Review Form 3

Journal Name:	**Journal of Materials Science Research and Reviews**
Manuscript Number:	**Ms_JMSRR_130745**
Title of the Manuscript:	**Development and Mechanical Properties of Compacted Graphite Cast Iron (CGI) Suitable for Exhaust System Pipes.**
Type of the 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.
To know the complete guidelines for the Peer Review process, reviewers are requested to visit this link:

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PART 1: 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. 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.		
Is the manuscript scientifically, correct? Please write here.		
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.		

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Is the language/English quality of the article suitable for scholarly communications?		
Optional/General comments	Reviewer # Comments ?Summary This study focuses on the development and evaluation of compacted graphite iron (CGI) for automotive exhaust system components. Through theoretical and practical failure analyses, six CGI variants were developed using micro-alloying with elements like chromium, aluminum, copper, titanium, and nickel to enhance key mechanical properties such as tensile strength, hardness, impact resistance, and ductility. Optical microscopy revealed distinct microstructural variations across the samples, while mechanical tests identified the most optimal composition. The findings demonstrate the potential of CGI as a durable, high-performance material for exhaust systems, offering improved reliability and suitability for demanding automotive applications. The work provides a fundamental understanding of the underlying processes pertinent to mechanical property, and the manuscript is within the journal's scope. Detailed below are suggestions to improve the manuscript's scientific merit. **?Minor suggestions** • Consider revising the sentence for clarity and grammar, e.g., "This research focuses on the development of compacted graphite iron (CGI) and evaluating its mechanical properties for application in exhaust system components." • Verify and correct the unit. Tensile strength is typically measured in MPa (megapascals). Replace "Megapascal" with "MPa" for consistency. • Rephrase for clarity, e.g., "An optical microscope was used to examine the microstructure of the produced CGI." • Specify the exact percentages or ranges for these alloying elements to provide more technical detail. • Explain why C4's values are considered optimum and provide a comparison with other CGI grades (C1–C6). • Verify if "615%" is correct or if it is a typographical error. Typical ductility values are much lower. • Correct to "CGI with varying microstructures was produced." **?Major suggestions** • Include details of statistical analysis or comparisons made between C1–C6 to validate the claim that C4 has the optimum properties. • what specific advancements or unique properties introduced by the alloying strategy distinguish this research from previous studies on CGI? • Elaborate on how the results specifically impact exhaust system design, e.g., addressing high-temperature performance, durability, or corrosion resistance.	

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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)*	

Reviewer Details:

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