Progressive Education Society's
Modern College of Engineering, Pune-411005

Department of Electrical Engineering
B.E. Electrical Engineering, 2023-24

Project Group No:
In-house /Sponsored

Project Title: Designing and simulation of asymmetric supercapacitor by using biomass materials

Name of the Students (with Exam seat No.):

RAHUL RANJITSING CHANDANSE	B190312516
VANDAN GULZARILAL CHAUDHARI	B190312517
SHRIKANT BALIRAM GAIKWAD	B190312643
PARTH LAXMANRAO INAMDAR	B190312666

Name of Guide: Prof. Mrs. G. K. Palnitkar

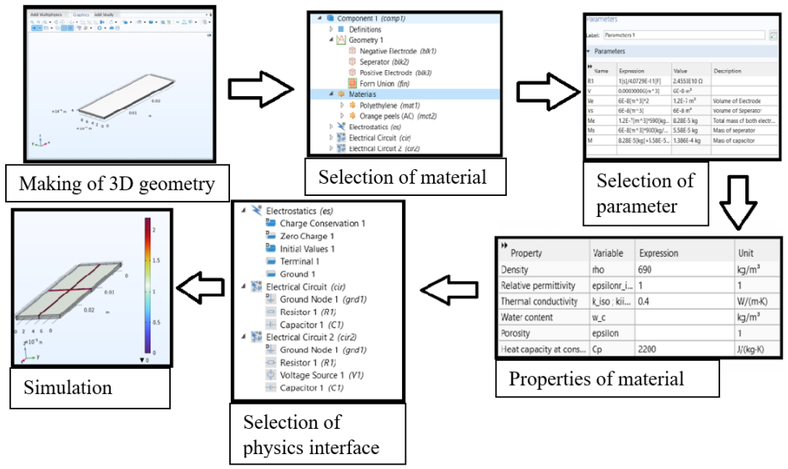
Objectives: To make supercapacitor made of different electrode materials (Orange peels and teak wood) and find there specific capacitance, charging and discharging graphs by simulation

Methodology:

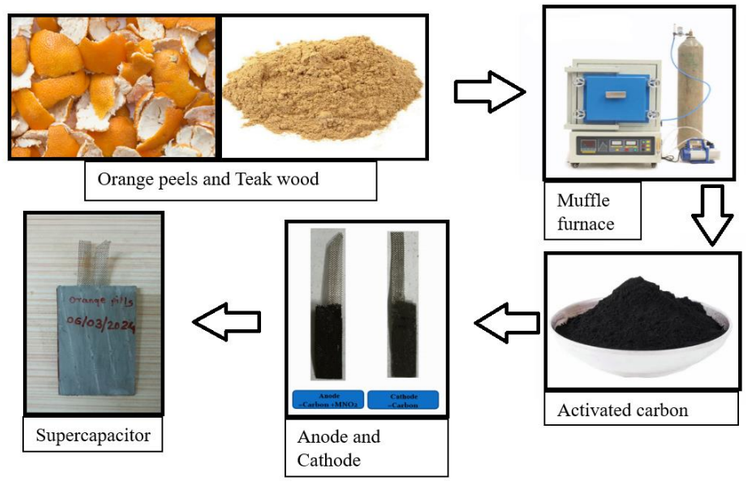
1. Selection of software for simulation.
2. Selection of biomass materials for SC.
3. Creating 3D geometry.
4. Creating equivalent material.
5. Optimizing physics interface.
6. Optimizing study interface.
7. Making of physical SC.
8. Comparing result with real super capacitor

Block Diagram:

Software block diagram



Hardware block diagram



Testing:

1. To charge the super capacitor under the solution of potassium sulphate for 3 min 3 cycle and 1 min 5 cycle.
2. Analysis of voltage and current drop with time by discharging the super capacitor.

Specifications / Features:

1. Development of such three electrodes type supercapacitor will help to boost the parameter of supercapacitor like charging time, discharging time, cycle life, density, efficiency over conventional supercapacitor.
2. By changing the material for electrode capacitance changes.

Results:

Material	Software results	Hardware results
Orange peels	3.0547E-11 F/g	1.251 F/g
Teakwood	2.2830E-10 F/g	3.2575 F/g

Conclusion:

So till now we have studied four different materials (tamarind seeds, coconut husk, coconut shells, bagasse, Orange peels, Teak wood) and we have found the specific capacitance of the materials and also we have found the charging and discharging graph of the four materials.