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**"Observation of Self-Healing and Blue Response Enhancement in c-Si Solar Cells Exposed to Electron Irradiation"**

As a reviewer of this paper, I would like to provide the following detailed comments, emphasizing both the strengths and weaknesses of the study.

**# Strengths:**

1. Comprehensive Analysis: The paper presents a thorough investigation of dose-dependent degradation in solar cell performance due to irradiation. The use of various characterization techniques, such as dark and illuminated current-voltage (I-V) measurements, external quantum efficiency (EQE) measurements, capacitance-voltage (C-V) measurements, and conductance-voltage (G/ω-V) measurements, offers a well-rounded understanding of the irradiation effects on the performance of the solar cells.

2. Insight into Self-Healing Mechanisms: The observation of significant self-healing effects, including improvements in blue response after 52 months of irradiation, is a notable finding. This insight into the resilience of c-Si solar cells under prolonged radiation exposure is valuable for future applications, especially in space or high-radiation environments, where long-term performance is critical.

3. Relevance to Solar Cell Technology: The study addresses a crucial aspect of solar cell technology, particularly for applications in environments where radiation exposure is a concern. The findings could inform the design of more robust solar cells, enhancing their longevity and efficiency in extreme conditions.

**# Weaknesses:**

1. Limited Discussion on Mechanisms: While the paper identifies defect formation in the base layer as a cause of degradation, it would benefit from a more detailed discussion on the underlying mechanisms of defect formation and their impact on overall solar cell performance. A deeper exploration of the physical and chemical processes involved would provide a more comprehensive understanding of the degradation mechanisms.

Add a section that explains in detail the mechanisms leading to defect formation and how they affect the performance of solar cells.

2. Lack of Comparative Analysis: The study primarily focuses on c-Si solar cells without making comparisons to other types of solar cells (e.g., thin-film or multi-junction cells). Including such comparisons could provide a broader context for the findings and highlight the unique advantages or limitations of c-Si technology in radiation environments.

Include a comparative analysis with other solar cell types to provide a broader context regarding the effectiveness of monocrystalline silicon cells in radiation environments.

3. Figures and Visuals: Although several figures are referenced in the paper, the quality and clarity of these visuals could be improved. Ensuring that figures are well-labeled, with clear legends and easy-to-interpret data, would enhance the overall presentation and readability of the results.

Ensure that all figures and illustrations are clear and informative, with accurate labeling.

4.Lack of Information on Environmental Conditions: The environmental conditions under which the experiments were conducted are not adequately detailed. It is important to clarify the temperature, humidity, and pressure, as these factors can influence the experimental results.

Add details about the environmental conditions under which the experiments were conducted, helping to understand the impact of these factors on the results.

the paper presents valuable findings on the effects of electron irradiation on c-Si solar cells, contributing to the understanding of their performance in radiation-rich environments. However, addressing the identified weaknesses could significantly improve the quality and impact of the research by providing a more detailed and comprehensive analysis of the findings.