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# Fabrication of ternary composite ZnFe<sub>2</sub>O<sub>4</sub>/Co<sub>3</sub>O<sub>4</sub>/G for high performance supercapacitor

Original

Volume


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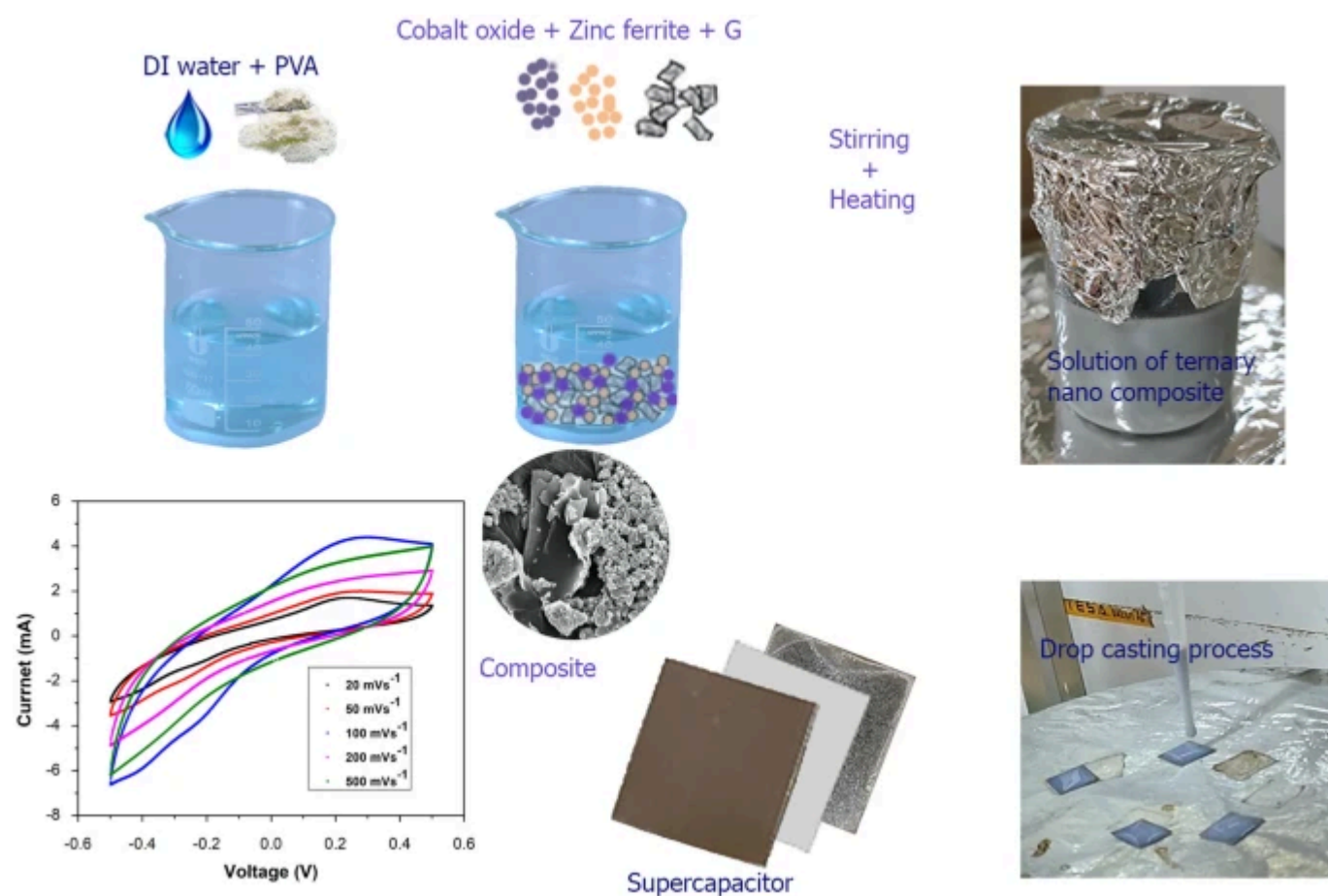
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## Abstract

The present work includes fabrication of a ternary composite of ZnFe<sub>2</sub>O<sub>4</sub>, Co<sub>3</sub>O<sub>4</sub> and graphene (ZnFe<sub>2</sub>O<sub>4</sub>/Co<sub>3</sub>O<sub>4</sub>/G) for high performance supercapacitor. ZnFe<sub>2</sub>O<sub>4</sub>, Co<sub>3</sub>O<sub>4</sub> and graphene are combined in a single electrode in order to have large value of specific capacitance with excellent cycle stability. The electrochemical properties were evaluated using cyclic voltammetry, constant current charging/discharging and electrochemical impedance spectroscopy. The supercapacitor with two electrodes of ZnFe<sub>2</sub>O<sub>4</sub>/Co<sub>3</sub>O<sub>4</sub>/G exhibited a specific capacitance of 580 Fg<sup>-1</sup> at scan rate 20 mVs<sup>-1</sup>, which is larger than ZnFe<sub>2</sub>O<sub>4</sub>/G and Co<sub>3</sub>O<sub>4</sub>/G based binary composites. XRD results confirm the formation of ternary composite. SEM and TEM analysis have been performed for morphology

investigation. ZnFe<sub>2</sub>O<sub>4</sub> and Co<sub>3</sub>O<sub>4</sub> nanoparticles were observed to be attached well on the graphene nanosheet. The synthesized electrode performed favourable and satisfactory performance in supercapacitor.

## Graphical Abstract



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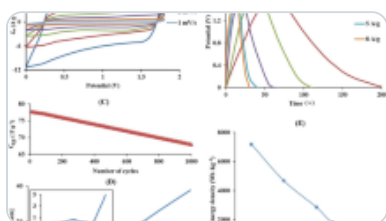
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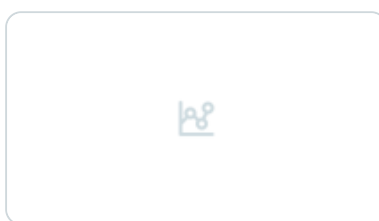
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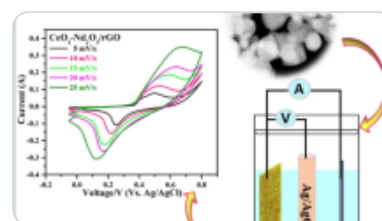
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## Data availability

The datasets generated during the current study are available from the corresponding author on reasonable request.

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## Ethics declarations

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### Conflict of interests

The authors have no conflicts of interest to declare. All authors have seen and agree with the contents of the manuscript and there is no financial interest to report.

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