

Third Laureate Applied Research

26th Khwarizmi International Award (KIA)



- **Research Work Title:** Preparation and characterization of kenaf reinforced thermoplastic composites
- **Researcher:** Prof. Mohd Sapuan Salit
- **Nationality:** Malaysian
- **Date of Birth:** 1965
- **Field:** Composite Materials
- **Position:** Professor
- **Scientific Affiliation:** Department of Mechanical and Manufacturing Engineering, Universiti Putra Malaysia, Malaysia

● Abstract:

This research was carried out to produce a new composite material from kenaf bast fiber and thermoplastic polyurethane (TPU/KF). Different fiber sizes; namely, $125, 125-300\ \mu\text{m}$ and $300-425\ \mu\text{m}$ were characterized using tensile, flexural, and impact strengths. Fibers shown to be optimum are between 125 and 300 μm . Fiber loading was characterized using tensile and flexural properties and impact strength. A 30% fiber loading was optimum for these properties. Fiber loading was also characterized using thermogravimetric analysis (TGA). Increase of fiber loading showed decrease of thermal stability of TPU/KF. The effect of sodium hydroxide (NaOH) treatment on mechanical properties with different concentrations was studied. Treatment with NaOH showed deterioration in mechanical properties. Scanning electron microscope showed that fiber-matrix adhesion was poor for the treated composites. TGA also proved the deterioration of properties of TPU/KF after treatment with NaOH, where it showed that thermal stability decreased after treatment.

● Biography:

Professor Mohd Sapuan Salit is currently a professor of composite materials in Department of Mechanical and Manufacturing Engineering, Universiti Putra Malaysia (UPM). He is also the head of Engineering Composites Research Program at Faculty of Engineering, UPM. Professor Mohd Sapuan is the Vice President and Honorary Member of Asian Polymer Association. He is also a fellow of Plastics and Rubber Institute, Malaysia (PRIM), Institute of Materials Malaysia (IMM), and Malaysian Scientific Association (FMSA). He has successfully supervised 32 PhD and 45 MS students. To date he has authored or co-authored more than 350 journal papers and 400 seminar and conference papers. He has edited a book titled 'Composite Materials Technology: Neural Network Applications' published by CRC Press. Professor Mohd Sapuan was the recipient of ISESCO Science Award, Rotary Research Award, PRIM Fellowship Award, Forest Research Institute, Malaysia Publication Award, Vice Chancellor Fellowship Prize, UPM, and Excellence Research Award, UPM.

