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Journal Name:	British Journal of Applied Science & Technology
Manuscript Number:	2014_BJAST_12590
Title of the Manuscript:	Evaluation of the Adsorption Kinetics and Equilibrium for the Potential Removal of Congo Red Dye From Aqueous Medium by Using a Biosorbent
Type of the Article	

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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.

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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)
<u>Compulsory</u> REVISION comments	The following six items are suggested as revisions. 1. <u>Comparison to existent adsorbent</u>. It is quite helpful and useful to have more quantitative descriptions of the AMSD in comparison with the activated carbon as well as other biosorbents mentioned in "Introduction" section. The specific area of the adsorbent as well as production cost can be listed and compared. So that it will provide the current status of AMSD and future direction. 2. <u>Reasoning of selecting proposed system</u>. The authors are recommended to describe the reasons why CR was chosen to be studied as an adsorbate among many dyes. It is not clear if CR was chosen because of particular scientific reasons (<i>e.g.</i>, due to a spectroscopic characteristic which is convenient for its detection) or availability of adsorption data obtained previously at author's research group. Also, the same type of description is required for the AMSD. The authors should list up specialties of AMSD among possible biosorbents and explain why AMSD was chosen to be focused in this study. 3. <u>Presentation and interpretation of FTIR data</u>. First of all, the Figs. 1 and 2 are recommended to be polished more to a final publication format. Currently, the graphs appear to be just directly copied from the output of FTIR machine. For example, there are several unnecessary statements given in the figures, such as titles and dates.	Corrected in manuscript Corrected fig 1&2 in manuscript



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	Also an increment of y-axis is too busy and the font size of letters used in both axes may be too small. Secondly, there is no clear evidence presented for a conclusion made in this study. While the authors concluded that “the figures presented several functional groups for binding CR on AMSD” in line 125, the way spectrum presented and the values shown in Table 1 do not necessary show this interpretation is correct. Several slight band shifts (a few wave numbers) were certainly found as shown in the Table 1. However, these band-shift could be easily due to band width change or even due to background level change (<i>e.g.</i>, scattering from AMSD surface). The best recommended approach would be to overlay two plots with different colour (if colour is allowed) or with different line formats (<i>e.g.</i>, solid line vs. dotted line). So that not only a change in line width but also a change in the amount of absorbance may be easily detected. In order to view a change clearly, it would be highly recommended to add another plot which shows the difference of two plots. Lastly, Figures 1 and 2 should plot an absorbance. The authors plot %Transmittance in these plots. However, in my experience, plot against absorbance may reduce noise level. Furthermore, the authors use a term “absorbance” in lines 105 and 108, while % Transmittance was plotted in Figures 1 and 2. 4. <u>Presentation and interpretation of XRD.</u> The similar issues mentioned in No. 3 are pointed out for Figs. 3/4 and Tables 2/3. These figures need to be polished into publication formats. Again, the overlaying two plots together may clarify the differences. An addition of new plot showing the differences of these two plots is suggested as well. In Table 2, the peak at $2\theta=87.96$ was not picked up though, it shows up in Fig. 3, even though it is a weak peak. Furthermore, there are several issues	Corrected fig 3&4 and table 2&3 in Manuscript.
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	which were not explained at all in the text. First, the authors need to mention why the peak at $2\theta=22\sim 23$ was not listed in the Table. Secondly, there seem to be a band appear around $2\theta=10\sim 20$ only in Fig.4. Lastly, a drastic narrowing of peak width was observed for the peak at $2\theta=72.3$. However, this was not discussed at all. 5. <u>Effect of pH</u>. Because of pH dependence of molar absorption coefficient of CR (<i>i.e.</i>, colour of CR is different depending on the pH), the Fig. 9 does not reflect a fair measure of pH dependence as authors concluded. The authors described in lines 89-92 that “removal %” was measured based on the absorbance at 500 nm. Thus, Fig. 9 must be representing the absorbance at 500 nm at various pHs. Since the peak position of CR is drastically different between acidic and basic conditions, the absorbance at 500 nm naturally decreases under various pH conditions. At first, pH dependence of peak position needs to be investigated or referenced. Then, the absorbance change of individual peak at given pH should be observed. 6. <u>Conclusion on a kinetics model</u>. The authors concluded the observed adsorption kinetics is described as pseudo first order based on the closer agreement in the q_e values (line 317). However, the logic explained in the section 4 was extremely confusing and did not sound convincing to reach to this conclusion. The biggest confusion is due to the fact that a fitting condition of the pseudo second order was better than that of the pseudo first order. If the fitting model needs to be concluded only by the q_e value, the authors are requested to explain why so and more detail on how experimental q_e value was obtained in this study.	Corrected in manuscript The calculation of q_e value was explain in section 4 (line 310-312)
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Minor REVISION comments	1. In paper title, the word “Biosorbent” was used though, this paper focuses only AMSD. Thus, the usage of “biosorbent” may be inappropriate. Also, the word “AMSD” is suggested to be added to keywords.	Corrected in manuscript
	2. The word “Mangifera Indica” was used only once at the abstract, and “Mango” was used for the rest.	Corrected in manuscript
	3. Once the abbreviations of the terms were defined, you may use them through the manuscript. For example, you could replace Congo red and Activated Mango Saw Dust with CR and AMSD, respectively.	Corrected in manuscript
	4. There were several spots where the words started with the upper cases, even though they should be given in the lower cases. (e.g., line 36-Allergy, line 120-Stretching)	Corrected in manuscript
	5. There were many spots showed “PH” instead of “pH”.	Corrected in manuscript
	6. To be consistent, “mL” can be used instead of “ml” (For example, line 87)	Corrected in manuscript
	7. The words “gm” could be replaced with “g”. (For example, line 187)	
	8. There were so many spots which had unnecessary periods (For example, line 187 “L.” should be “L”.)	Corrected in manuscript
	9. The Fig. 11 appears to be a reproduction of Fig. 8. (They look the same figures each other.)	Corrected in manuscript
	10. In Eq. (1), the last term, C_e/b , does not provide the same dimension as the other two terms, if the units given in the texts were used.	
	11. “freundlich” should be retyped as “Freundlich”. (For example, line 277)	Corrected in manuscript
	12. “RL” should be “R _L ”. (For example, 263)	
	13. The lines 265-268 should be explained in the	Corrected in manuscript



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	sentences. 14. Fig. 12 needs show the units for y- (C_e/q_e) and x- axes (C_e). 15. The method of plotting Figs. 12 - 15 should be reconsidered. The data points could have error bars. A fitting line (or curve) may be separately plotted over the data points. 16. The expression of "v/s" could be replaced with more conventional way as "vs.". 17. The first term of Eq. (5), $1/q_b$ was given inconsistently with those in line 327 and Fig. 15. (i.e., t/q_t was given in the other spots.) Also, the unit should be given for they-axis, "t/q_t". 18. There were several sections where the sentences should be rephrased, and they were unclear otherwise. a) lines 168-172 b) lines 193-195 c) lines 201-203 d) lines 215-222 e) lines 300-301 f) lines 306-308 g) lines 342-345 19. List of Possible Typos: a) line 59 "powde" should be "powder" b) line88 "27°C" should be "27 °C" c) line 110 "2923." And "898." should be "2923" and "898". d) line 118 "1634." And "1736."be "1634" and "1736". e) line 125 "show" should be "shows" f) Table 1. "Cm^{-1}" should be "cm^{-1}" g) Table 1. "-NH2" should be "$-\text{NH}_2$" h) Table 1. The last band ($\sim 1250 \text{ cm}^{-1}$) was stated as -C-O stretch in the text but not -C-N.	Corrected in manuscript Corrected in manuscript Corrected in manuscript
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	i) line 156 "...the absorbent surface it is useful..." should be rewritten as "...the absorbent surface. It is useful..." j) line 168 "fig -6" must be "fig-5" based on the contents. k) line 196 "adsorbant" should be "adsorbent" l) lines 218 and 220 "fig 11" should be "fig 10" m) line 233 "3.6" should be "3.3". n) line 248 "(mg/L)" should be "(L/mg)". o) line 276 "3.6.2" should be "3.3.2". p) line 287 "table 5" is highlighted with yellow.	Corrected in manuscript
<u>Optional/General</u> comments	Overall, this paper successfully conducted a series of studies of characterizing the possibility of utilizing AMSD as a promising biosorbent. However, as mentioned in the above, the methods of presenting data and some interpretations caused several confusions. So that they hindered to guide the readers to reach to the presented conclusions. The quality of manuscript and figures need to be reconsidered for final quality. The texts are provided enough to explain the obtained data. Generally speaking, the data results tended to be explained with minimum amount of texts and some paragraphs were unclear. The authors are highly recommended to consult with the third party who is capable to proof read the manuscript.	