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# Synthesis and characterisation of CoMoO4 nanospheres with improved supercapacitive performance

Electrochemical energy storage has been the main topic of interest in the recent years. The important features of electrochemical energy storage include low maintenance, excellent efficiency, cycling stability and environmental friendliness. There are ranges of candidates that can be employed as electrodes for supercapacitors.[1-3] Metal molybdate has attracted interest due to its electrochemical properties of the active metal ions in the chemically stable molybdate structure, and the pseudocapacitive and semiconducting nature of the material. In this work, CoMoO4 materials were synthesised via a simple chemical synthetic route at 300oC. The pure CoMoO4 material showed rod shaped particles with weak redox reaction exhibiting specific capacitance of 23 F g-1. To enhance the supercapacitive behaviour of the pure material, urea and Pluronic F127 surfactant were added to the synthesis bath in separate attempts. Results showed that the addition of urea as a fuel can change the morphology from rod to nanosheet shape and as a result increase the capacitance to 47 F g-1. However, it was not suitable for cyclability. To further improve the specific capacitance and cyclability of CoMoO4, urea was replaced by F127 surfactant, and significant change in morphology of the synthesised material was observed by obtaining nano sphere like particles. The specific capacitance of surfactant assisted CoMoO4 resulted in 77 F g-1. Detailed results will be presented at the conference.

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