



*International Journal of Advanced Research in Biology, Engineering, Science and Technology (IJARBEST)*

*Vol. 2, Special Issue 8, February 2016 in association with*

**KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY, VIRUDHUNAGAR  
DEPARTMENT OF BIOTECHNOLOGY**

**ORGANIZES**

**DBT, NEW DELHI SPONSORED NATIONAL LEVEL CONFERENCE ON CONTEMPORARY TRENDS IN  
BIOENERGY AND GREEN TECHNOLOGY: CHALLENGES AND OPPORTUNITIES [ORA-2016]**

**(25-26<sup>TH</sup> FEBRUARY 2016)**

# Production And Characterization Of Superabsorbent Polymer From Waste Polystyrene

N.SharmilaDevi<sup>1</sup>, V.Sasipriya<sup>1</sup>, Aiswarya Murali<sup>2</sup>, S.Koushikaa<sup>2</sup>, A.Monika<sup>2</sup>  
Assistant Professor, Department Of Biotechnology  
Third Year Biotechnology  
Selvam College Of Technology ,Namakkal 637003

## ABSTRACT:

A novel PS-g-SAP using partially neutralized acrylic acid waste poly(styrene) foam, montmorillonite(MMT) powder was synthesised through emulsion copolymerization using N,N' -methylenebisacylamide as a cross-linker, 2,2' - azo-bisisobutyronitrile as oil soluble initiator, ammonium persulfate and sodium sulfate as water soluble redox initiators. The effects of factors such as amount of MMT, cross-linker, initiator, and neutralization degrees on water absorbency of PS-g-SAP were investigated. The PS-g-SAP was characterized by Fourier transform infra-red (FT-IR) spectroscope, Thermogravimetric analysis (TGA) and Differential Scanning Calorimetry(DSC). After grafting the Tg of PS decreased to 75 degree Celsius indicating that grafted PS. The results showed that acrylic acid monomer successfully grafted onto the poly(styrene) increased the water absorbency rate. The addition of MMT not only enhanced the thermal stability of SAP but also increased its equilibrium water absorbency. The study revealed that the waste PS foam can be suitably modified by grafting to make it super absorbent which used for various applications such as packaging, controlled water release etc.

**KEYWORDS:** Superabsorbent polymer, acrylic acid, waste poly(styrene) foam, montmorillonite.

Research at its Best!!!