Annexure - III

ANNUAL TECHNICAL PROGRESS REPORT

1. **Project Title** Mechanical properties, stability and structure of polymeric composites reinforced with functionalized fibers	**Ref. No** **10/1/2010-CT-I**
2. **Name & Address of TRA**	The Bombay Textile Research Association (BTRA) LBS Marg, Ghatkopar W Mumbai – 400086 , Maharastra

3. Board Area of Research

Polymeric Composites manufacturing & studies using natural & Synthetic fibers

3.1 Sub Area

Confined to More for Textile Industries Application

4. Approved Objectives of Proposal:

1. To study the kinetics of formation of composites of polyester and polypropylene fibers and fabrics using polyester and epoxy resins.
2. To study various mechanical, thermal and structural properties of these Composites.
3. To study the formation of composites of Natural fibers such as Cotton, Jute, Sisal and Banana.
4. To enhance the interfacial adhesion of fibers with the resins by pre-treating the fibers with plasma and chemical etching.
5. To explore the possibilities of using the Bio-degradable composites in medical and electronics fields.
6. To investigate the structure using XRD, SEM, DTA/TGA, FTIR etc.
7. The performance of the composites will be investigated in the laboratory as well as in field trials.

Date of Start : 16th Nov. 2010	Total Cost of Project : 173.68 (Lakh)
Date of Completion : 16th Nov. 2013	Expenditure as on : 48.00 (Lakh)

5. Methodology

Various types of molding machines will be procured and set up. In particular Vacuum assisted Resin transfer molding machine will be set up. This machine has special advantage over the conventional RTM in that any resin or pre-forms can be used. Mainly Polyester resin, Epoxy resin and natural oil resins will be used. Polyester, Polypropylene, and Non-Wovens will be used. Natural fibers like Cotton, Jute, Sisal and Banana fibers will be used in the composites

6. Salient Research Achievements : NIL

6.1 Summary of Progress

(Phase I 1st year Activities)

1. Staff selection - Completed
2. Procurement of raw materials - Partial,(Since resin have less self life to keep stock)
3. Equipments purchase - Completed
4. Design of experiments - As Per Objective & tuned with Machines Utilization

7. **New Observations** - As per newer development trends are more towards Recyclable/Biodegradable product development

7.2 Innovations : NIL

7.3 Application Potential :

For Newer products for Textile industries, Packaging industry, Automotive and electronics industries

7.3.1 Long Term - Not yet Identified

7.3.2 Immediate - NIL

7.4 Any other – NIL

8 Research Work Which remains to be done under the project (for on-going projects)

Ongoing - Work started after set up of new machinery for pilot plant for Composites manufacturing in BTRA

Ph.Ds Produced No. Enrolled	**Technical Personnel trained :** 1	**Research Publication Arising out of present Projects:** Nil
List of Publications from this Project (Including Title , Author(S), Journal & Year(s) A. Paper Published only in Cited Journal(SCI) -NIL B. Paper Published in Conference Proceedings, Popular Journals etc. - NIL		
Patent Filed /To Be filed NIL		

Major Equipment (Model & Make)					
S. No	Sectioned List	Procured	Cost (In RS Lakh)	Working	Utilization Rate (%)
1.	Resin Transfer Molding (M/c) {JHM technologies USA, Infusor Mono – OCT 2011)}	YES	21.50	Yes	Yet To Analyze
2.	Injection Molding M/c {L&T India S-Tech 60 MT,SEP 2011)	YES	16.00	Yes	Yet To Analyze
3.	Compression Molding M/c (Santec India , 30 T LAB Model , SEP 2011)	YES	9.00	Yes	Yet To Analyze
4.	Scanning Electron Microscope (From 2nd Installment	NO	80.00	-	-