



Weekly Seminar Program – (2023-24)
Department of Physics – Bharathiar University
Coimbatore- 641046

Seminar-4



Mr. Mathivanan T.

Research scholar (III Year)
Energy Storage and Conversion Devices Laboratory,
Department of Physics, Bharathiar University.

Speaks on
“Role of Separators on Secondary Batteries”

Abstract

Energy is one of the major crises nowadays due to the ever-increasing population growth and the industrial development energy demand. Among various energy storage systems, lithium-ion batteries (LIBs) have attracted tremendous attention during the past three decades due to their excellent cycling performance and lifespan. However, the relatively low energy density of LIBs could not satisfy some practical applications, including automobiles. With this regard, many efforts have been made to lithium-sulfur (Li-S) batteries, which not only have a theoretical capacity of 1675 mAhg^{-1} and energy density of 2600 Whkg^{-1} , but S itself has a low cost because it is abundant on earth. At the same time, the practical applications of Li-S batteries are hindered by their short cycle life, severe capacity fading, and low coulombic efficiency due to the insulating nature of S, intermediates, and the “Shuttle” effect. Researchers have struggled with maintaining a stable electrode structure, full active material utilization, and sufficient cycle life with good system efficiency. Although researchers have made significant progress on rechargeable Li-S batteries in the last decade, these cycle life and efficiency problems prevent their use in commercial cells. An ideal separator for a Li-S battery should be able to suppress the diffusion of polysulfide intermediates. Microporous polyolefin separators and glass fiber membranes are widely used because of their good chemical stability and mechanical strength, while they are poor in wettability, and also increase cell resistance. Separators are modified and functionalized with functional groups to enhance properties and as well as to hinder the shuttle phenomenon. This presentation aims to delve into the various separators used to eradicate the problems and conquer the commercialization of Li-S batteries for upcoming generations.

About the Speaker

Mr. Mathivanan T is from Theni, and has completed both undergraduate and postgraduate in Physics at St. Joseph’s College, Tiruchirappalli, and also completed M.Tech in Nanoscience at PSG College of Technology, Coimbatore. His field of research is on electrochemical energy devices. He is currently focusing on fabricating functional separators for Li-S batteries.

Venue: Sir C.V. Raman Hall

Date: 08.08.2023

Time: 10.00 am

Kindly be seated by 10:00 am and switch off your mobile phone during the lecture.

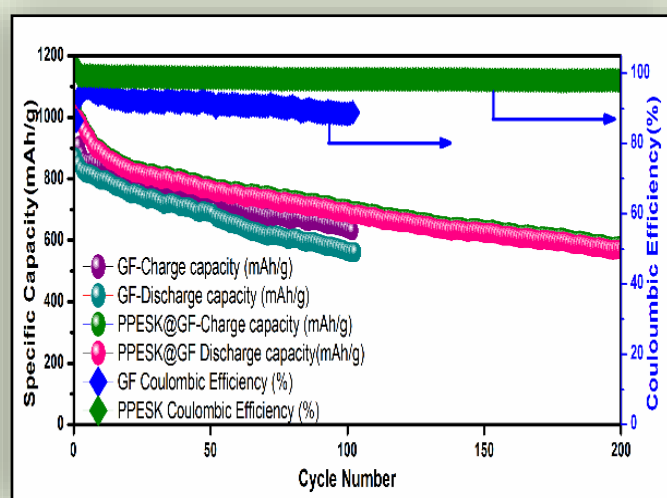
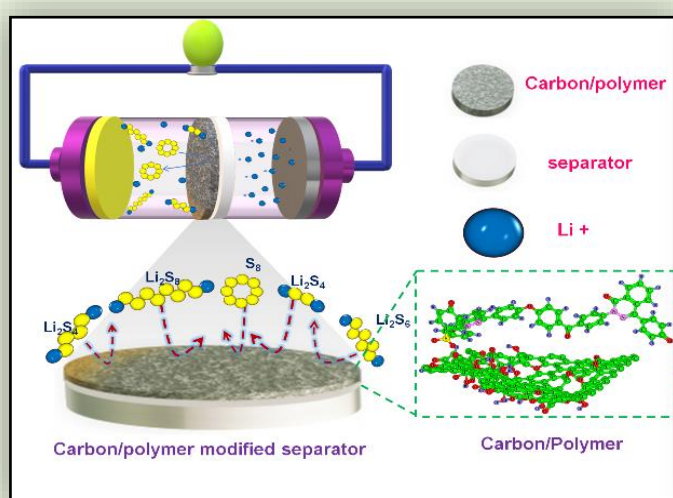
All are cordially invited.

Coordinator (General Seminar)

Head of the Department

Agenda

Time	Event	Name	Designation
10.00 am	குறள் வணக்கம்	Ms. Firdhoshini S	II M. Sc., (Physics)
10.05 am	Biography of Scientists (Dr. W.C. Roentgen)	Ms. Arshika Sri S	I M.Sc., (Physics)
10.10 am	Recent Physics News	Ms. Rishi Narayani M	II M. Sc., (Physics)
10.15 am	Seminar	Mr. Mathivanan T	Research Scholar, Energy Storage & Conversion Devices Lab
10.45 am	பாரதியின் குரல்	Ms. Moniha E	I M.Sc., (Physics)



**Department of Physics
Bharathiar University**

Tea & Snacks at 10.50 am