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### Construction of High-Performance 3D Nanostructured Flower-Like Iron-Nickel Sulfide for Supercapacitor

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# Construction of high-performance 3D nanostructured flower-like iron-nickel sulfide for supercapacitor

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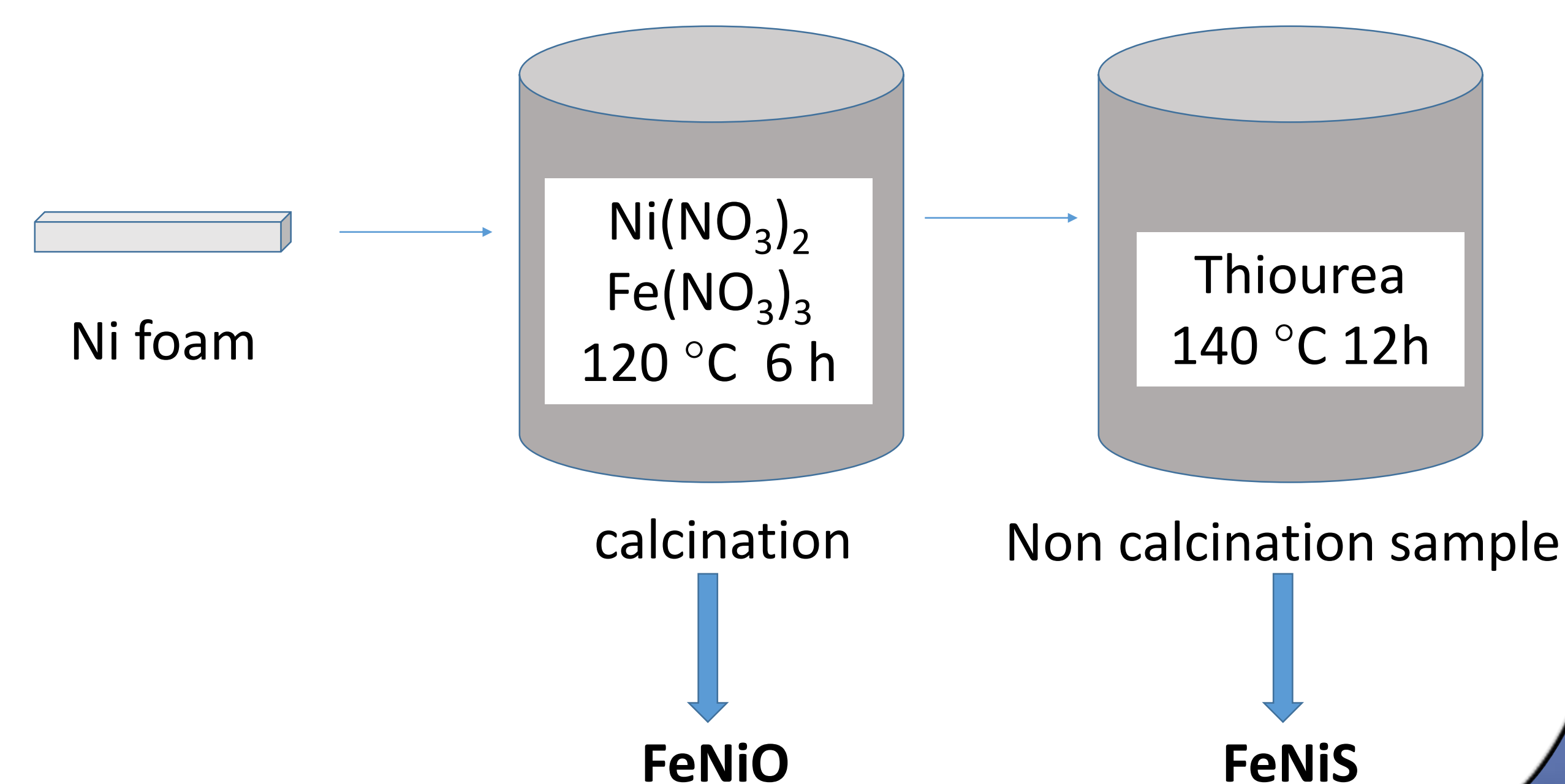
## Introduction & Purpose

- The global energy crisis and environmental pollution have stimulated increasing attention to develop clean and renewable alternative energy sources.
- Supercapacitor as a non-polluting energy storage device captures people's attention due to high-power density, fast charge-discharge rate, wide temperature range and long cycle life.

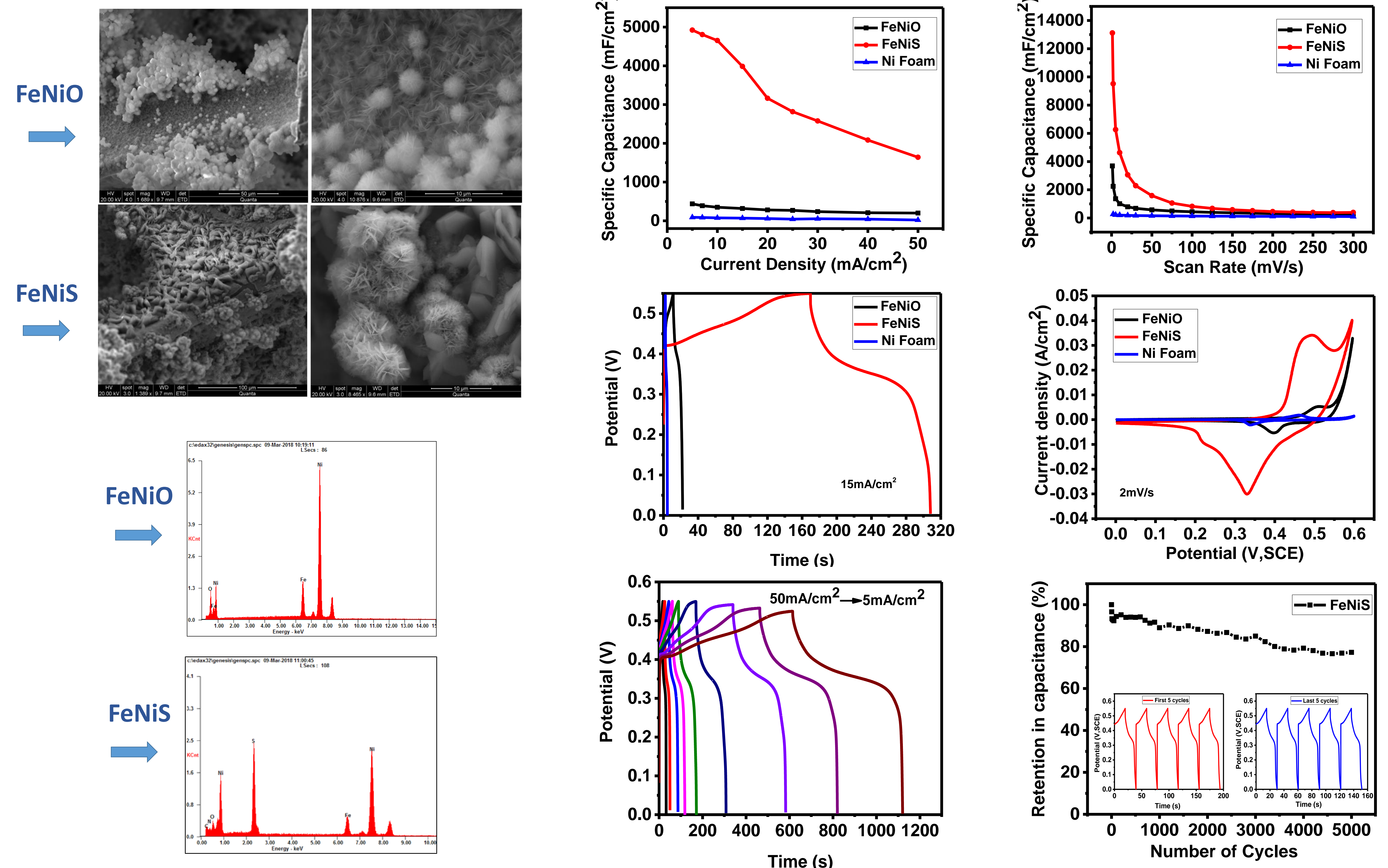


## Methods

- ◆ In this work, we synthesized high-performance nanostructured flower-like iron-nickel sulfide grown on 3D nickel foam for energy storage application using a facile hydrothermal method.



## Results and discussion



## Summary

- The FeNiS electrode exhibited a superior performance for supercapacitor with a large areal capacitance of 13.2 F/cm<sup>2</sup> at the scan rate of 1 mV/s and 4.9 F/cm<sup>2</sup> at the current density of 5 mA/cm<sup>2</sup>, respectively.
- The capacitance of FeNiS was more than 11 and 54 times higher than that of FeNiO and nickel foam at 5 mA/cm<sup>2</sup>, respectively.
- In addition, FeNiS electrode showed the great stability of the charge-discharge study with 77.3 % charge retention after 5,000 cycles.
- Our study suggested that the synthesized nanostructured flower-like iron-nickel sulfide could be a promising material for energy storage applications.

## Reference & Acknowledgement

- Dong et al. Two-Step Synthesis of Binary Ni-Fe Sulfides Supported on Nickel Foam as Highly Efficient Electrocatalysts for the Oxygen Evolution Reaction. *J. Mater. Chem. A* 2016, 4, 13499
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