

COMPARATIVE STUDY ON MECHANICAL PROPERTIES OF LUFFA CYLINDRICA AND JUTE FIBRE REINFORCED EPOXY WITH GRAPHENE NANOPARTICLES

Sikta Panda^a, Subhakanta Nayak^b, Gaurab Kumar Ghosh^{b,*}

^aDepartment of Mechanical Engineering, National Institute of Technology, Rourkela, 769008, India

^bDepartment of Mechanical Engineering, Indira Gandhi Institute of Technology, Sarang, 759146, India

*Corresponding author

ABSTRACT

In the present world, environmental awareness motivates researchers on the studies of natural fibre reinforced polymer composite as a cost effective option to synthetic fibre reinforced composites. The availability of natural fibres and ease of manufacturing have tempted researchers to try locally available inexpensive fibres and to study their feasibility of reinforcement purposes. With its low cost and high specific mechanical properties, natural fibre represents a good renewable and biodegradable alternative to the most common synthetic reinforcement, i.e. glass fibre. Despite the interest and environmental appeal of natural fibres, their use is limited to non-bearing applications, due to their lower strength as compared with synthetic fibre reinforced polymer composite. The stiffness and strength shortcomings of bio-composites can be overcome by structural configurations and better arrangement in a sense of placing the fibres in specific locations for highest strength performance. This work presents the comparative study on mechanical properties of Luffa cylindrical (sponge gourds) and jute fibre. Both being indigenous to south and south-east Asia are abundant for research as well as mass production. It has been observed that properties like tensile, flexural and impact strength is better in luffa fibre reinforced composite than jute fibre reinforced composite.

Keywords: Luffa cylindrica, Jute fibre, Graphene nanoparticles, SEM

