Peer Review Comments on “Manuscript Number: 2024_AIR_125657”

“Micro structural study of recycled aggregates concrete based on scanning electron microscope technique”

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The article provided reads more like a **review article** rather than an opinion piece. It synthesizes and summarizes existing research on the **microstructure of recycled aggregates concrete** using **scanning electron microscopy (SEM)**, referencing various studies to discuss topics such as particle morphology, pore structure, and interfacial bonding.

Here are some key points that make it similar to a review article:

1. **Literature Synthesis**: The article compiles findings from multiple studies rather than presenting new, original experimental data. It summarizes research progress and provides an overview of the microstructural characteristics of recycled aggregates concrete.
2. **Comprehensive Discussion**: The article covers a broad range of topics related to the microstructure of recycled aggregates concrete, including pore structure, particle distribution, and interfacial bonding with cement. This is typical of review articles, which aim to give a comprehensive understanding of a particular subject.
3. **No Original Research**: The article does not present any new experimental results or findings, which is characteristic of review articles that primarily analyze and compile existing studies.
4. **Summary of Techniques**: The article discusses the application of SEM in studying recycled aggregates concrete, summarizing how SEM has been used in various studies to explore different aspects of microstructure.

Lack of Focus on Practical Applications: While the article delves deeply into the micro structural aspects of RAC, it falls short in addressing the practical implications of these findings. Although the structural characteristics of recycled aggregates are analyzed, there is limited discussion on how this knowledge translates to real-world applications, such as large-scale construction or the long-term durability of RAC in varying environmental conditions. The connection between microscopic analysis and macro-level performance should be further explored.

Lack of SEM Images: the absence of practical SEM images significantly weakens the article by reducing clarity, credibility, educational value, and practical application. Incorporating visual data is essential in microstructural studies, especially when discussing materials like recycled aggregates concrete, where microscopic details play a critical role in understanding material behavior.

Reduced Clarity and Visualization: SEM is a visual tool, and without images, the descriptions of micro structural features such as particle distribution, pore shapes, and interfacial bonding remain abstract. Including SEM images of recycled aggregates and RAC samples would allow readers to **visualize the key concepts** being discussed, thereby bridging the gap between theory and real-world observation.

The opinion article on the microstructural study of recycled aggregates concrete using SEM lacks practical depth and novelty. It primarily summarizes existing literature without offering new insights or experimental data, making it less impactful. The absence of SEM images weakens the visual understanding of the microstructural analysis. The discussion on SEM's limitations is absent, which presents an overly optimistic view of the technique. The article's conclusions are generalized, lacking specific recommendations or actionable insights. Additionally, the sustainability aspect is superficially mentioned,

without a thorough analysis of environmental or practical implications of recycled aggregates concrete.