**Research Proposal**

Energy storage devices have gained much attraction around the globe because of their ability to provide higher energy and power densities and their capability for rapid charging and good cyclic stability. Most of the research was going on to develop flexible energy storage devices to incorporate them into several fields by synthesizing new kind of nanomaterials that can give better conductivity and good specific capacitance. My aim is to synthesize carbon-based ternary nanocomposite material that offers better electrochemical properties. Carbon-based materials because of their high specific surface area and high porosity have drawn much interest and particularly graphene has attracted greater interest because of its unique layered structure and also because of its good electrical, optical, mechanical, thermal and electrochemical properties. The development of ternary composite material involves the formation of graphene-based metal oxides/metal sulphides along with conducting polymers to obtain a metal-organic framework containing graphene. Synthesis of graphene involves the reduction of graphene oxide which is synthesized by the Modified Hummers method. Reduction of graphene oxide to graphene will be done using green methods using green extracts or hydrothermal methods which results in the reduction of graphene oxide to graphene. Metal Oxides/Metal Sulphides are synthesized using the hydrothermal method as using chemical or green reducing agents as it is the ideal method for the synthesis of 1D,2D or 3D nanostructures by varying the reaction time, reaction temperature and also the addition of capping and stabilizing agents. My aim is mainly concentrated on the synthesizing different nanostructures namely nanorods, nanofibers, nanoflowers and nanoflakes etc that can improve the conducting nature of the composite materials since the structure is also an important parameter in determining the conductivity. Graphene and metal oxide/metal sulphide nanocomposite can be prepared either by direct mixing of individual nanomaterials or through the hydrothermal method. Finally, ternary composite material (metal organic framework) is prepared by using in-situ polymerization technique using different conducting polymers. Electrochemical performance of the synthesized metal-organic framework will be studied cyclic voltammetry, galvanostatic charge-discharge and electrochemical impedance spectroscopy.