Review Form 3

Journal Name:	**Asian Journal of Applied Chemistry Research**
Manuscript Number:	**Ms_AJACR_124420**
Title of the Manuscript:	**XRD Studies on Metamorphic Changes of the Dissimilarly Graphitized Carbonaceous Materials**
Type of the Article	**Original Research Article**

General guidelines for the 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.
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PART 1: Review Comments

Compulsory REVISION comments	**Reviewer's comment**	**Author's Feedback** *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.		
Is the title of the article suitable? (If not please suggest an alternative title)		
Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.		
Are subsections and structure of the manuscript appropriate?		
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.		
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. -		

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Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**		
Optional/General comments	**Scientific & Technical Comments:** 1. **Page 1, Line 4:** *Terminology Issue*: The phrase "metamorphic effects" needs more clarity. Use "structural rearrangements or phase transitions" to specify the processes happening to the carbonaceous materials under varying temperatures. 2. **Page 2, Line 20:** *Graphitization Process Clarification*: When discussing "graphitization," add details about phase changes and crystallinity to better explain the transformation of amorphous carbon to graphitic forms. Refer to "Green synthesis and characterization of magnetic gamma alumina nanoparticles for copper ions adsorption" for methodology on phase transformation. 3. **Page 5, Line 12:** *Technical Error in BET Calculation*: The formula used for BET surface area is outdated. Consider updating the formula for modern techniques used in adsorption science. Reference the "Revolutionizing water treatment" study for updated BET calculations and surface area importance. 4. **Page 6, Line 9:** *Ambiguity in Thermal Expansion Description*: The discussion on thermal expansion and resistivity is vague. A more quantitative analysis of the thermal properties, including temperature vs. expansion graphs, would improve the technical robustness. Refer to "Efficient dye removal from industrial wastewater using sustainable activated carbon." 5. **Page 10, Table 2:** *Crystallite Size Inconsistencies*: The crystallite size data for CB1 and CB2 seems unusually small compared to similar studies. Verify the parameters used in the Scherrer equation and provide a more consistent comparison. Check "Green magnetic clay nanocomposite" for comparative crystallite size studies. 6. **Page 11, Line 27:** *Inadequate Discussion on Adsorption Mechanism*: The paper needs an in-depth explanation of the adsorption mechanism for the carbon blacks. Compare with "Green synthesis and characterization of magnetic gamma alumina nanoparticles for copper ions adsorption" for adsorption mechanism discussion. **Language & Formatting Comments:** 7. **Page 2, Line 8:** *Awkward Sentence Structure*: "carbon is widely recognized as standalone material next to the cement" should be rephrased to "Carbon is second only to cement in its widespread use due to its functional properties." 8. **Page 4, Line 15:** *Passive Voice Overuse*: The sentence "the internal networks of their carbon atoms are rearranged structurally" should be rephrased to an active voice for clarity: "The carbon atoms within the internal networks undergo structural rearrangement." 9. **Page 8, Line 2:** *Wordy Sentences*: The use of lengthy and complex sentences hinders readability. For example, break down "Based on their graphitizing temperature regimes disclosed by the specific manufacturers..." into simpler clauses. 10. **Page 12, Line 25:** *Figure Caption Misleading*: The caption for Figure 3 is vague. It should specify that this is a comparison of the XRD patterns at different heating temperatures, linking it more explicitly to the discussion of crystallinity. 11. **Page 15, Line 18:** *Inconsistent Use of Units*: Ensure that units are consistent throughout the paper (e.g., nm vs Å). This appears in several sections, such as the description of interlayer distance. **Methodological & Referencing Suggestions:** 12. **Page 18, Line 6:** *Inadequate Statistical Analysis*: Add a more robust statistical analysis for data on surface area and porosity. Use statistical comparisons such as t-tests or ANOVA to validate the experimental results. Reference the study "Industrial-scale feasibility for textile wastewater treatment via Photocatalysis" for methods on statistical validation. 13. **Page 20, Table 4:** *Insufficient Data on BET Surface Area*: The BET surface areas provided need a more detailed explanation of their impact on the overall application of the materials.	

	Discuss the influence of surface area on adsorption capacity, referencing "Efficient dye removal from industrial wastewater using sustainable activated carbon." 14. **Page 25, Line 22:** *Missing Comparison with Similar Studies*: Include more comparisons with existing studies on similar carbon-based materials to strengthen the discussion. Reference "Fe(III) and Cr(VI) ions' removal using AgNPs/GO/chitosan nanocomposite" for comparative removal efficiencies and material characterization. **General Writing Advice:** 15. **Overall Language Consistency:** Throughout the manuscript, there are frequent grammatical errors such as missing articles ("a" and "the") and awkward prepositional phrases. Consider proofreading the paper or using language-checking software to improve clarity. **Suggested References:** Include the following references at the end of the manuscript: • **Scientific Reports, 2024, 14(1), 16188** • **BMC Chemistry, 2024, 18(1), 121** • **Scientific Reports, 2024, 14(1), 8406** These references will strengthen your scientific grounding and provide a more comprehensive discussion.	

PART 2:

	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)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

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