

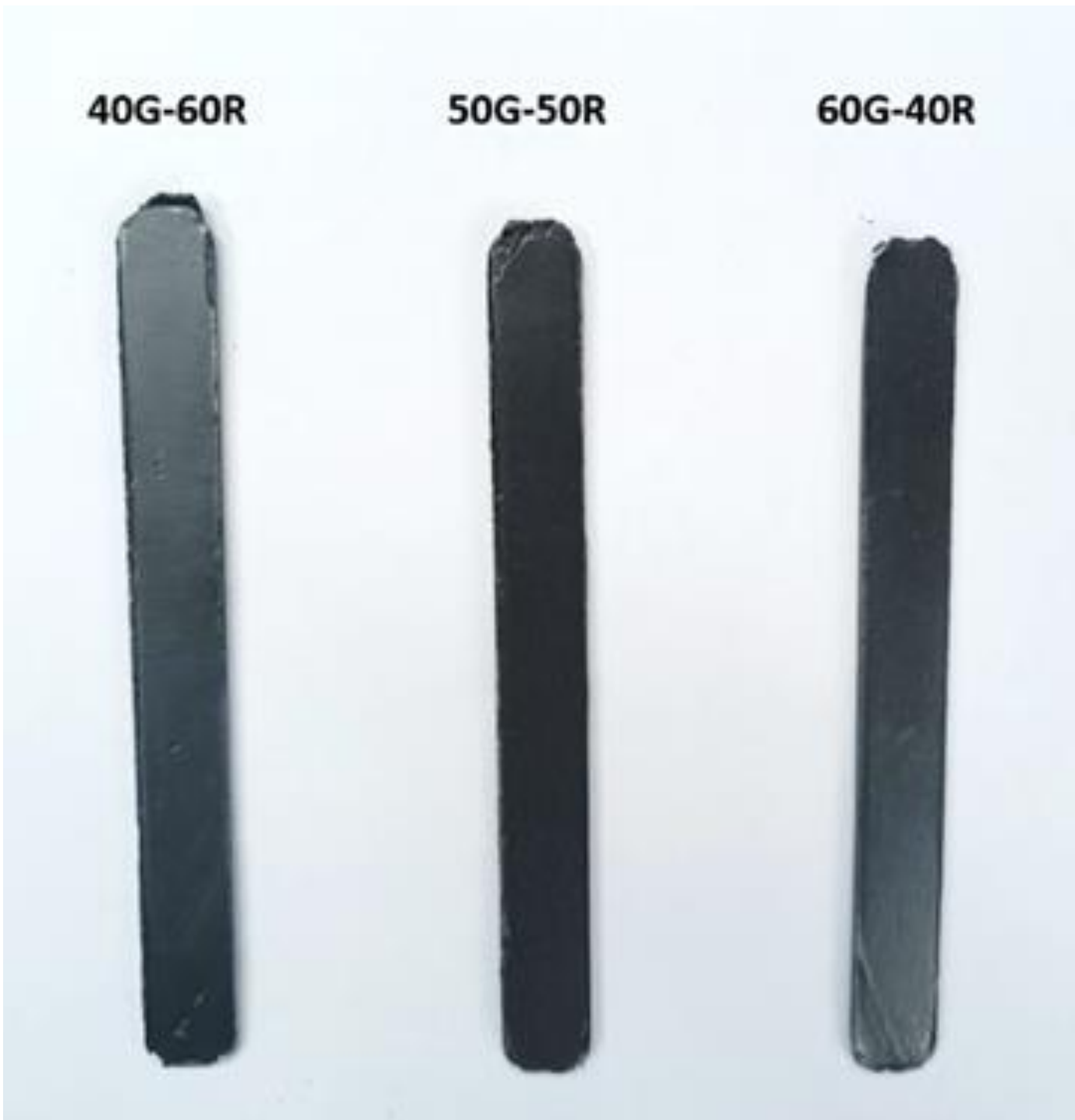
LOW-ENERGY AND SOLVENTLESS MANUFACTURING OF EPOXY/EXPANDED GRAPHITE BIPOLAR PLATES

PROBLEM

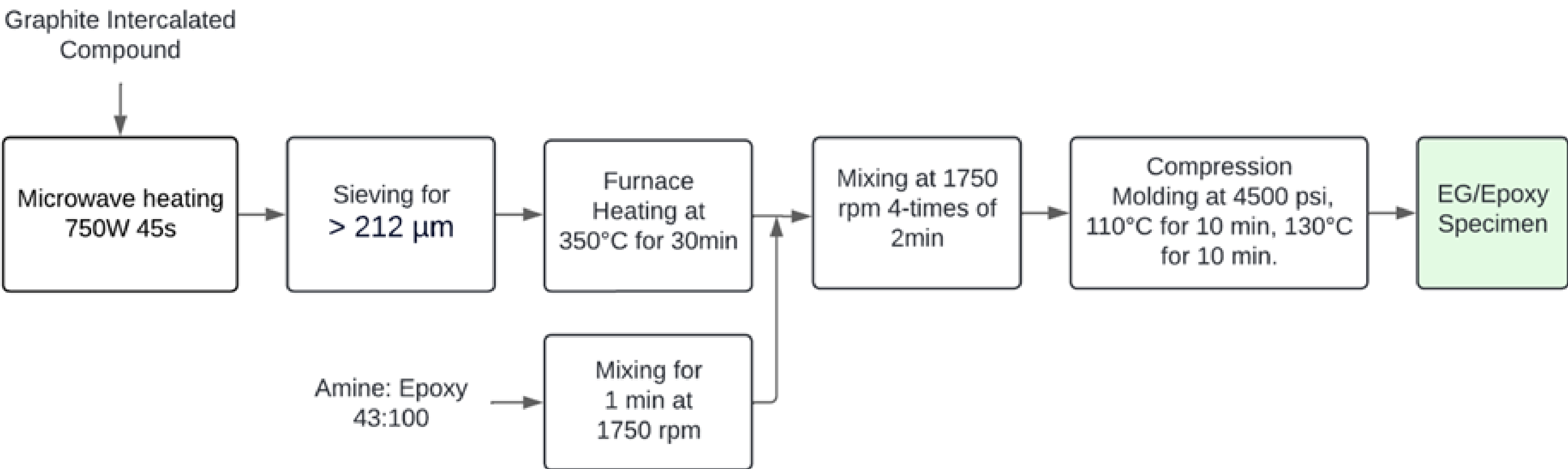
Current fabrication of bipolar plates for PEFCs is hindered by high energy consumption during synthesis and a reliance on environmentally harmful solvents, obstructing widespread market adoption

GENERAL OBJETIVE

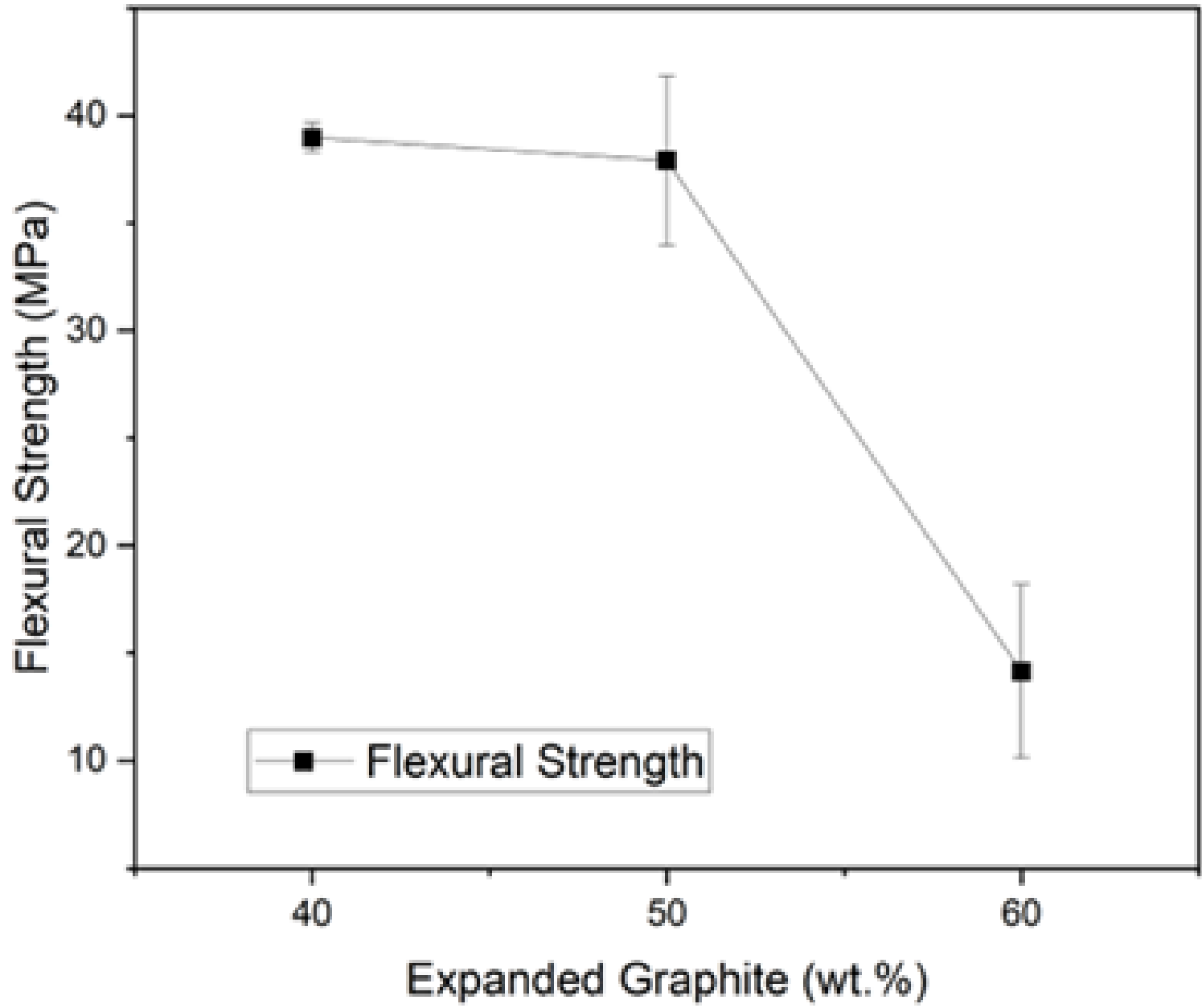
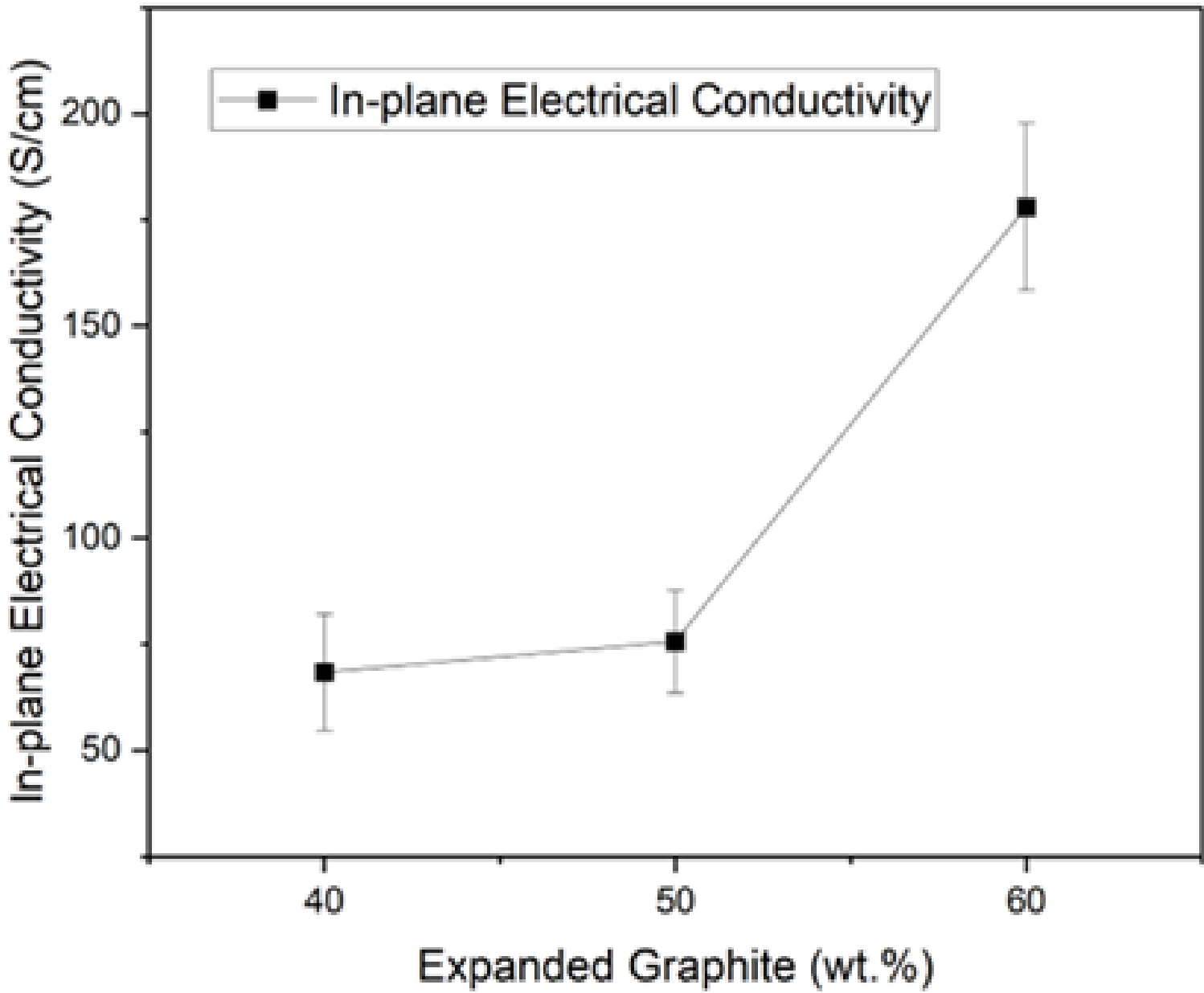
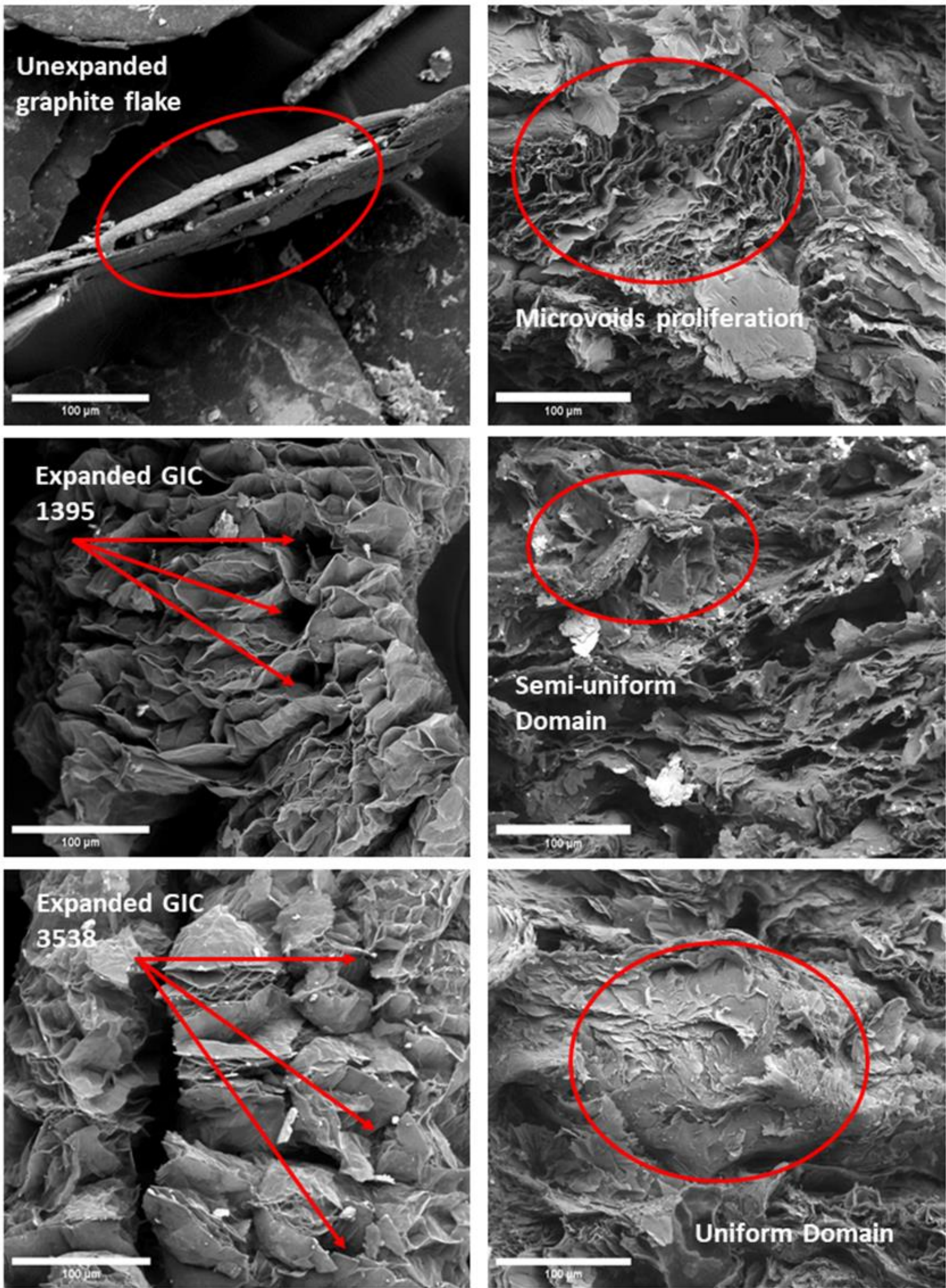
To develop an efficient, solventless fabrication method for high-performance bipolar plate composites using low-viscosity epoxy resin and microwave-treated expanded graphite to meet DOE requirements.



METHODOLOGY



RESULTADOS



CONCLUSIONS

- A sustainable, solvent-free method successfully produced epoxy/expanded graphite composites, achieving a remarkable electrical conductivity of 177.99 S.cm⁻¹ at 60 wt% EG by establishing interconnected conductive pathways.
- While the 50 wt% EG composite exceeded DOE standards with a flexural strength of 37.90 MPa, increasing the filler to 60 wt% caused graphite agglomeration and poor wetting, dropping the strength to 14.16 MPa and highlighting the need for better matrix dispersion in future work.

CONTACT



Research Profile
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