



SDI Review Form 1.6

Journal Name:	British Journal of Applied Science & Technology
Manuscript Number:	2014_BJAST_12742
Title of the Manuscript:	Valorization of Cocoa shells (Theobroma cacao) for the production of Activated Carbon by Chemical Activation using H ₃ PO ₄ and KOH: Kinetic and Equilibrium Studies of Cu(II) ions Adsorption from Aqueous Solutions
Type of the Article	Original Research Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)



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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	Lines 2 to 5 : Title is too lengthy. Suggested title; Adsorption of Cu(II) ions onto paralyzed H₃PO₄ and KOH modified <i>Theobroma cacao</i> shells Or Kinetic and Equilibrium Studies of Cu(II) ions uptake using thermally cracked H₃PO₄ and KOH modified <i>Theobroma cacao</i> shells (Reasons: No indication of activation in methodology. We noticed only carbonization which is also called Pyrolysis, title is too lengthy) Lines 9 to 34: Please summarize abstract into 200 or at most, 250 words. For adsorption studies, abstracts may not be void of certain key experimental values. Between Lines 104 and 105: You may now tell us the justification, aims and objectives of this present research, not as separate sub title but all in a block paragraph just before materials and methods.	Corrected: Adsorption of Cu (II) ions from Aqueous Solution onto Chemically Prepared Activated Carbon from <i>Theobroma Cacao</i>. Chemical activation method by pyrolysis now indicated. It has equally been summarized to the acceptable range and as per the Author's Guide of BJAST Corrected as suggested



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	Lines 106 to 114: These lines wrongly contained methodology as well as results. For Materials and methods, use the order: sampling of substrates as well as key reagents with chemical specifications, sample pretreatment and then the methods Line 136: the temperature used is for Pyrolysis and not activation temperature. The thermal treatment prior to washing and storage is that of Pyrolysis. Item 2.3 Line 148 :Use the title; “characterization of Adsorbent “ instead of parameters Analysis of characterization parameters Lines 149 and 150 ; move to sample treatment Figure I Line 327; qe and its unit is a measure of adsorption capacity and not iodine number. Confirm from figure 5 which is same as qe at time, t. Below line 363: The two FTIR spectral is to further assist you characterized your derived AC. This is possible if you compare with those of commercial AC. Its use as functional group determination is also useful if you were able to deduce interfering reagents as well as active adsorption sites. Let your discussion reflect this.	Corrected; all the results have been moved to the concerned section It is now well précised: activated temp. is 110 °C while Pyrolysis was carried out at 400 °C ... Hope its ok Characterization of adsorbent Corrected in the text Iodine number is the mg of iodine adsorb by 1g of activated carbon; implies mg/g (same as Qe). It is define by the ASTM standard Corrected
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	Lines 471 to 482: As the case applies, regression correlation test, R^2 cannot stand in isolation while predicting best kinetic model. 3 model applicability test applies, (1) regression analysis, R^2 (2) precision test comparing calculated q_e and experimental q_e (3) statistical error. Best model presents the highest R^2 value, least error and more nearness between q_e cal and q_e exp. 554 to 579: Conclusion; The intraparticle diffusion is a mode of transport and it is separately utilized where a conclusion may be drawn for adsorbates uptake as either film diffusion, bulk or mass transfer, or as particulate diffusivities. The entire criteria to conclude on the type of kinetic model were not followed, Discussion on Isotherm model were not linked to surface coverage and sorbate site energies.	This is very true, but however, As described in other articles; [2], [4], [10] etc. The correlation coefficient can also be a sole determinant to predict which model best fit the adsorption data Corrected both on the theoretical part and the discussion part
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<u>Minor</u> REVISION comments	Generally, The totality of the effect of initial concentrations as well as effect of contact time is what is entailed in isotherm studies and kinetic studies respectively. Presenting them as separate study areas makes the work bulky. Author may wish to know that isotherm also explain surface coverage and site energies. This may further reduce discussion on characterization of adsorbent.	Ok
<u>Optional/General</u> comments	The multiatomic functional groups as well as multiple groups in the spectral shows that the adsorbent prepared may not be called activated carbon. For Activated carbon, the spectral may be mainly graphene carbon with only very few other active sites or groups. Adsorbent may therefore be termed surface modified <i>Theobroma cacao</i> shells if you are interested in inducing special active groups. Else, you may check your activation or final washing technique.	Activated carbon might be rich in functional groups depending on the treatment or the source of the raw material. It is AC because it is riddled with high pores and surface area.