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Book Name:	Chemical and Materials Sciences: Developments and Innovations
Manuscript Number:	Ms_BPR_2706
Title of the Manuscript:	Cellular Automata Modeling as a Tool in Corrosion Management
Type of the Article	Book chapter

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.	This manuscript titled " <i>Cellular Automata Modeling as a Tool in Corrosion Management</i> " is highly significant for the scientific community, particularly in corrosion research and predictive maintenance. The paper provides valuable insights into the use of cellular automata (CA) models to simulate complex corrosion processes at the microscale. These models can assist researchers and engineers in understanding and predicting corrosion behavior, which has both scientific and practical importance. The application of CA models is timely and addresses an ongoing need for more efficient corrosion management strategies. I find the approach innovative, and the comprehensive review of CA applications in different corrosion types is commendable.	
Is the title of the article suitable? (If not please suggest an alternative title)	The title is suitable as it accurately reflects the manuscript's content, emphasizing both the modeling aspect and its practical application in corrosion management. However, a possible refinement could be: " <i>Advancements in Cellular Automata Modeling for Corrosion Management and Predictive Maintenance.</i> " This would highlight the forward-looking nature of the research.	
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.	The abstract is comprehensive and summarizes the key points effectively. However, it could be improved by briefly mentioning specific types of corrosion that the cellular automata model addresses , such as localized or intergranular corrosion. This addition would make the abstract even more informative for readers.	
Are subsections and structure of the manuscript appropriate?	The manuscript's subsections are appropriately structured, with clear divisions between different types of corrosion and modeling methodologies. Each section logically leads to the next, making it easy to follow the progression of the research.	
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.	This manuscript is scientifically robust and technically sound. The authors have thoroughly explained the methodology behind cellular automata models, including grid types, state transitions, and the influence of environmental factors. The models presented are grounded in well-established mathematical principles and are validated through experimental comparisons. The paper is also technically accurate, providing a detailed exploration of both uniform and localized corrosion processes. Overall, the research demonstrates a high level of scientific rigor.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.	The references are sufficient and recent, reflecting a comprehensive understanding of both foundational and contemporary literature on corrosion management. The authors might consider	

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:	<p>adding a few more recent studies on machine learning integration with corrosion modeling to enhance the discussion on predictive maintenance.</p>	
<p>Minor REVISION comments</p> <p>Is the language/English quality of the article suitable for scholarly communications?</p>	<p>The language is clear and generally suitable for scholarly communication.</p>	
<p>Optional/General comments</p>	<p>The manuscript provides a solid foundation for future research in corrosion modeling. Including more figures demonstrating the real-world application of cellular automata in predictive maintenance would enhance the paper's practical appeal. Following points may be considered for making this manuscript more comprehensive and robust:</p> <ol style="list-style-type: none"> 1. The manuscript does not sufficiently address the limitations of cellular automata models, particularly their potential shortcomings in simulating highly complex or multiscale corrosion phenomena. A more critical discussion on where CA models fall short, or how they can be improved, would add balance and depth to the analysis 2. Although the manuscript provides a comprehensive review of CA models, it misses the opportunity to discuss emerging technologies, such as the integration of artificial intelligence (AI) or machine learning (ML) with CA models for predictive corrosion management. Including these advancements would make the paper more future-oriented and relevant to ongoing research 3. The manuscript discusses cellular automata models in detail but doesn't provide a thorough comparison with other corrosion modeling techniques, such as finite element models (FEM) or Monte Carlo simulations. A comparative analysis would help position CA more clearly in the broader context of corrosion management tools, outlining its strengths and weaknesses relative to alternative methods. 	

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)
<p>Are there ethical issues in this manuscript?</p>	<p><i>(If yes, Kindly please write down the ethical issues here in details)</i></p>	

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