



CFRP FATIGUE TESTING AND ISSUES FOR AERONAUTICAL APPLICATIONS

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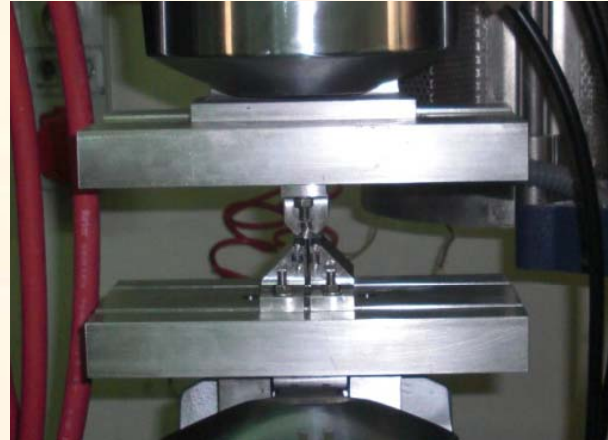
The results of a series of experimental fatigue tests carried out on carbon/epoxy laminates to be used for aeronautical structures are showed

Test method

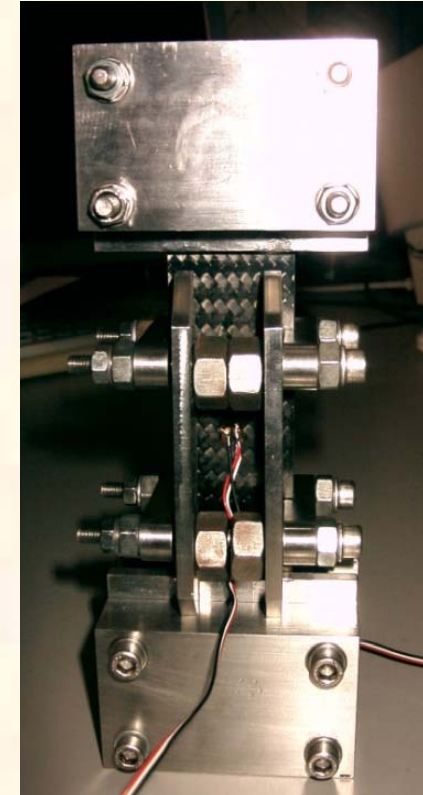
a)



b)



c)



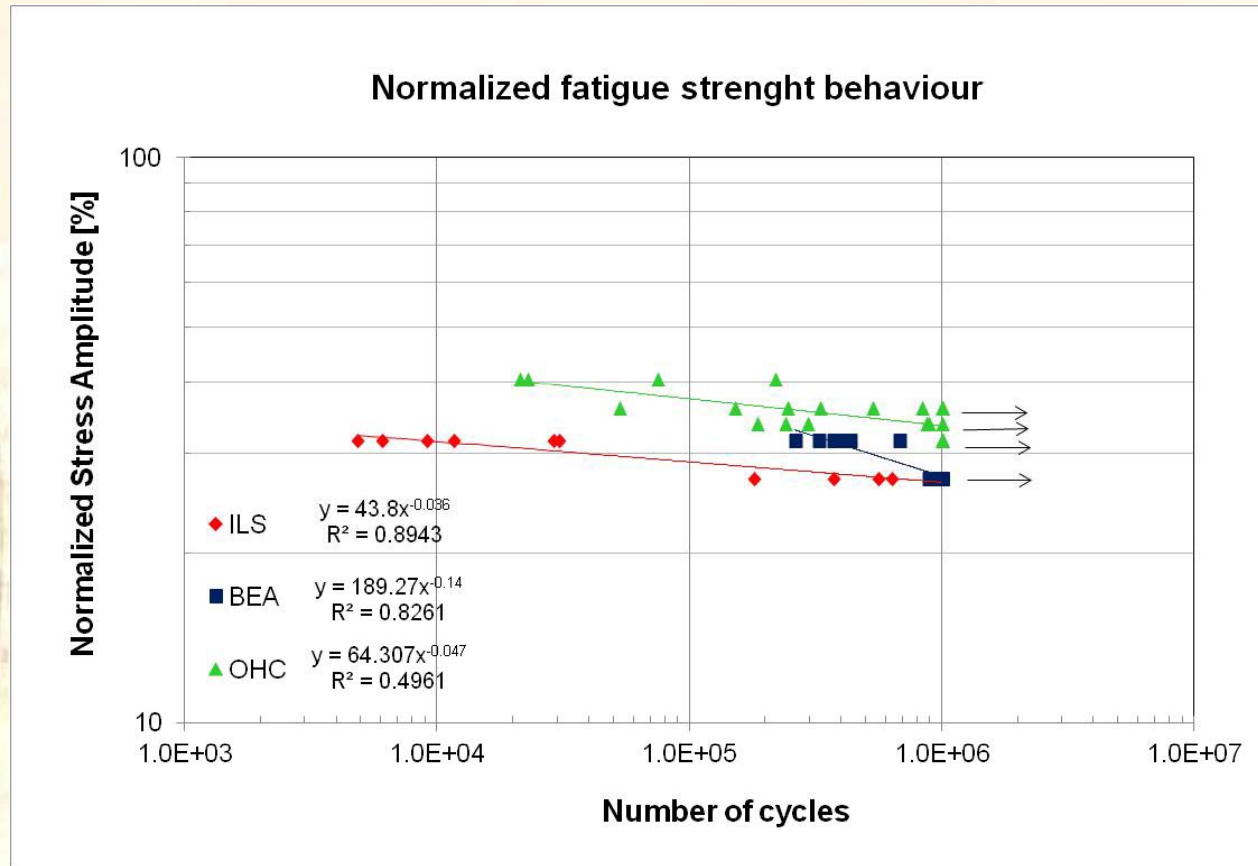
a) *Bearing test - ASTM D5961*

b) *Inter-Laminar Shear test - ASTM D2344*

c) *Open-Hole Compression test - ASTM D6484*

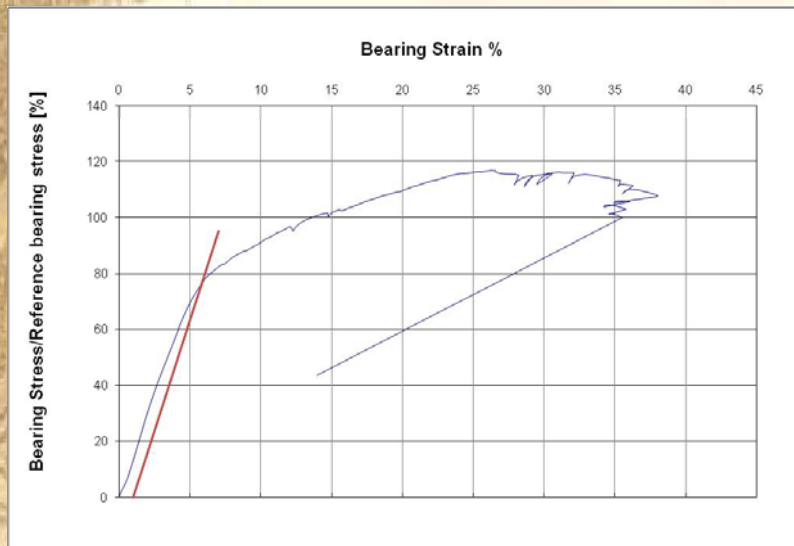
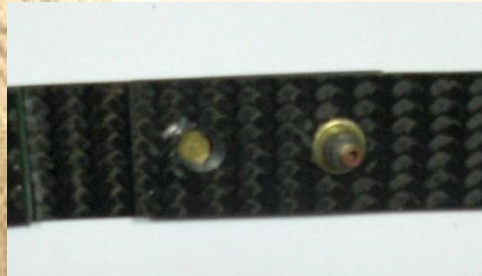
- Tests are carried out with a load ratio $R = 0.1$ and a frequency of 5 Hz.
- Test are interrupted at 10^6 cycles and the residual strength is determined.

Experimental results: *fatigue behaviour*



Stress amplitude is normalized to the static strength of each test. Inter-Laminar Shear and Bearing are the most critical condition. Fatigue strength varies from 27% to 34% of the static strength

Experimental results: *failure modes and residual strength*



- Failure modes are coherent with the corresponding static behaviour.
- Residual strength of Bearing specimen is always better of the static strength measured on undamaged specimens.