

Review Article: On Packing Polymer And Modern Demand

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Abstract

The DSC (Differential scanning Calorimetry) is used to study the different useful temperature like, glass transition temperature and crystallization temperature and phase transformations occurring in the material, since then lot of modifications in the instrument has been done. Calorimetric method records the exothermic, endothermic processes, melting and crystallization temperature etc. Second order transitions like glass transition temperature are also readily revealed by this method .In addition to this, different kinetic parameters like, activation energy, heat absorbed during glass transition, heat evolved during crystallization, dimensionality of growth .specific heat etc. can also be evaluated by this method .thus, the thermal analysis using DSC give us vary important information about thermal properties of a material.

Keywords: DSC, Thermal Properties, glass transition temperature.

1. INTRODUCTION

Increasing packing material demand in the world has forced in modern world scientists have to start development of product which involves the method which do not disturb the ecological balance , formation of composites or polymers is vary common nowadays and more importantly the formation of composites using fibers found in that locality. Usefulness of composites is determined by its mechanical and thermal properties. Natural composites could not fulfill the demand of modern market, so modern scientists and engineers are bound to use synthetic (or man made) composites, here scientists have to think in term of economical and ecological balance. The importance or usefulness of manmade polymer and composite is decided by its thermal analysis. Man has learned the importance of thermal analysis from ancient times.

2. MAIN OBJECT OF RESEARCH WORK

Importance of composite materials is seen in all age of history and all ancient

civilizations have used such materials. The main objective of this study is to prove the industrial use of local plants found in desert area. The study provides useful parameters for fiber industry so that material can be used properly for particular application and can compete the international market. By these parameters we try to develop understanding for usefulness of new natural fiber composite material with respect to exiting plastic material. The knowledge said parameters are useful for understanding the microscopic level study. The theory, models and equipment used are accepted under international standards. By the proposed work we investigate phase transformation, some thermal properties of fiber reinforced phenol formaldehyde composites of *Leptadenia pyrotechnica* it is planned to investigate strength, phase transformation and some thermophysical properties of compoite materials in respect of polymer made by plastics. *Leptadenia pyrotechnica* (Hindi: [khai] is the botanical name of a desert herb of the family Asclepiadaceae. It is known as himpin

Hindi and Urdu, “Khipp”. Being highly brought-resistant, *leptadenia pyrotechnica* has played an important role in the desert afforestation programs. The herb *khimpis* a strong soil- binder and as such is one of the pioneer species in sand dune fixation. Only a few workers have done work on composite of fibers of desert plant and since plants are able to survive under extreme whether conditions, their composites are expected to provide good result. Fiber reinforcement plastics are commonly used by modern electronic industry, and, since the disposal is not easy for such fiber reinforced plastics, the development of fiber reinforced plastics that harmonized with environment ie demanded [1]. Form such a viewpoint, some researchers have been studying to use the natural fiber, which it has a moderate mechanical property and is a green material as a reinforcement of the conventional fiber reinforced plastic [2,3] However, since generally the strength of natural fiber is lower than that of the glass fiber etc. , it is necessary to produce a green composite with higher fiber content and longer fiber length in order to obtain a natural fiber reinforced composite material with high strength. Which natural fibers are obtained, appropriate atmospheric carbon dioxide during their growth, which is released during the combustion of natural fibers. Hence incineration of natural fibers reinforced composites lead to positive carbon credits and lower global warming effect [7].the properties of natural fibers we want determine, keep in mind that one is dealing with natural product with properties that are strongly influenced by their growing environment. Temperature, humidity, the composition of the soil and the air all affect the height of the plant, strength of its fibers density, etc. and the way by which plants, are harvested and processed result in a variation of propertied [8].” *Crotalaria burhia*’ is fount in desert of western rajasthan the fibers obtained in these have many advantages like eco-friendly, easy process-able, low

cost, non toxic, abundance in nature, low density high strength etc.

3. IMPORTANCE OF PROPOSED RESEARCH WORK

Insertion of natural fibers in polymer matrix is absolutely necessary for scientists and engineers due to the increasing use of plastic materials by almost all industries. The proper study of such material will reduce the cost of polymers. These natural fiber reinforced composites have wide range of use in domestic Application’ the application like packing sigh, households, textiles, medical devices, foam, paints toys appliances, lenses, electronic & electrical product, automobiles bodies etc. in western rajesthan in wast land, plants like *crotalaria burhia*’ is growing, enhancing their properties in reinforce composite material made utilization of the waste land also. This study has wide importance in varied dimensions and may provide a real boom to local industry and agriculture sector. This will provide a real boost to dry farming on one hand and development of waste land on other.

4. OVERVIEW OF DEVELOPMENT OF COMPOSITES

In ancient time our need were limited as composites to natural resources available at that time so an ecological balance was maintained but gradually with the development of mankind , increment in population ,the necessity , and increased green of man has disturbed ecological balance .so we need eco friendly products . Formation of composites using natural fiber is very common nowadays and more. Importantly the formation of composites using fibers found in that locality, Usefulness of a composite is determined by its mechanical and thermal properties, but only natural composites cannot fulfill the demand of modern market, so scientists and engineers have to think a combination of synthetic and natural composites, keeping ecological and economical balance in mind.

The various composites industry can be generally characterized in accordance with

the markets of components products. Thousands of products are manufactured from components, which are divided into three broad categories –

1. Industrial components
2. Consumer components and
3. Advanced components

4.1 Industrial components

Large number of component products are being using in industrial applications in which performance of adverse environments and corrosion resistance is critical .To meet the corrosion resistance specification generally premium resins such as isophthatic and vinyl ester formation are required and fiber glass is almost always used as the reinforcing fiber. In many cases, cosmetic finishes are secondary to the performance of the product. Various types of underground product including underground storage tanks, scrubbers, piping, fume hoods, pressure vessel, pipes and many other products are considered as industrials composites products.

4.2 Consumer components

For over 50 years the composites industry has been placed and other consumer

product like as boats , automobiles and recreational products have been manufactured since the early 1950s .Typically although not always composites involve products that require a cosmetic finish such as boats, recreational vehicles .bath wears and sporting goods . In many cases, the cosmetic finish is an in mold coating known as get coat .Consumer products make up a large portion of the overall composites market.

4.3 Advanced components

The advanced composites have a large customer ground. This sector of composites industry is characterized by the use of expensive, high –performance resin system and high –strength, high &stiffness fiber reinforcement .The aerospace industries, including military and commercial aircraft of all types are the major customer for advanced composites. These materials have also been adopted for the use of sporting goods, where high – performance equipment such as golf clubs, tennis rackets, fishing pole and archery equipment benefits from the light weights, high strength offered by advanced materials.



Fig1. Leptadenia pyrotechnica in Bikaner (Rajasthan)

5. CONCLUSION

This is perhaps first attempt to insert khimp fiber in polymer matrix .Results are encouraging at earlier stage .study of the thermo physical properties of composites using fiber of plants found in desert area is entirely a new idea . Moreover study of the thermal properties of polymer and composites have always been a point of

attraction due to the use of these composites in wide variety of application s. Fiber reinforced composites are the new area of study due to the fabrication of new materials with entirely different properties. By reinforcing a polymer matrix with different materials or the combination of materials, we are now able to tailor make advanced composites having desired

properties. In this regard the reinforcement of fiber (two different types of fibers namely untreated and chemically treated fibers) is done in the phenol formaldehyde. To see the effect of reinforcement of fiber in about the best composites on the basis of the present studies, wide spectrum of filler (5, 10, 15, 20, and 25% weight fraction of the composites have been taken.

In order to study the phase transformation (glass transition and crystallization mechanism) of said composites, the evaluation of important parameters like, glass transition temperature, crystallization temperature, activation energy, enthalpy in both regions and thermals stability has been under taken, glass transition phenomenon is undertaken by two methods namely DMA and DSC Working of DMA is based on mechanical properties but it supports the glass transition phenomena very well. Glass transition temperature and crystalline temperature was found to depend on heating rate and fiber content. Evaluation of activation energy is necessary for nucleation and growth, is calculated using DSC data.

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