

ACOUSTIC EMISSION SIGNAL WAVEFORM AND POWER SPECTRA ANALYSIS DURING TENSILE TESTING OF GFRP COMPOSITE

M. SEEMAN

Assistant Professor, Department of Manufacturing Engineering, Annamalai University,
Annamalai Nagar, Tamil Nadu, India

ABSTRACT

In this work, The AE waveform and AE power spectra studied during tensile testing of GFRP (reinforcement: E-glass fiber, matrix: Poly-ester resin) composite studied and compared with conventional materials like Al, Cu, and HCS. The AE waveform of GFRP specimen found more burst type signal compare to homogeneous material like Al, Cu, and HCS. This mainly due to individual fibers breakage produces this type of signal like multi-phase material GFRP laminate. The material having high tensile strength AE signal peak observed at lower frequency range in the AE power spectra. The acoustic emission phenomena in the tensile test were very active in the elastic region, drop significantly when it starts to enter the plastic region and increase rapidly at rupture point during testing a materials Al, Cu, and HCS.

KEYWORDS: Tensile Testing, Acoustic Emission Signal (AE Signal), Glass Fiber Reinforced Polymer (GFRP), AE Waveform, AE Power Spectra