The face the ever-increasing plastic pollution on the earth, it is highly urgent to develop a suitable way to recycle the produced plastic. The present existed recycling method is not environmentally friendly way, hence, it is highly desirable to recycle the plastic waste into high value added product. To address the above issues, the present proposed research grant is undertaken to reveal the present problems in the field of plastic waste recycling and electrochemical properties of plastic waste derived carbon nanomaterials. The carbon nanomaterials will be prepared from waste PET, in which PET will be firstly changed to metal-organic frameworks (MOFs) and subsequently carbonized MOF to prepare porous carbons. Within this process, highly hierarchical porous carbon will be prepared from waste PET with high efficiency and production yield. More importantly, the whole process will not be involved with any activation agent, such as KOH. Due to the highly hierarchical porous structure and high surface area, the PET derived porous carbon will be the ideal electrode materials for supercapacitors. When transition metal ions (Fe, Co, Ni) introduced, the corresponding MOF will be prepared. The metal oxide/carbon products from carbonization of these MOFs will be the excellent electrode materials for lithium ion batteries. The above obtained data will allow us to orientate the future applied research. Examples of present research realized within the grant: 1. Revealing of the method for efficient recycling of PET into different kinds of metal-organic frameworks; 2. Investigation of supercapacitive performance of the obtained porous carbon from PET derived MOF; 3. Investigation of supercapacitive performance of the obtained porous carbon from PET derived MOF in lithium ion batteries; 4. Discovery of the most efficient way for preparation of porous carbon nanomaterials from waste PET; 5. Development of a potential way to recycle the waste polymer into highly valuable products.