# COHESIVE LAW ESTIMATION IN MODE II OF A DUCTILE ADHESIVE

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## ABSTRACT

*Modern and competitive structures are sought to be strong, reliable and lightweight, which increased the industrial and research interest in adhesive bonding. Cohesive Zone Models (CZM) are a powerful analysis tool, although the CZM laws of the adhesive bond in tension and shear are required as input in the models. This work evaluated the value of shear fracture toughness (GIIC) and CZM law of bonded joints. The experimental work dealt with the shear fracture characterization of the bond by conventional and J-integral techniques. By the J-integral technique, the precise shape of the cohesive law is defined. For the J-integral, a digital image correlation method is used for the evaluation of the adhesive layer shear displacement at the crack tip (□s) during the test, coupled to a Matlab® sub-routine for the extraction of this parameter automatically. As output of this work, fracture data is provided in shear for the selected adhesive, allowing the subsequent strength prediction of bonded joints.*

**KEYWORDS:** adhesive joints, finite element method, cohesive zone models, fracture toughness, direct method.

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