

Manufacturing, Testing of Polymer Nanocomposite and Analysis of Tennis Racket Frame

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Abstract

The modern days, the game of tennis expects high levels of performance from every international tennis players. The performance of every tennis player based on the tennis racket and playing conditions. The evolution of the tennis racket, with respect to both design and materials (tennis racket strings and grips) developed lots of new tennis racket frames. The tennis racket required to change in recent years as a result of lightweight, stiffer rackets for better performance. The paper discusses the manufacturing, testing, structural and modal analysis of four ratios of Nylon6,6/MWNT new polymer nanocomposite material replacing existing composite materials to a tennis racket frame for better mechanical properties to enhanced performance of the tennis racket. Using universal testing machine test and calculate the various mechanical properties strength, modulus, impact, hardness, stiffness, toughness of the polymer nanocomposite. In the design, the tennis racket frame was designed of the shape, dimensions. After design part created the 3D model using by PRO/ENGINEER software. The 3D racket model can be export to ANSYS analysis software and incorporated with new polymer nanocomposite properties. The structural and modal analysis was done.

Keywords: MWNT, nylon 6,6, tennis racket frame, PRO/ENGINEER, ANSYS

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