Ejeomo Osazuwa Jatto PhD (Ekpoma)

E-Mail: ejeomojatto@aauekpoma.edu.ng
Tel: +234 8162702866
FACULTY: Physical Sciences
DEPARTMENT: Chemistry

BRIEF INTRODUCTION

A senior lecturer with over ten years of experience in independent and collaborative research in chemistry.

Area of expertise:

1. Physical Chemistry
2. Environmental Chemistry (water analysis and treatment).

Research Interests

1. Adsorption studies
2. Kinetic studies
3. Thermodynamic studies
4. Wastewater and water analysis
5. Treatment of water and wastewater.

Post graduate Supervision

1. Adsorption, kinetics and thermodynamic studies of the treatment of municipal wastewater using powdered moringa oleifera seeds.

Publications

1. **Jatto E.O,** Asia I.O, Egharevba F, Odia A.(2013)
Kinetic Studies of Wastewater Treatment from Rubber Factory, using Snail Shell
New York Science Journal 6 (2) 25-33.

2. **Jatto E.O**, Asia I.O, Egharevba F. (2013).
Kinetic Studies of Wastewater Treatment from Pharmaceutical Industry, using Snail Shell Powder. *International Journal of Advanced Research* 1 (1): 47-56

3. *Ewansiha C.J, Ekabafe L.O, Ehigie C, **Jatto O.E** (2012).*
Treatment of Palm Oil Effluent using Modified Powdered Cherry (chrysophyllum albidium) Seed Shell Carbon. International Journal of Environmental Sciences 2012, 1 (4) 234-238

4. Medjor O.W, Egharevba F, Akpovita O.V, Ize-Iyamu O.K, **Jatto E.O.** (2012)
Kinetic Studies of Bioremediation of Hydrocarbon Contaminated Groundwater. *Research Journal of Chemical Sciences* 2(1):38-44

5.C.I Ewansiha, I.O Asia, I.O Ekabafe, **O.E Jatto,** G.Okodugha **(***2011).*
Proximate and Mineral Composition of Seed of Pericap of Chrisophyllum Albidum. *The Pacific Journal of Science and Technology, Akamai University,* 12.(1): 363-365.

6.V.O Akpovita, F Egharevba, O.K Ize-Iyamu, **O.E Jatto,** M.O Odjighere. (2011).
Equilibrium and Kinetic Studies of the Reaction of Aquomet Derivative of Pigeon Haemoglobin with 5,51 Dithiobis (2-nitrobenzoic acid). *The Pacific Journal of Science and Technology* 12 (1): 365-373.

7. **O.E Jatto,** M.E Chukwuedo, I.O Asia, A Odia, J Ehigbor (2011).
Adsorption Isotherm Studies of Hg(ii) and Cd(ii) Ions using Maize Cob and Coconut Shell. *Ircab Journal of Natural and Applied Sciences,*1. (1). 5-11

8.Chukwuedo,M.E, Azih, M.C Odia A, **Jatto, E.O,** Ihimire, I.G. (2011).
Physicochemical Characteristics and Functional Properties of Breads made from Sweet and Irish Potato-Cassava Flour Blends. *Ircab Journal of Natural and Applied Sciences* 1, (1): 80-84

9. **E.O Jatto,** I.O Asia, E.E Egbon, J.O Otutu, M.E Chukwuedo, C.J Ewansiha (2010).
Treatment of Wastewater from Food Industries using Snail Shell. *Academia Arena,*2(1): 32-36.

10 **O.E Jatto,** I.O Asia, W.E Medjor (2010).
Proximate and Mineral Composition of Different Species of Snail Shell. The Pacific Journal of Science and Technology. *Akamai University,* 11(1:, 416-419**.**

11. **Jatto E.O**, Asia I.O. (2010).
Quality Assessment of Domestic Water in Ekpoma. R*eport and Opinion,2 (12). 86-93*

12. **Jatto. E.O;** Asia. I.O; Egharevba, F; Medjor, W.O (2014).
Thermodynamic studies of the treatment of wastewater from brewery industry, using powdered snail shell. *Mamblla: Journal of sciences and the environment* vol.1 (2). pp 42-54.

13.Medjor. W.O; Egharevba. F; Akpovita, V.O; Wepuaka, C.A; **Jatto, E.O** (2013).
Effects of Bioremediation on physicochemical properties and heavy metal content of groundwater contaminated with diesel using mixed culture microorganisms. *Mamblla: Journal of sciences and the environment* vol.1. pp 96-106

14. Medjor W.O; Egharevba, F; Akpovita, O.V; Namessan, N.O; **Jatto, E.O.** (2013).
Biodegredation and Kinetic studies of groundwater contaminated with domestic purpose kerosene using microorganisms from agricultural waste. *Mamblla: Journal of sciences and the environment.* vol.1. pp 120-129

15.C.I Ewansiha, F.E Okieimen, I.O Ekebafe, **E.O Jatto,** C.W Ozabor (2010).
Preparation and Characterization of Powdered Activated Carbon from Maize Cobs (Zeamays) for Uptake of Organic Waste from Aqueous Media *J. Chem. Soc. Nigeria.* 35 (2): 79-83

16. J.O Otutu, E.K Ossai, **O.E Jatto** (2007).
Synthesis and Physicochemical Properties of Mono-azo Disperse Dyes from 3-amino phenol. J. *Chem. Soc. Nigeria.*32 (2): 81-9

17. **Jatto. E.O**, Asia I.O, Egharevba F, Egbon, E.E. (2015).
A study of the thermodynamic of the treatment of rubber effluent using powdered snail shell. *Nigerian annals of natural sciences* vol.15 (1) pp 155-161.

18**.Jatto E.O,** Asia I.O, Egharevba F, (2014).

Thermodynamic Studies of Treatment of Wastewater from Pharmaceutical Industry, Using powdered Snail Shell. *Chem tech journal.* vol.9.pp 120-131.

19.E.E Egbon, **E.O Jatto,** I.O Asia, O.K Ize-Iyamu (2007).
Proximate and Mineral Composition of Mucuna Pruriens. *Chem.Tech. Journal.3:* 640-642

20.I.O Asia, I.O Eguavoen, **O.E.Jatto** (2006).
Illumination and Heating with Locally Fabricated Lamps and Stoves Respectively During Night Trading: Environmental and Health Hazards. *Chem Tech Journal 2:* 206-211

21. Odia A, Ihimire, I.G, **Jatto. E.O** (2007)
Formulation and Characterization of weanling Meal Based on Cassava Flour, Cassava Flour and Soya beans Flour. *Adv. Nat. and Appl.Sci. Res. Vol5: PP 90-94*

22. Uwidia Ita Erebho, Ogheneovo Sunday and **Jatto Ejeomo Osazuwa** (2017)
Physicochemical Evaluation of Abattoir Wastewater from an Abattoir in Benin City. *Mamblla: Journal of sciences and the environment.* vol.4 (1). pp 23-27

23. Uwidia Ita Erebho, Asia Imohimi Ohioma, **Jatto Ejeomo Osazuwa** (2017).
Correlation Studies of some Parameters in Petroleum wastewater obtained from Warri, Delta State, Nigeria. *International journal of scientific and Engineering research, vol 8(7) pp 380-385*.

24. **Jatto E.O,** Asia I.O, Ogbebor C, Ewansiha J.C (2017).
Adsorption and Kinetic Studies of Lead (II) ion using powdered snail shell. SAU Science – Tech Journal, vol2(1) pp 60-68.

25. **Jatto, Ejeomo. Osazuwa,** Asia, Imohimi. Ohioma, Egharevba, Felix, Odia, Amriabure (2017)
Thermodynamic Studies of the Treatment of Wastewater from Food Industry, Using Powdered Snail Shell (PSS). SAU Science – Tech journal, vol 2(1) pp 69- 76.

CONFERENCE PAPER:

1. **E.O Jatto,** I.O Asia, F.Egharevba (2012)
Kinetic Studies of Wastewater Treatment from Brewery, using Powdered Snail Shell
proceedings of the 35th annual international conference, workshop and exhibition of chemical society of Nigeria. 2. 321-325.

ABSTRACT

Kinetic Studies of Treatment of Wastewater from Brewery Industry using Powderd Snail shell
1 Jatto E.O*, [1]Asia I.O [1] Egharevba F (2012)
proceedings of the 35th annual international conference, workshop and exhibition of chemical society of Nigeria. 2. 321-325.

The kinetic studies of the treatment of wastewater from brewery using powdered snail shell, shows that the treatment fit the pseudo-second order kinetic model, as compared to the other two kinetic models (Psuedo-first order or Lagergrien kinetic model and intraparticle diffusions model) studied, for the pseudo first order, the correlation value (r^2) of Alkalinity, Turbidity, Electrical conductivity, total solids, total suspended solids, and Dissolved solids were 0.830, 0.865, 0.674,0.984,0.793 and 0.981 respectively, biochemical oxygen demand, chemical oxygen demand, NO_3-N, phosphate and sulphate have r^2 values of 0.708, 0.864, 0.751, 0.233 and 0.505 respectively. The r^2 values of the pseudo-second order of pH, Temperature, Alkalinity, Turbidity, Electrical conductivity, Total solids, Total suspended solids, Dissolved solids, Biochemical oxygen demand, Chemical oxygen demand, Dissolved oxygen, Nitrate-Nitrogen, Phosphate, and Sulphate, were 0.999, 0.997, 0.989, 0.995, 0.999,0.992, 0.998, 0.992,0.995, 0.999, 0.964, 0.956 and 0.996 respectively while the r^2 value of the intrapartcle diffusion of most these parameters were below 0.999, In addition, the physicochemical properties (pH, temperature, alkalinity, turbidity, total solids, suspended solids, dissolved solids, dissolved oxygen, biochemical oxygen demand, chemical oxygen demand, electrical conductivity, and phosphate, Nitrate-Nitrogen, Sulphate, Pb, Cd and Hg) were analysed for treated and untreated wastewater obtained from Brewery.

KINETIC STUDIES OF WASTEWATER TREATMENT FROM RUBBER FACTORY USING SNAIL SHELL

[1*]Jatto, Ejeomo.Osazuwa. Asia, Imohimi.Ohioma. Egharevba, Felix. Odia, Ariaburie
Department of Chemistry, Ambrose Alli University, P.M.B 14, Ekpoma, Nigeria.
New York Science Journal 2013; 6(2)

ABSTRACT

The kinetics studies of the treatment of wastewater from rubber industry, shows that the treatment fit the pseudo-second order kinetic model, as compared to the other two kinetic models (Pseudo-first order or Lagergrien kinetic and intraparticle diffusions model) studied, since the correlation coefficient (R^2) values of most parameters were ≥ 0.99. Moreover, the food composition (Nitrogen free extract, protein, fibre, fat and ash content), the mineral compositions (Fe, Mn, Zn and Cu) as well as the surface area and pH were analysed for the four species of snail shell (Archatina archatia, Archtina marginata, Achatina fulica and limucularia species). In addition, the physicochemical properties (pH, temperature, alkalinity, turbidity, total solids, suspended solids, dissolved solids, dissolved oxygen, biochemical oxygen demand, chemical oxygen demand, electrical conductivity, and phosphate, Nitrate-Nitrogen, Sulphate, Pb, Cd and Hg) were analysed for wastewater from rubber industry. The data derived from the physicochemical properties were treated with three kinetic models (Pseudo-first order- Lagergrien, Psuedo-second order and intraparticle diffusion). From the kinetic models, the results show that for the wastewater from the rubber industry, the correlation coefficient (R^2) of the pseudo-second order was approximately 1, indicating that the treatment fit the pseudo-second order kinetics.

KEYWORDS: Rubber, snail shell, kinetics, pseudo-second order.

A Study of the Thermodynamic of the Treatment of Rubber Effluent Using Powdered Snail Shell

Jatto E.O*, Asia I.O Egharevba F, Egbon E.E (2016)
Department of Chemistry, Ambrose Alli University, Ekpoma.
Nigerian annals of natural sciences vol.15 (1) pp 155-161.

Thermodynamic studies of the treatment of rubber effluent was carried out, the change in standard Gibb's free energy (ΔG^0) of hydrogen ion concentration (pH) were (0.0359, 0.0736, 0.0385, 0.0789, 0.0423Kj/mol), dissolve oxygen (DO) (1.486, 1.535, 1.515, 1.361 and 1.396 Kj/mol) the values of change in standard entropy (ΔS^0) and standard enthalpy (ΔH^0) were 297.30kj/mol and 105.92kj/mol for hydrogen ion concentration (pH) , 261.28kj/mol and 25.36kj/mol for dissolved oxygen (DO) Other parameters such as Alkalinity, Turbidity, Total solid (TS), Biochemical oxygen demand (BOD) and Sulphate have negative values of change in standard Gibb's free energy (ΔG^0), the values are Alkalinity (-1.253, -1.261, -1.287, -1.320, -1.396 Kj/mol), Turbidity (-1.201, -1.026, -1.026, -1.060 and -0.915 kj/mol) Total Solids (TS), (-0.429, -0.421, -0.435, -0.353 and -0.135Kj/mol), Biochemical oxygen demand (BOD) values (-8.152, -8.401, -8.688, -8.857 and -9.400 Kj/mol), and sulphate values (-16.70, -17.29, -19.88, -18.47 and -19.65Kj/mol). The change in standard entropy (ΔS^0) was positive for most parameters except electrical conductivity (EC), alkalinity and phosphate with values of
-281.77kj/mol, -15.86kj/mol and -179.09kj/mol and change in standard enthalpy (ΔH^0) also have negative values for most of the parameters of the rubber effluent except hydrogen ion concentration (pH), dissolved oxygen (DO), Turbidity, Total Solid (TS) total dissolved solid (TDS) and total suspended solid (TSS). In addition, the physicochemical properties (Hydrogen ion concentration (pH), temperature, alkalinity, turbidity, total solids, suspended solids, dissolved solids, dissolved oxygen, biochemical oxygen demand, chemical oxygen demand, electrical conductivity, and phosphate, Nitrate-Nitrogen, Sulphate, lead (Pb) and cadmium (Cd)) were analysed for wastewater from rubber effluent.
KEYWORDS: Thermodynamics, rubber, spontaneous, entropy, enthalpy, Gibb's free energy

Thermodynamic studies of the treatment of wastewater from brewery Industry, using powdered snail shell. (2014)

*Jatto, Ejeomo.Osazuwa. [1]Asia, Imohimi.Ohioma. [1]Egharevba Felix. [2]Medjor, Weltime Odeguonor
1. Department of Chemistry, Faculty of Natural Sciences, Ambrose Alli University Ekpoma
2. Department of Chemistry, Faculty of Sciences, Taraba State University, Jalingo.
Mamblla: Journal of sciences and the environment vol.1 (2). pp 42-54.

*Corresponding author: e-mail ejey2010@gmail.com

ABSTRACT

Thermodynamic studies of the treatment of wastewater from brewery industry were carried out. The change in standard Gibb's free energy (ΔG^0) for pH were 0.71, 0.72, 0.45 and 0.49 Kj/mol, while for dissolved oxygen were 0.93, 0.96, 0.98, 0.97 and 0.95 Kj/mol. The values of change in standard entropy (ΔS^0) and standard enthalpy (ΔH^0) were -1.21 and 542.5Kj/mol respectively. Other parameters of the wastewater have negative values of change in standard Gibb's free energy (ΔG^0), among which are Alkalinity with values of -1.13, -048, -0.94, -0.70 and -0.73 Kj/mol. Turbidity have values of ΔG^0 as -2.62, -1.82, -1.87, -1.78 and -1.76 kj/mol, while electrical conductivity values were -2.12, -2.17, -2.23, -2.20 and -2.23Kj/mol. Total solids have values of ΔG^0 as -0.41, -0.39, -0.38, -0.38 and -0.32 Kj/mol, while biochemical oxygen demand values were -0.39, -0.37, -0.33, - 0.24 and -0.19 Kj/mol, chemical oxygen demand -0.68, -0.66, -0.64, -0.62 and -0.65 kj/mol, Nitrate-Nitrogen -0.95, -0.88, -0.87, -0.86 and -0.87Kj/mol, phosphate -5.42, -5.52, -5.62, -5.78 and -6.09Kj/mol, Sulphate -9.42, -9.42, -9.89, -10.14 and -10.60Kj/mol. The values of change in standard entropy (ΔS^0) was negative for most parameters with the exception of Turbidity, Total solids and Biochemical oxygen demand and change in standard enthalpy (ΔH^0) was positive for Electrical conductivity, Total suspended solid, phosphate and sulphate, but negative for other parameters. This shows that the reduction of most parameters during treatment at different temperature is spontaneous.
Keywords: Treatment, wastewater, snail shell, thermodynamic studies.

THERMODYNAMIC STUDIES OF TREATMENT OF WASTEWATER FROM PHARMACEUTICAL INDUSTRY, USING POWDERED SNAIL SHELL. (2014)

*[1]Jatto, Ejeomo.Osazuwa. [1]Asia, Imohimi.Ohioma. [1]Egharevba Felix. [2]Medjor, Weltime Odeguonor

1. Department of Chemistry, Faculty of Natural Sciences, Ambrose Alli University Ekpoma
2. Department of Chemistry, Faculty of Sciences, Taraba State University, Jalingo.

Chem tech journal. vol.9.pp 120-131.

*Corresponding author: e-mail ejey2010@gmail.com

ABSTRACT

The thermodynamic study of the treatment of wastewater from a pharmaceutical industry using powdered snail shell was done. The change in standard Gibb's free energy (ΔG^0) of pH has values of 0.511, 0.567, 0.607, 0.718 and 0.796 Kj/mol respectively, while the change in standard entropy (ΔS^0) and enthalpy (ΔH^0) have values of -1.169 and $5x10^{-3}$ Kj/mol respectively. ΔG^0 values of alkalinity are -1.924, -1.759, -1.723, and -1.473 and -1.269kj/mol respectively, its values of ΔS^0 and ΔH^0 are -5.666 and 0.0132 kj/mol respectively. Turbidity has ΔG^0 values of -4.401, -4.404, -5.280, -5,323 and -5.597 kj/mol while its ΔS^0 and ΔH^0 values are 73.047 and -0.0263kj/mol. The values of ΔG^0 of electrical conductivity are -2.488, -2.484, -2.349, -2.156 and -2.228kj/mol while its ΔS^0 and ΔH^0 values are -4.322 and 0.00649kj/mol respectively. ΔG^0, ΔS^0 and ΔH^0 values of TS, TSS, TDS, BOD, COD, DO, NO_3-N, and Phosphate were also determined. The thermodynamic studies were done at 283, 292, 303, 313 and 333K respectively. Physicochemical characterization of the wastewater was determined before and after treatment. However the food and mineral composition of four different species of snail shell were determined, the pH, surface area and optimum dosage of the powdered snail shell were determined, from the analysis, the giant African snail shell was chosen and used for the treatment of the wastewater, due to its large surface area, stability at pH of 4-12 and the ease to produce a fine powder when homogenised.

KEYWORDS: thermodynamics, snail shell, physicochemical parameters, Gibb's free energy, enthalpy, entropy.

ADSORPTION AND KINETICS STUDIES OF LEAD II ION USING POWDERED SNAIL SHELL (PSS) (2017)

[1*].Jatto, E.O [1]Asia, I.O. [2] Ogbebor, C
1.Department of Chemistry, Ambrose Alli University, Ekpoma.
2. Department of Chemical sciences, Samuel Adegboyega University,

SAU Science – Tech Journal, vol2(1) pp 60-68.

*** Correspondence. E-mail: ejeomojatto@aauekpoma.edu.ng**

Abstract

Lead (ii) ion was adsorbed from solution at regular time interval of 20 minutes at 130 minutes, using powdered snail shell by equilibrium sorption experiment. Results show that 2g of the powdered snail shell was able to adsorbed 9.97, 9.96, 9.95, 9.95, 9.79, 9.69.and 9.58 mg/L of lead (ii) ion, from initial concentration of 10mg/L, a similar trend was equally observed when the initial concentration of the lead (ii) ions was varied from 20mg/L to 70mg/L at different time intervals of 10, 30, 50, 70, 90, 110 and 130mins respectively. It was observed that the concentration of Lead (ii) ion removed from the solution by the powdered snail shell depends on the contact time between the adsorbent and adsorbate. The results show that optimum adsorption was achieved at 110mins for 60mg/L metal ion solution. Adsorption was found generally to increase with concentration of adsorbate. It was observed that adsorption fits into the freundlich isotherm and pseudo second order kinetics.

KEYWORDS: Sorption; Adsorbed; Snail shell; lead (ii) ions; time intervals; Pseudo-second; Freundlich