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4.	Name of the Research Guide	Dr. A. Prithiba
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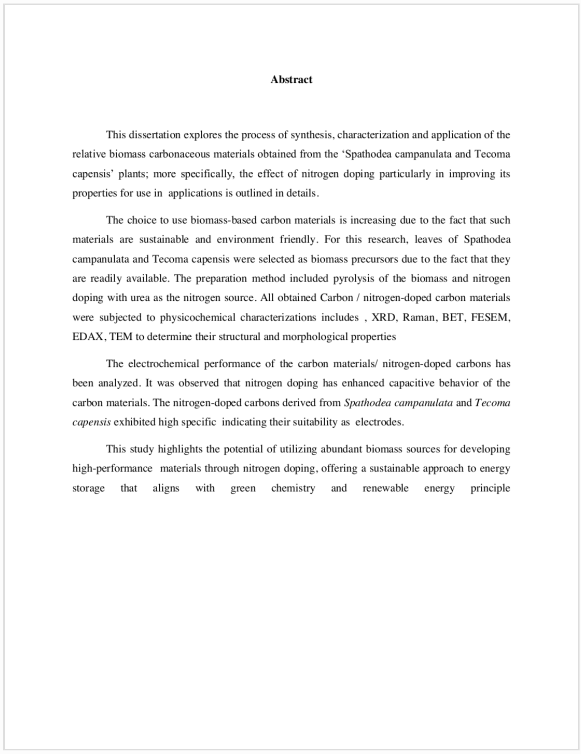

Abstract

This dissertation explores the process of synthesis, characterization and application of the relative biomass carbonaceous materials obtained from the 'Spathodea campanulata and Tecoma capensis' plants; more specifically, the effect of nitrogen doping particularly in improving its properties for use in applications is outlined in details.

The choice to use biomass-based carbon materials is increasing due to the fact that such materials are sustainable and environment friendly. For this research, leaves of Spathodea campanulata and Tecoma capensis were selected as biomass precursors due to the fact that they are readily available. The preparation method included pyrolysis of the biomass and nitrogen doping with urea as the nitrogen source. All obtained Carbon / nitrogen-doped carbon materials were subjected to physicochemical characterizations includes , XRD, Raman, BET, FESEM, EDAX, TEM to determine their structural and morphological properties

The electrochemical performance of the carbon materials/ nitrogen-doped carbons has been analyzed. It was observed that nitrogen doping has enhanced capacitive behavior of the carbon materials. The nitrogen-doped carbons derived from *Spathodea campanulata* and *Tecoma capensis* exhibited high specific indicating their suitability as electrodes.

This study highlights the potential of utilizing abundant biomass sources for developing high-performance materials through nitrogen doping, offering a sustainable approach to energy storage that aligns with green chemistry and renewable energy principle

Investigation of Biomass Derived Functional Carbon Electrodes from leaves of Spathodea campanulata and Tecoma capensis for applications

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