

SHORT COURSE (N. 5) / 21 June, 2009

'Damage mechanics: theory and applications to adhesive and hybrid joints'

ACE-X 2009 / Rome, Italy / from 22-23 June, 2009



3rd International Conference on Advanced
Computational Engineering and Experimenting

SHORT COURSE (N.5):

'Damage mechanics: theory and applications to adhesive and hybrid joints'

by Prof. N. Bonora and Prof. A. Pironi

Date 21 June / Time 14:30-17:30

The ever increasing pressure towards the design of lightweight structures implies an efficient use of the construction material, or the use of a mix of materials according to the specific performance required. Joining is a crucial issue to obtain higher performances and adhesive bonding is well known to offer structural and economical advantages over other techniques. The objectives of the talk are to present and discuss: i) the evaluation procedure of damage model parameters for each constituent of the adhesive or hybrid joint; ii) the efficiency of in the prediction of failure by comparison with experiments on selected adhesive and hybrid joint geometries.

FOCUS 1:

'Fundamentals of Damage mechanics'

N. Bonora, University of Cassino

The micromechanical approach to material failure has received considerable attention in the last two decades as a suitable alternative to more traditional methodologies. The modelling of the failure process at the mesoscale is the basis for the simulation of failure in macroscopic components and structures. Many models have been developed since the initial studies of Dugdale (1960), McClintock (1968) and Rice and Tracey (1969). They can be classified into three main classes: i) cohesive zone, ii) porous metal plasticity, and iii) continuum damage mechanics (CDM). Damage mechanics concepts will be illustrated and discussed with the help of application examples

FOCUS 2:

'Modelling damage and failure of adhesive and hybrid structural joints'

A. Pironi, University of Parma

The ever increasing pressure towards the design of lightweight structures implies an efficient use of the construction material, or the use of a mix of materials according to the specific performance required. Joining is a crucial issue to obtain higher performances and adhesive bonding is well known to offer structural and economical advantages over other techniques. The objectives of the talk are to present and discuss: i) the evaluation procedure of damage model parameters for each constituent of the adhesive or hybrid joint; ii) the efficiency of in the prediction of failure by comparison with experiments on selected adhesive and hybrid joint geometries.

Registration for this course can be done under: <http://www.ace-x2009.com/register.html>

Registration includes:

- *Course Materials in CD format,*
- *Course Certificate*

More information is available through:

Prof. N. Bonora,
University of Cassino, Italy
nbonora@unicas.it

Prof. A. Pironi,
University of Parma, Italy
pironia@me.unipr.it

IMPORTANT DATES:

- ✓ Abstract Submission Deadline 27 March
- ✓ Notification of Acceptance 03 April
- ✓ Early Bird Registration 17 April
- ✓ Accommodation Reservation 20 April
- ✓ **Short course 21 June**
- ✓ ACE-X 2009 22-23 Jun 2009