

KINETIC DAMAGE ANALYSIS OF COMPOSITE MATERIALS USING ACOUSTIC EMISSION

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Abstract : Fiber reinforced composite materials have been increasingly used as structural material in airplanes, because of their high specific stiffness and strength. Structural design and non destructive test techniques have evolved as increased emphasis has been placed on the durability and damage tolerance of these materials. This work presents the results of the damage kinetic of carbon fiber reinforced polymer using the acoustic emission under solicitations. The correlations between acoustic emission parameters and damage mechanism are identified, and then confirmed by microscopic observations. This review will emphasize the roles that AE can play as a tool for the composite materials, damage mechanisms, and characterization of damage evolution with increasing time or stress, the localization and origin of damage, quantification of crack size based on energy release from concrete structures in the field and reduction in the numbers of test specimens required in various studies.

Keywords : Composite material, damage, Correlation, mechanism, localization