# Anodic Response of Ferricyanide onto Mechanochemically Enhanced Graphite Electrode With Alumina for Enhanced Energy Storage Sciforum-103778

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## Introduction

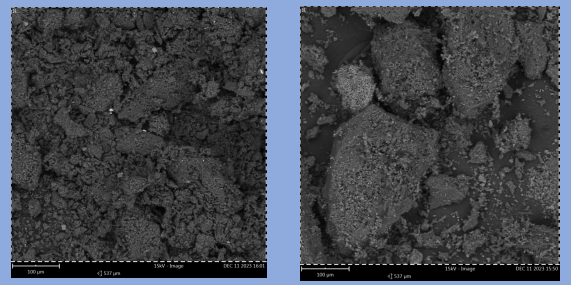
Introduction : Mechanochemical synthesis has emerged as a pivotal approach in sustainable chemistry. The synthesis method involves using mechanical energy to drive chemical reactions, often eliminating the need for solvents and reducing waste generation. This method enhances reaction efficiency and minimizes environmental impact by utilizing less hazardous materials and energy. The importance of mechanochemical synthesis is underscored by its contributions to SDG 12 (Responsible Consumption and Production) by promoting sustainable industrial processes and reducing the carbon footprint associated with traditional chemical manufacturing. This study investigates the anodic response of ferricyanide on a mechanochemically enhanced graphite electrode modified with aluminium oxide ($Al_2O_3$)

## Method

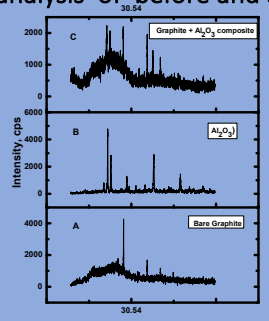
Graphite + $Al_2O_3$ 

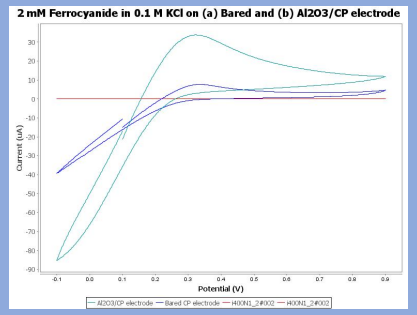
## Result

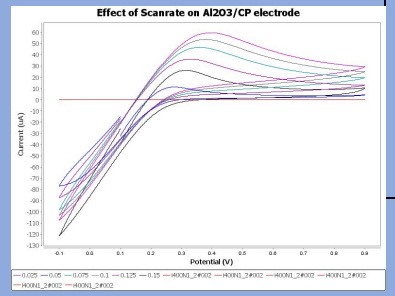
SEM analysis of before and after modification



XRD analysis of before and after modification




| Parameters | Ia (µA) | Ea (V/s) | Scan rate (V/s) | Ia peak Scan rate (µA) |
|---|---|---|---|---|
| Bared CPE/Sensor (blue) | 8 | 0.34 | - | - |
| $Al_2O_3$/CPE (Sensor) (green ) | 35 | 0.32 | 0.025<br>0.05<br>0.075<br>0.1<br>0.125<br>0.15 | 10<br>35<br>48<br>55<br>60<br>25 |

## Conclusion

Conclusion: Cyclic voltammetry experiments showed a significant enhancement in the anodic response of ferricyanide on the modified electrode, with increased peak currents observed at elevated scan rates. The study findings suggest that mechanochemical treatment not only alters the physical properties of graphite but also optimizes its electrochemical performance, positioning it as a promising candidate for future energy storage applications. Overall, the results underscore the potential of mechanochemical methods to enhance electrode materials for improved energy efficiency in electrochemical systems.

## References

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