G-control fatigue testing for cyclic crack propagation in composite structures - DTU Orbit (08/11/2017)

G-control fatigue testing for cyclic crack propagation in composite structures

This paper presents a computer controlled testing methodology called “The G-control Method” which allows cyclic crack growth testing using real-time control of the cyclic energy release rate. The advantages of using this approach are described and compared with traditional fatigue testing methods (displacement or load control). The compliance based analytical formulation for G-control is explained for the DCB specimen and then applied to experimental testing of the sandwich MMB specimen. Experimental results are presented for sandwich MMB specimens with fiberglass face sheets and PVC foam core, showing that the G-control method allows fatigue testing at a constant range of energy release rates leading to a constant crack propagation rate.

General information

State: Published
Organisations: Department of Mechanical Engineering, Solid Mechanics, Florida Atlantic University
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Pages: 375-386
Publication date: 2015
Main Research Area: Technical/natural sciences

Publication information

Journal: Engineering Fracture Mechanics
Volume: 149
ISSN (Print): 0013-7944
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 2.39 SJR 1.247 SNIP 1.676
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.362 SNIP 1.945 CiteScore 2.44
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.619 SNIP 2.214 CiteScore 2.28
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.483 SNIP 2.047 CiteScore 2.25
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.367 SNIP 2.112 CiteScore 1.82
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.793 SNIP 2.237 CiteScore 1.92
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.482 SNIP 1.946
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.734 SNIP 1.899
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 1.602 SNIP 2.235
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.358 SNIP 2.075

Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.682 SNIP 2.225
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 2.244 SNIP 2.206
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 1.653 SNIP 2.28
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 1.555 SNIP 2.09
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 1.319 SNIP 1.569
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.927 SNIP 1.164
Scopus rating (2000): SJR 0.809 SNIP 1.104
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 0.732 SNIP 0.929
Original language: English
Sandwich, Interface , Fracture characterization, Energy release rate, Crack propagation
DOIs:
10.1016/j.engfracmech.2015.06.059
Source: FindIt
Source-ID: 2279647674
Publication: Research - peer-review › Journal article – Annual report year: 2015