. Simpulan juga cukup ringkas dan fokus.

3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:**
   Data-data yang menunjang hipotesis penelitian mencukupi dan mutakhir. Referensi artikel juga mencukupi dan mutakhir, dan sebagian besar dari literatur jurnal ilmiah.

4. **Kelengkapan unsur dan kualitas terbitan:**
   Kualitas terbitan cukup bagus (level Q2 dg SJR: 0.27) dan CiteScore Scopus cukup tinggi: 1.8.

Semarang, 15 Desember 2020
Reviewer 2

Prof. Dr. Istadi, S.T., M.T.
NIP. 197103011997021001
Unit Kerja : Teknik Kimia FT UNDIP

12-04-2022
Ditemukan bahasa Indonesia pada Fig. 3
Nilai point d diturunkan menjadi 8, sehingga nilai perolehan menjadi (0.4 x 35)/2 = 7

DocuSigned by:
5D535F69BD8D411...

Prof. Han Ay Lie
NIP 19561109 198503 2 002
PAK Universitas Diponegoro

Document details

Rasayan Journal of Chemistry Open Access
Volume 13, Issue 4, 2020, Pages 2106-2113

Isotherms and capacity adsorption of fe(Iii) onto duck feather modification using CH_3OH and HCl solution (Article) (Open Access)

Utami, U.B.L.[a], Cahyono, B.[b], Susanto, H.[c]

[a]Environmental Studies Program, Postgraduate Study School, Diponegoro University, Semarang, Indonesia
[b]Department of Chemistry Science and Mathematics, Diponegoro University, Semarang, Indonesia
[c]Department of Chemical Engineering, Diponegoro University, Semarang, Indonesia

Abstract

View references (33)

Research has been carried out on isotherms and adsorption capacity of Fe (III by duck feathers modification using CH_3OH and HCl solution. Activated duck feather adsorbents 2 g of duck powder was dissolved in 25 mL HCl with a concentration of 2; 4; 6; 8; and 10% (v / v), and 50 mL CH_3OH 25% was added, then placed on hotplate stirrer at 50 ° C and stirred for 24 hours. The results showed that adsorption capacity of Fe by adsorbent of duck feather optimum before & after activation with 4% HCl-CH_3OH 25% were 111.11 mg / g and 125.00 mg/g and the kinetics follows Langmuir and Freundlich isotherms.

SciVal Topic Prominence

Topic: Keratins | Feathers | Wool

Prominence percentile: 95.512

Chemistry database information

Substances

$Fe(^{3+})$

Author keywords

Adsorption | Duck feather | Fe(III) | Isotherm

Funding details

Funding text

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Research Interest: Water treatment

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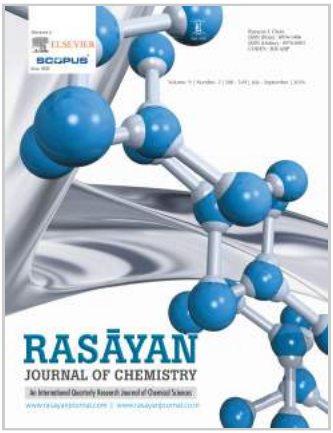

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KeywordsSS: Honey, Heavy Metals, Locality, Mitrovicë, Acacia.

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Rasayan J. Chem, 13 (4), 2045 - 2051 (2020)

KeywordsSS: Semustine, Anti-cancer Drug, Cyclic Voltammetry.

DOI: http://dx.doi.org/10.31788/RJC.2020.1345845

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KeywordsSS: Tebuconazole, Oncorhynchus mykiss, Acute Toxicity, HPLC, LC50.

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DOI: http://dx.doi.org/10.31788/RJC.2020.1345664

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KeywordsSS: Automotive Fuels, Additives, Octane Number, Shankanai Natural Zeolite, Heteropoly Compounds.

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DOI: http://dx.doi.org/10.31788/RJC.2020.1345897

ISOTHERMS AND CAPACITY ADSORPTION OF Fe(III) ONTO DUCK FEATHER MODIFICATION USING CH3OH AND HCl SOLUTION

U. B. L. Utami, B. Cahyono and H. Susanto

Rasayan J. Chem, 13 (4), 2106 - 2113 (2020)

KeywordsSS: Adsorption, Fe(III), Isotherm, Duck Feather

DOI: http://dx.doi.org/10.31788/RJC.2020.1345508

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DOI: http://dx.doi.org/10.31788/RJC.2020.1345955

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KeywordsSS: Coumarin, Metal-free Environment, Microwave Irradiation, Organocatalyst, Green Chemistry etc

DOI: http://dx.doi.org/10.31788/RJC.2020.1345950

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Rasayan J. Chem, 13 (4), 2474 - 2482 (2020)

KeywordsSS: Cham?enerion latifolium, Polyphenolic Compounds, Flavonoids, Tannins, Paper Chromatography.

DOI: http://dx.doi.org/10.31788/RJC.2020.1345919

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Rizki Damayanti, Tamrin, Zul Alfian and Eddiyanto

Rasayan J. Chem, 13 (4), 2483 - 2489 (2020)

KeywordsSS: Illicium verum, Ag Nanopaticles, Antibacterial, AgNPsE, AgNPsMA.

DOI: http://dx.doi.org/10.31788/RJC.2020.1345792

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Rasayan J. Chem, 13 (4), 2490 - 2497 (2020)

KeywordsSS: Averrhoa carambola, Adsorbent, Cr(VI), Applications.

DOI: http://dx.doi.org/10.31788/RJC.2020.1345908

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ISOTHERMS AND CAPACITY ADSORPTION OF Fe(III) ONTO DUCK FEATHER MODIFICATION USING CH_3OH AND HCl SOLUTION

U. B. L. Utami[1,*], B. Cahyono[2] and H. Susanto[3]

[1]Ph.D Environmental Studies Program, Postgraduate Study School, Diponegoro University, Semarang Indonesia

[2]Department of Chemistry Science and Mathematics Diponegoro University, Semarang, Indonesia

[3]Department of Chemical Engineering Diponegoro University, Semarang, Indonesia

*E-mail: umi.baroroh@ulm.ac.id

ABSTRACT

Research has been carried out on isotherms and adsorption capacity of Fe (III by duck feathers modification using CH_3OH and HCl solution. Activated duck feather adsorbents 2 g of duck powder was dissolved in 25 mL HCl with a concentration of 2; 4; 6; 8; and 10% (v / v), and 50 mL CH_3OH 25% was added, then placed on hotplate stirrer at 50 ° C and stirred for 24 hours. The results showed that adsorption capacity of Fe by adsorbent of duck feather optimum before & after activation with 4% HCl- CH_3OH 25% were 111.11 mg / g and 125.00 mg/g and the kinetics follows Langmuir and Freundlich isotherms.

Keywords: Adsorption, Fe(III), Isotherm, Duck Feather

INTRODUCTION

The increase of duck breeding efforts can lead to an increased produce duck feather waste. Based on data from the Livestock Service Office of South Kalimantan Province in 2017, the number of ducks is 4,284,284 population, are generated can be estimated that a total of 200 tons of duck feather waste. These duck feathers to be used as adsorbents for absorbing metals and dyes in industrial wastewater. Related studies absorbent with formic acid, to Methylene Blue, the adsorption capacity of 134.76 mg/g[1] chicken feather adsorbents as removal of Indigo Carmiane dyes[2], and Blue Astrazon 2RN textile dye (DBA).[3] Modified chicken feathers with acylates for film and tested on textile waste.[4] Research on chicken feathers as a metal absorber has been done with activation of Na_2S capable of absorbing Pb of 98.69%, duck feather composite with NaOH increased adsorption capacity on Cu^{2+} and Cr^{6+}.[5] The Co(II) adsorption study by the protein grains produced from chicken feathers suggests that it is more efficient.[6] Research on adsorption of copper with Dromaius novaehollandiae feathers and chitosan composite that maximum adsorption was found 93.91% (18.78 mg/l), and these composites can be applied for safe, effective and economical industrial wastewater treatment, with a value of permitted threshold of 1.3 mg / L for drinking water[7]. Lead adsorption (Pb) by duck feather adsorption capacity was 2.3 g / L[8] on research of Pb^{2+}, Cd^{2+} and Ni^{2+} by CH_3COOH modified chicken feathers and HCl showed that significant effect on adsorption of Pb^{2+}, for the desorption process affected Pb^{2+} and Cd^{2+}, but no significant effect on Ni^{2+}.[9] Adsorption As (III) modified chicken feathers by NaOH, Na_2SO_3, and CH_3OH showed that keratin from 6% CH_3OH and 2% HCl, CH_3OH higher when compared with the addition of NaOH and Na_2SO_3, adsorption capacity 0.13 mg /g.[10]

Research kinetics and equilibrium of metal adsorption have been carried out, among others. Adsorption almond shell activated carbon follow the Langmuir isotherms and adsorption capacity 334.40 mg/g.[11] The Langmuir and Freundlich isotherms are Cd by modification of chicken feathers with ascorbic acid[12], Cu, Zn and Ni by chicken feathers.[13] Zn using powdered cow hooves[14], Selenium (Se) using rice husk ash (RHA)[15], Ni, Cu and Co on barley straw ash[16], remove Ni and Cr from waste[17], biosorption metal and Cu

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ORGANOCHLORINE PESTICIDES ASSESSMENT IN SEDIMENT SAMPLES FROM VAAL RIVER BY ACCELERATED SOLVENT EXTRACTION TECHNIQUE

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ABSTRACT

The excessive use of pesticides has become a global concern owing to the great adverse effect exerted on human health and the environment. The application of Soxhlet extraction (SE) and accelerated solvent extraction (ASE) techniques to the analysis of 15 organochlorine pesticides (OCPs) in sediment samples was described. Sediment samples were obtained from the Vaal River, the largest tributary of the Orange River in South Africa. The method detection limit (MDL) is in the range of 0.01 to 0.25 mg/L, and the average recoveries were in the range 63.2 %-96.0% with standard deviations in the range 3 %-12.5 %. The total OCPs are in the values of 0.352 µg/L, 0.352 µg/L, and 0.212 µg/L in the sediments from Vereeniging, Barrage, and Parys respectively using the ASE method. Higher values of 4,4′-DDE, 4,4′-DDD, and 4,4′-DDT were found in samples collected from Vereeniging and Barrage locations within the range 0.068-0.095 µg/L and 0.063-0.089 µg/L respectively. The mean concentrations of OCPs residues in the sediment samples follows the order: endosulfan I > 4,4′-DDT > 4,4′-DDE > 4,4′-DDD > α-HCH > β-HCH > heptachlor epoxide > trans-chlordane > γ-HCH heptachlor. It was revealed that the ASE was the optimal technique for the analysis of OCPs in sediments. It can be concluded that the accelerated solvent extraction (ASE) is an effective extraction technique for the analysis of organochlorine pesticides from sediment matrices within a short period, and consumes less solvent.

Keywords: Organochlorine Pesticides, Vaal River, Accelerated Solvent Extraction, Soxhlet Extraction, Environment, Sediment

INTRODUCTION

The increasing use of pesticides such as organochlorine in the domestic industry and agriculture activities for controlling pests is polluting the environment daily.[1-6] Pesticides are a collection of substances used for the annihilation of insects, bacteria, fungi, weeds, and others; hence, they are commonly termed insecticides, herbicides, bactericides, rodenticides or fungicides.[7-9] Environmental adulteration due to the disproportionate use of pesticides possesses a great adverse effect on human health and the environment.[7,10-13] The excessive use of pesticides to control the crop-destroying insects have gained momentum in the last two to three decades, which can be linked to rapid urbanization, hence, the need to meet up with the world's population demand. Most OCPs are categorized as persistent organic pollutants (POPs) because they are not broken down easily and/ or can remain in the environs long after application.[2,4,5,7,10,13,14] OCPs vary in their mechanisms of toxicity, chemical structures and persistence in the environment.[14-16] They possess hydrophobic and lipophilic nature, hence; they are likely to accumulate in the fatty tissues of marine and wildlife species.[2,15] Concerning their widespread usage, different media such as air, soil, and groundwater are easily contaminated. These compounds after product usually remain in the soil, thereby decreasing the biodiversity in the soil, and also finds their

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REGULARITIES OF INTERACTION OF CALCIUM CHLORIDE OF DISTILLER LIQUID WITH NATURAL SODIUM SULFATE

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ABSTRACT

This article deals with the processing of distiller liquid of the main waste of soda production by treating it with natural sodium sulfate to produce a gypsum binder and filtrate containing sodium chloride and impurities. The filtrate after dissolving an additional amount of table salt in it and cleaning it from undesirable impurities can be used in the technology of producing soda ash. Sodium sulfate, used in experiments, is a natural salt of the deposits of the Kyzylorda region, which crystallizes as tenardite. The model solution of distiller liquid of soda ash production is prepared in accordance with the technological regulations of the Sterlitamak soda plant. The Gibbs energy was calculated to determine the possibility of an interaction reaction between calcium chloride and sodium sulfate in the presence of impurities (ΔG_T^0).Based on the chemical composition of the distiller liquid, the required amount of natural sodium sulfate is calculated. The optimal parameters of the process modes of distiller liquid utilization, the consumption of natural sodium sulfate in the range of 84÷100% of stoichiometry, the temperature and duration of the process are determined.

Keywords: Production of Soda Ash, Distiller's Liquid, Sodium Sulfate, Waste Processing

INTRODUCTION

Kazakhstan is one of the leading countries in the world's mineral resource balance in terms of proven reserves of many minerals[1]. The extraction and processing of natural mineral salts are one of the most promising directions for the development of the chemical industry in Kazakhstan. Most of the developed production of inorganic salts is based on the use of soda ash, which must be purchased from the Russian Federation [2]. The demand for the chemical industry of the Republic of Kazakhstan for soda ash is more than 300 thousand tons per year, which determines the need to create its production of soda ash. Currently, an agreement has been signed on the establishment of a joint Kazakh-Chinese enterprise for the construction of a plant for the production of soda ash in the Kyzylorda region with a capacity of 300 thousand tons per year.

Currently, there are mainly four methods of producing soda: ammonia (the solve method), from natural soda-containing raw materials, from nephelins and by carbonation of sodium hydroxide.[3,4]

The wide practical use of the ammonia method for producing soda indicates its advantages over others. The raw materials needed to produce soda by the ammonia method are inexpensive, widespread and easily extracted, such as table salt or its brine and limestone, rock salt and deposited salt, as well as lake brine. The total reserves of table salt deposits in Kazakhstan are 1.3 billion tons. They are represented by various types of salt deposits: rock salt and deposited salt, as well as the brine of lakes.

There are more than 75 soda factories in the world, where about 70% of soda ash is produced using the solve method[4].

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