CHAPTER 10
CONCLUSIONS AND FUTURE SCOPE

10.1 CONCLUSIONS

In the present research, the following conclusions are drawn after mechanical and metallurgical study.

Hand lay-up method is used to prepare the FRP composites. Mechanical and metallurgical studies were undertaken. SEM images were used to study the morphology of the specimens. Water absorption test was conducted to find out the moisture resisting capability of the FRP composites with different compositions.

The mechanical characterization proved that the hybridization and addition of filler materials have definitively had a certain impact on enhancing the mechanical properties of the FRP composites with respect to fiber orientation and water absorption.

The SEM image was used to find out the fiber pull out and debonding of FRP composites. The test was conducted on the tensile specimens in the fractured ends. The results proved that hybridization of FRP composite and nano and micro fillers enhanced the above metallurgical properties.

The water absorption study proved that the maximum moisture content and diffusion coefficient of Bamboo FRP composites were good enough to be utilized for outdoor applications.

The above mentioned test methods prove that bamboo fiber is marvelous when compared to other natural fibers.

10.2 FUTURE SCOPE

The above work can be extended with the following future scope. They are as follows:
In the present work only two orientations were considered, that is 0°/90° and ±45° only. In future, it can be extended to further more orientations such as ±30°, ±60°, ±90° etc.

In the present work, the water absorption specimens were dipped in rain water. In future it can be extended by dipping the specimens in sea water, distilled water, mineral water etc.

In the present work, bamboo fiber and glass fiber were used as the reinforcing material. In future it can be extended by using other natural fibers such as sisal, palm, jute, hemp, henequen etc.

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In the present work, only polyester resin was used as matrix material. In future, it can be extended by using other matrixes such as polypropylene, polyurethane, vinyl ester resin, epoxy resin etc...

In the present work, coconut shell powder in the nano and micro form was used as filler. In future, it can be extended by using paddy hush, charcoal powder, saw dust etc… as fillers.

In the present work, analyzing the mechanical and metallurgical properties such as tensile, flexural, impact, Rockwell hardness, water absorption and SEM was undertaken. In future, it can be extended to finding properties such as fatigue, wear, brinell hardness, izod impact test etc…