Tremendous growth has been incorporated in the field of composite materials in current scenario where the engineering applications are highly demandable. Currently composites are being used to replace conventional metallic materials in a wide range of industries including aerospace, defense and aircraft which require structural materials with high strength to weight and stiffness to weight ratios. Also natural fiber composites are currently replacing synthetic fiber composites of various applications in different engineering industries due to their low cost and eco-friendly in nature.

In this work, twisted Kenaf, twisted Neem (Natural fibers) and twisted Kevlar (Aramid fibers) have combined together to enhance the mechanical properties and also to improve high impact resistance with less contribution of Kevlar which is very high in cost categorized next to carbon fibers. Here, the hybrid composites (Natural and Aramid) are done by using hand layup method and various mechanical properties has been investigated. Also, the morphological analysis is done to observe the internal structure of the tested composite. From the experimental results, it is noted that twisted Kevlar, kenaf and neem of category C3 shows high mechanical behavior while compared with other categories. Also, Wear and machining of hybrid composites have been done to study and optimize the process parameters influencing the composite material using ANOVA and Taguchi methods. From the SEM analysis, it is noted that wear property of C3 is most significant and it has not been much affected when continuously applying load. It is also observed that machining behavior of C3 shows the optimal value of maximum material removal rate and minimum surface roughness value at the experiment 24 and 7 respectively. It is observed that hybrid composite has high strength with minimum contribution of Kevlar fibers.