

Contribution à l'analyse de l'endommagement des matériaux composites

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Abstract: The composite materials with an organic matrix have become a serious competitor to traditional materials in a variety of industrial and domestic areas. However the inter-laminar defects induced during implementation or during stress are the main sources of its progressive damage. The promotion and use of these materials require the study of their mechanical behavior and the various forms of damage. The main of this work is study the mechanical behavior and damage of tubular composite materials with glass fiber and organic matrix obtained by the filament winding method. The experimental investigation is to cut specimens from composite tube for determination of mechanical tensile properties and the toughness expressed by the energy release rate of the double cantilever beam specimens at delamination, and the evolution of resistance with R curves. The aim of numerical study is the modeling of the damage with element finite method from « ABAQUS » logiciel for determination of the energy release rate.

Keywords : Composites materials, characterization, damage, fracture, delamination, Cracking