

REFERENCES Paper-Reports-GENOA

Year 1999 Published Papers

1. Darwin Moon, Frank Abdi, Bill Davis “Discrete Source Damage Tolerance Evaluation Of S/RFI Stiffened Panels”. Sampe Conference Paper 1999. Filename: 1-99_SAMPE1999-DiscreteDamage
2. **TECHNICAL REPORT** Dade Huang, Frank Abdi, Mohsen Khatiblou “Progressive Failure Analysis (PFA) and Verification of Composite Test Panel Under Impact and Compression After Impact (CAI) Loading Using GENOA”. Alpha STAR Technical Report to Boeing 12/14/1999. Filename: a) 2-99_Report-impact_compression, b) 2-99_Present-impact-CAI.ppt
3. Dade Huang, Frank Abdi, Mohsen Khatiblou “Progressive Failure Analysis (PFA) and Verification of Composite Test Panel Under Impact and Tension After Impact (TAI) Loading Using GENOA”. Alpha STAR Technical Report to Boeing 12/14/1999. Filename: 3-99_Report-impact_tension.
4. Alpha Star Corp. and W. Branbdt Goldsworthy and Associate Inc. “Blade Manufacturing Process Technology Development of Preform Composite Net Shapes”. White Paper. Filename: a) 4-99_Sock-Mandrel-Whitepaper.pdf; b) 4-99_Sock-Mandrel-present-Whitepaper.pdf
5. Alpha Star Corp. “Progressive Fracture Simulation Of Double Cantilever Beam (DCB) with No Z-pin, 1.5% Z-pin, and 5% Z-pin”. Alpha STAR Technical Report to Boeing. File Name: 5-99_Zpin-Fract-Toughness.pdf
6. Alpha Star Corp. “GENOA Fracture Toughness Simulation Of Un-Reinforced Double Cantilever Beam (DCB) Test Specimen”, Alpha STAR Technical Report to Boeing. File Name: 6-99_Final-DCB.pdf
7. Alpha Star Corp. “Probabilistic Fatigue Life Analysis of IAS Panel Lap Joint in the Presence of MSD Using Genoa”. Alpha STAR Technical Report for Applied Research and Associates 2/1/1999. Filename: 7-99_ARA_Life_Report.
8. Alpha Star Corp. “Predication of Damage Initiation of BMI-Polymer Composite Coupon under Unidirectional Tension Using GENOA”. Alpha STAR Technical Report for United States Air Force 8/29/1999. Filename: 8-99_BMI_paganoPredication.doc
9. Frank Abdi, Bill Davis “Analytical and Experimental Verification of DSD in S/RFI Commercial Aircraft”. Alpha STAR Technical Report to Boeing, Advanced Subsonic Technology (AST) Composite Wing Program, Contract No, NAS1-20546-6XY016021. File Name: 9-99_ACT-Fianl-Report-PDF.zip
10. Frank Abdi, Dade Huang “Probabilistic Fatigue Life Analysis Of IAS Panel Lap Joint In The Presence Of MSD Using GENOA”. Alpha STAR Technical Report to Applied Research And Associates, Contract No, ARA1-056-DSK-1149. February 1, 1999. File Name: 10-99_Final_Report-ARA-Metal-fatigue.pdf

Year 2000 Published Papers

1. F. Abdi, L. Minnetyan, C. Chamis, “DURABILITY AND DAMAGE TOLERANCE OF COMPOSITES”. **Book Chapter 8- “Composites, Welded Joints, and Bolted Joints” Kluwer Academic Publisher, 2000.** Filename: 1-00_Book-CHAPTER8-Kluwer Academic.pdf
2. Alpha Star Corp. “GENOA Progressive Fracture Simulation of C-17 Metallic Panel”. **Alpha STAR Technical Report for The Boeing** Company 4/15/2000. Filename: 2-00_C-17Genoa Progressive Fracture Simulation of Metallic Panel.
3. **B. Farahmand, “Fracture Toughness Determinations (FTD) and Fatigue Crack Growth”.** Book Chapter - “Composites, Welded Joints, and Bolted Joints” Kluwer Academic Publisher, 2000. **Filename: 3-00_BookChap5-FTD-FCG-Kluwer Academic.doc**
4. “**GENOA Progressive Failure Analysis of Advanced Technology Demonstrator (ATD-2) Test Article**”. Chapter 1, and 5 - Contract No: MOD8GXH-863218W, **Filename: 4-00_X-37-PhaseI-Final-Report.pdf**
5. F. Abdi, “Durability, and Reliability Analysis For Flight Qualified Structural Integrity” **AIAA/SDM Conference Paper, AIAA-2000-1513, Atlanta, GA, 2000,** Filename: 5-00_sdm-paper1513-durability.doc
6. B. Farahmand, F Abdi, C. Chamis “Life Prediction and Virtual Testing” **AIAA/SDM Conference Paper, AIAA-2000-1721, Atlanta, GA, 2000,** Filename: 6-00_SDM-1721-Paper_Virtual-Test.doc
7. L. Minnetyan, C. Chamis, F. Abdi, “Damage Tolerance of Fiber Composite Airfoils with Piezoelectric Adaptive Control System” **AIAA/SDM Conference Paper, AIAA-2000-1504, Atlanta, GA, 2000,** Filename: 7-00_SDM-2000-1504-Piezoelectric.pdf
8. L. Minnetyan, Q. Li, C. Chamis, F. Abdi, “Integrally Stiffened Composite Structural Durability Evaluated by Computational Simulation” **AIAA/SDM Conference Paper, AIAA-2000-1339, Atlanta, GA, 2000,** Filename: 8-00_A0024504-StiffnedPanel.pdf
9. L. Minnetyan, C. Chamis, F. Abdi, “Evaluation of Progressive Fracture in Composites at the Micro-stress Level” **AIAA/SDM Conference Paper, AIAA-2000-1367, Atlanta, GA, 2000,** Filename: 9-00_A0024516-PFA-Microstress.pdf
10. G. Abumeri, L. Kugulu C. Chamis, “Non-Deterministic Optimization- Composite Laminates, Beams, and Blades” **AIAA/SDM Conference Paper, AIAA-2000-1565, Atlanta, GA, 2000,** Filename: 10-00_A0024716-probabilistic-optim-Baldes.pdf
11. L. Minnetyan, C. Chamis, “Computational Simulation of Composites Fatigue Life” **AIAA/SDM Conference Paper, AIAA-2000-1367, Atlanta, GA, 2000,** Filename: 11-00_A0024795-PFA-Fatigue.pdf
12. DURABILITY AND DAMAGE TOLERANCE OF COMPOSITES”. **Book Chapter 4- “Elastic Plastic Fracture Mechanics (EPFM) and Applications” Kluwer Academic Publisher, 2000.** Filename: 12-00_Book-CHAPTER4-EPFM-Kluwer Academic.pdf

13. Alpha Star Corp. "Bearing technology For Exo-Skeletal Engines Concepts". **Alpha STAR Final Report for NASA STTR Phase I program, Contract No.; NAS3-00002, October 2000.**
Filename: 13-00_Report-ESE-NASA-Alphastar-Oct2000.pdf
14. Alpha Star Corp , "Mini Space Plane Technology (MIST) Progressive Failure Simulation
15. Damage Tolerance Limit and Criteria of Failure", **Alpha STAR Final Report for Boeing-Advanced technology Demonstrator, October 2000.** Filename: 14-00_Report-ATD-2-ProofLoadr-Oct2000.pdf

Year 2001 Published Papers

1. Alpha Star Corp., "Progressive Failure Simulation of Shipboard Thick Composite Structures Under Static and Creep Loading," **Alpha STAR Technical Report to California State University, Fullerton, April 21, 2001,** Filename: 1-01_Report-2001-Sandwich-creep-4-1-04.pdf.
2. F. Abdi, Q. Li, V. Chung, B. Troha, S. Pai, and C. Chamis "Probabilistic Life Evaluation of Ceramic Matrix Composite Combustor Liner" **Conference Paper – Cocoa Beach, January 22, 2001,** Filename: a) 2-01_Cocoa CeramicProb-paper.pdf., b) 2-01_Present-CMC-Creep-Cocoa-Beach-present.ppt
3. Frank Abdi, Dade Huang, Hamid Jafroudi, Jefferson Stroud "Virtual Testing of Metallic Structure for Damage Tolerant Design Under Fatigue Life Analysis in the Presence of MSD". **Sampe Conference Paper 2001.** Filename: a) 3-01_Sampe2001 Virtual Testing Metal.pdf, b) 3-01_Present-Sampe2001 Virtual Testing Metal.ppt
4. Bob Farahmund, Frank Abdi, "Life Prediction of X37 Space Vehicle". **Sampe Conference Paper 2001,** Filename: 4-01_Sampe2001FTD-Paper.
5. Shekhar Kamat, Xiaofeng Su, Bradley S. Forsyth, Christopher Keddy, Harold D. Beeson, NASA-Glenn RC, Cleveland, OH - Christos Chamis, "Filament Winding Simulation of a Composite Overwrapped Pressure Vessel". **Sampe Conference Paper 2001.** Filename: a) 5-01_Sampe2001Filament-Winding.pdf., b) 5-01_Present-SAMPE2001Filament-Windingtank.ppt
6. Frank Abdi, Dade Huang, Mohsen Khatiblou, Chris Chamis. "Impact, and Tension After Impact of Composite Launch Space Structure". **Sampe Conference Paper 2001.** Filename: a) 6-01_paper-Sampe2001-impact-lowspeed, b) 6-01-Present-SAMPE2001-Impact-TAI.pdf
7. Levon Minnetyan, Scott Tomlinson Rose, Christos Chamis, Frank Abdi. "Durability of Concrete Infrastructure". **Sampe Conference Paper 2001.** Filename: 7-01_Sampe2001-concrete.doc.
8. Qiuzhan Li, Levon Minnetyan, Christos Chamis "Structural Durability and Fatigue of Composites in Acoustic Environment". **Sampe Conference Paper 2001.** Filename: a) 8-01_sample01_2-PSD.pdf., b) 8-01_present-sample01_PSD.ppt
9. Hui Zhang, Levon Minnetyan, Christos Chamis, Frank Abdi "Microstress Level Damage Evolution In Composite Structures". **Sampe Conference Paper 2001.** Filename: 9-01_Sampe2001-microstress.pdf

10. Alpha Star Corp. "GENOA Progressive Failure Simulation of Blade Impacted into Aircraft Engine Housing". **Alpha STAR Report - United Technology Corporation, April 30, 2001.**
Filename: 10-01_Final-Report-Pratt-BladeImpact.
11. Dade Huang, Levon Minnetyan "Progressive Fracture of Stitched Stiffened Composite Shear Panels in The Postbuckling Range" **Journal of Plastics Publication November 18, 2001.**
Filename: 11-01_Journalofplastics-paper-J_stiff.pdf.
12. Prof. Medhat Haroun, Prof. Ayman Mossallam, Dr. Frank Abdi "Experimental and Analytical Evaluation of All-Composite Highway Bridge Deck". **ACIS Conference Paper 2001.**
Filename: 12-01_ACIS Conference Mosallam-Bridge.

Year 2002 Published Papers

1. **PROBABILISTIC METAL:** Bob Farahmand, Frank Abdi, "Probabilistic Fracture Toughness, Fatigue Crack Growth Estimation Resulting From Material Uncertainties" **ASTM Conference Paper 11569 November 6-7, 2002.** Filename: a) 1-02_ASTM11569-Paper-Probability, b) 1-02_ASTM11569-Present-Probability
2. A. Mossallam, M. Haroun, A. Abdel-Kareem, H. Elsanadedy, M. Elbahar, F. Abdi "Service and Ultimate Behavior of the Schuyler Heim Bridge Hybrid Composite Deck" **ICCE Conference Paper July 6, 2002.** Filename: 2-02_ICCE-Paper-FRP-Bridge-2002.pdf
3. Leonardo Israeli, Tina Castillo, Frank Abdi "Failure Analysis of Carbon Composite Reinforcement of Concrete Infrastructures" **Sampe Paper 2002** Filename: 3-02_Sampe2002-Paper-Bridge.doc
4. Frank Abdi, Tina Castillo, Dade Huang, Victor Chen, Alfredo DelMundo "Virtual Testing of the X37 Space Vehicle". **Sampe Conference Paper 2002.** Filename: 4-02_Sampe2002-Virtual-test-X37.doc
5. Levon Minnetyan, Christos Chamis, "Cyclic Fatigue Degradation Response of Composite Structures". **Sampe Conference Paper 2002.** Filename: 5-02_Sampe2002-Papercyclic.pdf
6. Hui Zhang, Levon Minnetyan, Christos C. Chamis "Simulation of Energy Release Rates and Correlation With NDE Test Data". **Sampe Conference Paper 2002.** Filename: 6-02_Sampe2002-paper-NDE.doc
7. Ayman Mossallam, Medhat Haroun, Jesa Dreiner, Chris Dumlao Frank Abdi "Structural Evaluation of All Composite Deck For Schuyler Heim Bridge". **Sampe Conference Paper 2002.** Filename: 7-02_SAMPE 2002-Paper-Bridge.pdf
8. Alpha Star Corp. "Fire Resistance Simulation of Horizontal Flat Sandwich Panel and Deck-Bulkhead T-Joint Assembly with Temperature and Pressure Loads". **Alpha STAR Report to ONR, Contract No: N00014-02-M-0213 April 30, 2001.** Filename: a) 8-02_Final-Navy-Fire-10_01_02.doc, b) 8-02_Present-Final-Navy-Fire-10_01_02.ppt.

9. **PROBABILISTIC METHODS:** Galib H. Abumeri, Christos Chamis, “Method/Computer Codes To Improve Confidence In Probabilistic Evaluations”. **AIAA/SDM Conference Paper 2002. AIAA-2002-1278** Filename: 9-02_AIAA-2002-1278-ErrorBound.doc.
10. F. Abdi. “Simplified Analytical Procedure for Prediction of Fracture Damage in Composite Structures”. **Alpha STAR Report to ONR, Contract No: N00014-02-M-0144, _October 30 2002.** Filename: 10-02_NAvy-PhasI-Report-Sapgen-pdf.zip.
11. G. Y. Richardson “Influence of Turbine Engine Environment on The Mechanical Properties of Ceramic matrix Composites”. 34th International SAMPE technical Conference Proceeding, Nov 4-7, 2002, Baltimore, MD. Filename: 11-02_Sampe-Paper-Salt-Fog-Richardson.pdf
12. **CRYOGENIC:** F. Abdi, T. Castillo, X. SU, and L. Israeli “Progressive Composite Cryogenic Tank Permeability(Material Characterization, Virtual Testing, Accelerated testing)”. **Alpha STAR Technical Report to Boeing, Space launch Initiative Phase I Final Report, Contract No, MIL8GXL-172085W, Report No, TA2CT-DD-02-005, February 22 2002.** Filename: a) 12-02_Technical-Report-SLI-PhaseI-Final-Report-Apendices.pdf.

Year 2003 Published Papers

1. **Crack Density:** Frank Abdi, Xiaofeng Su “Composite Tank Permeation and Crack Density Prediction and Verification”. **ASME Paper No. IMECE2003-4439** November 2003 Filename: 1-03_ASME-2003-Paper-Crackdensity.pdf
2. Cody Godines, Frank Abdi, Steve Kiefer, Keith Kedward “Simplified Analytical Procedure for Prediction of Fracture Damage in Composite Structures”. **ASTM Conference Paper 3/17/03.** Filename: a) 2-03_ASTM-Paper-SimpleJoint-3_22_03.pdf, b) 2-03_ASTM-Present-SimpleJoint-3_22_03.ppt
3. Frank Abdi, Ayman Mossallam, Medhat Haroun “Service and Ultimate Behavior of Hybrid Composite Bridge Deck”. **Common Wealth Institute Conference Paper** 4/21/03 Filename: 3-03_CInst-Paper-FRP bridge.doc
4. Frank Abdi, Ayman Mossallam, Medhat Haroun “Structural Evaluation, Repair and Construction of a Composite Highway”. **Int’l Workshop on Structural Infrastructure Applications Conference Paper 12/03.** Filename: 4-03_Infrastructure-Workshop-Paper-Egypt03.pdf
5. **ITAR-**Bahram Farahmand, Frank Abdi, Ross Messinger “Accelerated Qualification Testing For Large Pressurized Tanks”. **JANNAF Conference 2003 ITAR** Filename: 5-03-ITAR_JANNAF-Paper-Accelerated-Test.doc
6. **ITAR-**Frank Abdi, Xiaofeng Su “Composite Tank Permeation And Crack Density Prediction And Verification”. **JANNAF Conference Paper 2003 ITAR** Filename: 6-03-ITAR_JANNAF-Paper-Crackdensity-Dec03.pdf
7. **ITAR-** Kevin Bowcutt, Donald Picetti, Kaye Yun, Frank Abdi “A High-Fidelity Aero-Thermal-Structural Analysis Of The STS-107 Columbia Reentry With Postulated Wing Leading Edge Damage”. **JANNAF Conference Paper 2003,** Colorado Spring, Colorado, **ITAR** Filename: a)

- 7-03-ITAR_ANNAF-Paper-STS-107 PFA.pdf, b) 7-03-ITAR_Present-JANNAF-STS-107-BurnThrough.ppt, c) 7-03-ITAR_Present-JANNAF-STS-107-impact-foam.ppt
8. Wenming Zhao, Levon Minnetyan, Christos Chamis “Fracture Propagation In Composites With Biaxial Fiber Reinforcement”. Journal of Plastic Paper Filename: 8-03_Journalofplastics-paper-CT-FTD.pdf
 9. Frank Abdi, Dade Huang, Ross Messinger “Accelerated Testing Methods For Next-Generation Launch Vehicles”. **Sampe 2003 Conference Paper**. Filename: 9-03_SAMPE-2003-paper-Acceltraed-Testing.pdf
 10. Dade Huang, Frank Abdi, Ayman Mossallam, “Comparison of Failure Mechanisms in Composite Structure”. **SAMPE 2003 Conference Paper**. Filename: A) 10-03_SAMPE-2003-PAPER-CUSTOM-FAILURE.PDF; B) 10-03_SAMPE-2003-PRESENT-CUSTOM-FAILURE.PDF
 11. Frank Abdi, Xiaofeng Su “Progressive Failure Analysis of RLV Laminates of IM7/PETI-5 - at High, Room, and Cryogenic Temperatures”. **SDM 44 Conference Paper** Filename: 11-03_SDM44-PAPER-7553PFAIM7PETI5.PDF
 12. Cody Godines, Randall D. Manteufel, Frank Abdi, “Density Parameter Estimation Using Latin Hypercube Sampling Within Nessus”. **SDM 44 Conference Paper 04/03** Filename: 12-03_SDM44-7639-PRESENT-HYPERCUBE-4-08-03.DOC
 13. Frank Abdi, Leonardo Israeli, Scott Johnson, Pravin Aggarwal, Jeff Rayburn, Doug Fox “Composite Tank Permeation Prediction And Verification”. **SDM 44 Conference, April 2003, Norfolk VA.** Filename: 13-03_SDM44-PAPER-7651-CRYOGENIC.DOC, B) 13-03_SDM44-PRESENT-7651-CRYOGENIC.PPT
 14. Frank Abdi, Dade Huang, Scott Johnson, Ross Messinger “Accelerated Testing Methods For Next-Generation Launch Vehicles” **SDM 44 Conference Paper 4/03**. Filename: 14-03_SDM44-PAPER-7873-ACCELRTAED-TESTING.DOC
 15. Frank Abdi, Xiaofeng Su, Barmac Taleghani, Joseph R. Blandino “Wrinkling Analysis of A Kapton Square Membrane under Tensile Loading” **SDM 44 Conference Paper** Filename: 15-03_SDM44-PAPER-7627-GOSSAMER.DOC, B) 15-03_SDM44-7627-PRESENT-WRINKLE-4-10-03.PPT
 16. Frank Abdi, Ayman Mossallam, Ramki Iyer “Progressive Failure Analysis of Composite Army Bridge”. **CICE Conference Paper**. Filename: 16-03_CICE-PAPER-AUSTRALIAARMY BRIDGE PFA.PDF
 17. Xie D and Biggers, Jr. SB, “Postbuckling analysis with progressive damage of tailored laminated plates and shells with a cutout, **Composite Structures**”, **59 (2003)**: 199–216 File Name: 17-03_dexie_J2003.pdf
 18. L. Minnetyan, C. Chamis, “Computational Damage Tracking Of Degrading Adaptive Composite Structures” **AIAA/SDM Conference Paper, AIAA-2000-1504, Atlanta, GA, 2000**, Filename: 18-03_SDM-2003-1566-Piezoelectric-coupon.pdf

19. Galib H. Abumeri and Latife H. Kuguoglu, C. Chamis, "Computational Data Compression For Effective Storage / Retrieval" **48th International SAMPE Symposium & Exhibition , Long Beach, CA, May 11-15, 2003**, Filename: a) 19-03_SAMPE-2003-MFIM-COMPU DATA Jan03.doc, b) 19-03_Present-SAMPE-2003-MFIM-COMPU DATA.ppt
20. J. Gharib, B. Castillo, F. Abdi, "GENOA Durability Analysis of Automotive Metallic Parts" **Alpha STAR Technical report, Vehicle Engineering Ford Motor Company**, January 5, 2003. Filename: 20-03_Ford_Ubracket_PFA_Report.doc
21. Xiaofeng Su, Jonas Surdenas and Frank Abdi "Micro-Cracking and Degradation of IM7/977-2". **Alpha STAR Technical Report to NASA/LaRC**, September 21, 2003. Filename: 21-03_REPORT#1CRACKDENSITYANDSENSITIVITY4NASA-LARC_REVB.PDF

Year 2004 Published Papers

1. F. Abdi, "Analysis of Ceramic Matrix Composite (CMC) Structure" **MIL-Handbook17-Ceramic Committee** 2004 Publication. Filename: 1-04_Mil17-Analysis-Tech-Approach.pdf
2. Levon Minnetyan, Christos Chamis "The CT Specimen in Composite Laminate Testing". **NASA Technical Report 4712 1996**. Filename: 2-04_REPORT-COMPACT-TEN-COM-NASATM4712.PDF
3. Frank Abdi, Xiaofeng Su "Multi-Scaling For Composite Tank Permeation And Crack Density Simulation". **MesoMech- Conference Paper 6/2004**. FILE NAME: 3-04_MESOMECH-PAPER-CRACKDENSITY-JUNE2004.DOC
4. Frank Abdi, Jonas Surdenas, Boris Golod, Myles Baker "Optimizing Composite Rocket Motor Development Using Advanced Evolutionary Algorithms". **MesoMech - Conference Paper 6/2004**. Filename: 4-04_MESOMECH-PAPER-TANK-OPTIM-JUNE2004.DOC
5. Levon Minnetyan, Christos Chamis "Mesomechanics In Composite Fatigue Damage Growth". **MesoMech - Conference Paper 6/2004**. Filename: 5-04_MESO-PAPER2004_FATIGUE.DOC
6. Levon Minnetyan, Christos Chamis "Mesomechanics In Progressive Fracture Simulation Of Composite Structures". **MesoMech - Conference Paper 6/2004**. Filename: 6-04_MESO-PAPER2004_PLYLAYUP.DOC
7. Xiaofeng Su, Jonas Surdenas and Frank Abdi "Micro-Cracking and Degradation of IM7/977-2". **Alpha STAR Technical Report to NASA/LaRC** , Dec, 2003. Filename: 7-04_REPORT#1CRACKDENSITYANDSENSITIVITY4NASA-LARC.DOC.
8. Xiaofeng Su, Jonas Surdenas and Frank Abdi "Effect of Isothermal Mechanical Cycling on the IM7/977-2 Laminates". **Alpha STAR Technical Report** to NASA/LaRC, March, 2004.. Filename: 8-04_REPORT#2-CYCLEDPROPERTIESNASA.DOC.
9. Xiaofeng Su, Jonas Surdenas and Frank Abdi "Face Sheet Delamination of Sandwich Composite Materials at Cryogenic Temperature – Simulation of the NASA Push-off Test". **Alpha STAR**

Technical Report to NASA/LaRC, June, 2004. Filename: A) 9-04_REPORT#3-PUSHOFFSANDWICHNASA.PDF; B) 9-04_PRESENT-PUSHOFF-TEST.PPT

10. Xiaofeng Su, Tina Castillo, Frank Abdi “Durability and Damage Tolerance Evaluation of the RLV”. **AIAA-SDM 45, Denver, Colorado**. Filename: A) 10-04_SDM-PAPER-17877-DURA.PDF, B) 10-04_SDM-PRESENT-17877-DURA.PPT
11. Levon Minnetyan, Frank Abdi “Dynamic Impact Loading Damage Propagation In Composite Structures”. **AIAA-SDM 45, Denver, Colorado** Filename: 11-04_SDM45-04_IMPACT.DOC
12. Xiaofeng Su, Frank Abdi, J. Andre Lavoie “Prediction of Micro-crack Densities in Cryogenic IM7/977-2 Propellant Tanks”. **AIAA-SDM 45, Denver, Colorado**. Filename: a) 12-04_SDM45-04-PAPER-17741-CRYOGENIC.PDF, B) 12-04_PRESENT-SDM45-04-17741-CRYOGENIC-CRACKDENSITY.PPT
13. Edhi Sutjaho, Xiaofeng Su, Frank Abdi, Barmac Taleghani “Dynamic ing Analysis of Kapton Membrane under Tensile Loading”. **AIAA-SDM 45, Denver, Colorado**. Filename: 13-04_SDM03WRINKLEPAPER.DOC
14. **PSD FATIGUE:** Qiuzhan Li, Frank Abdi, ED Shroyer, “Progressive Failure Simulation under Random Vibration Loading Condition”. **AIAA-SDM 45, Denver, Colorado**. Filename: **A) 14-04_SDM45-04-GPSPAPER-ACOUSTIC.PDF, B) 14-04_PRESENT-PFAUNDER RANDOMPSD.PPT**
15. Frank Abdi, Cody Godines, Kevin Bowcutt, Don Picetti “A High Fidelity Collaborative Virtual Testing (CVT) Simulation by Aero-Thermal-Structural Analysis of STS 107 Columbia Reentry With Postulated Wing Leading Edge Damage”. **White Paper**. Filename: 15-04_WHITEPAPER-NASA-SHUTTLE-STS-107.DOC
16. Xie D, Waas AM, Shahwan KW, Schroeder JA and Boeman RG, Computation of strain energy release rate for kinking cracks based on virtual crack closure technique, **Computer Modeling in Engineering & Sciences, 6(2004): 515-524**. 16-04_dexie-VCCT-DCZM_J2004.pdf
17. Christos Chamis., G. Abumeri “Mesomechanics Simulated Data For High Temperature Composite”. **SAMPE 2004, Long Beach**, CA 2004. Filename: 17-04_SAMPE04-MFIM.pdf
18. Frank Abdi, Steven Kiefer, Arun Bhattacharya, Jeff Price “Evaluation Of Structural Performance Of A Continuous Fiber-Reinforced Ceramic Composite Gas Turbine Combustor Liner”. **SAMPE 2004, Long Beach**, CA 2004. Filename: a) 18-04_SAMPE-2004-EBC-Combustor-273.pdf, b) 18-04_Present- SAMPE-2004-EBC-Combustor-273.ppt
19. **PROBABILISTIC IMPACT:** Frank Abdi, C. Godines, “Probabilistic Impact Analysis And Risk Assessment Supporting Shuttle Return-To-Flight Procedures”. **SAMPE 2004, Long Beach**, CA 2004. Filename: 19-04_SAMPE_2004_Impact_Shuttle.pdf, 19-04_Present-SAMPE_2004_Impact_Shuttle.ppt
20. Frank Abdi, Shahram Zadeh , Moe Shahab, and Rose Ragalini, “Collaborative Virtual Testing for manufacturing & Life Cycle Management”. **SAMPE 2004, Long Beach**, CA 2004. Filename: A) 20-04_Present-SAMPE_2004_CVT.ppt, B) 20-04_SAMPE_2004_CVT-paper.pdf

21. Ayman Mosallam, Frank Abdi, and Xiaofeng Su, "Virtual Testing And Progressive Failure Analysis Of ARMY COMPOSITE BRIDGE". Sampe **SAMPE 2004, Long Beach**, CA 2004, Filename: [21-04_Sampe04-Paper-VT-PFA-Army Bridge.pdf](#)
22. X. Su, and F. Abdi, "JTAGG III CMC Combustor Liner Fracture Simulation for Redesigned Liner", Contract # A006554, **Alpha STAR Technical Report to Honeywell Engine System**, December 2, 2004. Filename: [22-04_Merged-Final Report-AppendA-B-HES-CMC-liner-12-3-04.pdf](#)
23. X. Su, F. Abdi, J. Housner, "X-37 C/SIC Material Characterization, Component Life Prediction and Verification Simulation". **Alpha Star Technical Report to NASA-LaRC. Contract No. NAS-01067X. Nov. 2004**. Filename: [23-04_finalReport-AppedicesI-III_x37HotStructure-Nov23-04.pdf](#)
24. J. Wang, T. Chen, D. Sleight and A. Tessler , "Simulating Nonlinear Deformations of Solar Sail Membranes Using Explicit Time Integration", AIAA Paper 2004-1580 CD-ROM Number 6, NASA Langley Research Center, Hampton, VA 45th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conferencc, **AIAA-SDM 45, Denver, Colorado, May 2004**. Filename: [24-04_paper-wrinkle-NASA-SDM-2004_1580.pdf](#)
25. **Final CVT REPORT**, "Collaborative Virtual Testing (CVT) for Flight Qualified Spacecraft Application", Final Report, Contract No, NAS-01067, July 25, 2004, **Alpha Star Technical Report to NASA-LaRC**. Filename: [25-04_CVT-Report-6-9-04.pdf](#)
26. **Final AEROELASTIC REPORT**, "Advanced Structural Tailoring: Drag, Weight Reduction and Response Tailoring of Transport Aircraft Composite Integral Wing", Final Report, Contract No, NNL04AD25P, Prepared for: NASA Langley Research Center, July 25, 2004, **Alpha Star Technical Report to NASA-LaRC**. Filename: [26-04_PhaseI-Final-report-Aeroelastic-Appences1-6-NASA-Larc-2004.pdf](#)

Year 2005 Published Papers

1. Xiaofeng Su, Frank Abdi, Ron. Kim, "Prediction of Micro-crack Densities in IM7/977-2 Polymer Composite Laminates under Mechanical Loading at Room and Cryogenic Temperatures". AIAA/SDM 46. Austin, Texas, 2005. Filename: a) [1-05_PAPER-SDM-46-AUSTIN-CRACKD-IM7.DOC](#), b) [1-05_PRESENT-SDM-46-AUSTIN-CRACKD-IM7.PPT](#)
2. Frank Abdi, Galib Abumeri, George Richardson "Thermal Aging and Progressive Failure Analysis of an Oxide/Oxide CMC Coupon Subjected to a Transient Flame Loading". Sampe 2005 Conference Paper, Filename: a) [2-05_SAMPE-Paper-Thermal-Structural-Degrade.pdf](#), b) [2-05_SAMPE-Present-Thermal-Structural-Degrade.ppt](#)
3. Frank Abdi, Zhongyan Qian, and Xiaofeng Su, Ramki Iyer, Ayman Mosallam "Composite Army Bridge Under Fatigue Loading". Sampe 2005 Conference Paper. Filename: [3-05_SAMPE_Army-Bridge-Fatigue.doc](#)

4. Levon Minnetyan, Frank Abdi, Dade Huang, Christos C. Chamis “Progressive Fracture Simulation Of Satin Weave Composite Structures”. Sampe 2005 Conference Paper, Filename: 4-05_SAMPE05-wovenCMCpaper.doc
5. Frank Abdi, Keith Kedward, Steven Kiefer “Durability and Reliability-Based Design Optimization of Composite Structures with Fracture Damage”. ONR Review Workshop, Solid Mechanics, 2005. Filename: a) 5-05_Navy-Joint-PaperUnivofMarylandMay_2005.doc, and b) 5-05-UnivofMaryland-Level2-charts SAPGEN-Joint-5-064-05.ppt
6. Frank Abdi, Zhongyan Qian, Michael C.H. Lee, Brian Knouff “The Predictive Fatigue Behavior of Three Dimensional Composites”. **COMPOSITES 2005 Convention and Trade Show American Composites Manufacturers Association** September 28-30, 2005, Columbus, Ohio USA. Filename: 6-05_composite2005-Fatigue.doc
7. Zhongyan Qian, Frank Abdi, Rashid Miraj, Ayman Mosallam, Ramki Iyer, Jian-Juei Wang, Trent Logan “The Post-fire Residual Strength of Composite Army Bridge”. 4th International Conference on Composites In Fire (CIF-4) September, 2005, New Castle England. Filename: a) 7-05_CIF4-compositefire.doc, b) 7-05_CIF4-Present-compositefire.ppt
8. Bill Troha, Frank Abdi, “Analysis of Centrifugal Compressor Vibration Test Data and Opportunity to Control Response Modes”. AVT-121 Symposium in Granada, Spain, 3-6 October 2005 , Filename:.. 8-05_AVT-121Sym-Spain.ppt
9. Xie D, Chung J, Waas AM, Shahwan KW, Schroeder JA, Boeman RG, Kunc V, and Klett LB, Failure analysis of adhesively bonded structures: from coupon level data to structure level predictions and verification, International Journal of Fracture, 134(2005): 231-250. File Name: 9-05_dexie_J2005a-Int-Jornl-Fracture.pdf
10. Xie D, Waas AM, Shahwan KW Schroeder JA, and Boeman RG, “Fracture criteria for kinking cracks in triple material bonded joints”, Engineering Fracture Mechanics, 72(2005): 2487-2504. File Name: 10-05_dexie_J2005-Eng-Fract-Mech.pdf
11. Frank Abdi, Tina Castillo, Edward Shroyer “Risk Management of Composite Structure” Book Chapter 45, CRC Handbook, January 2005. Filename: 11-05_CRC-Chapter45-Design_Reliability.pdf
12. J. Housner, and V. Sokolinski, “Failure Analysis of Shuttle Reinforced Carbon-Carbon Specimens”, **Alpha STAR Technical Report to NASA/LaRC** , May 23, 2005. . Filename: 12-05_FINAL-NESC RCC Specimen Report-v4.doc
13. F. Abdi, Q. Li, D. Huang and V. S. Sokolinsky, “Progressive Failure Dynamic Analysis for Composite Structures”, **9th Japan International SAMPE Symposium & Exhibition (JISSE-9), Tokyo, Nov 2005.** . Filename: 13-05_PFDA-Lowspeed-SAMPE2005-Japan.pdf
14. D. Huang., R. Gholamipour, “Longevity of Drake cable”, **Alpha STAR Technical Report to CTC Cable** , June 13, 2005. . Filename: 14-05_Report-CTC-Longevity.pdf
15. M. Garg, A. Pantano, M. C. Boyce, “Mechanism of Deformation Nanotubes”. **Master Thesis Massachusetts Institute of technology, June, 2005.** Filenames: a) 15-05_Thesis-MIT-Mohit-Nanotube.pdf

Year 2006 Published Papers

1. Thomas S. Gates, Xiaofeng Su, Frank Abdi, Gregory M. Odegard, and Helen M. Herring, "Facesheet Delamination of Composite Sandwich Materials at Cryogenic Temperatures", Journal of Composite Science and Technology, 2006. Filename: [1-06_CSTE-S-06-00057-Pushoff.pdf](#)
2. Frank Abdi, Zhongyan Qian, Ayman Mosallam, Ramki Iyer, Jian-Juei Wang, Trent Logan, "Composite army bridges under fatigue cyclic loading". Journal of Society of Infrastructure Engineering (SIE), Taylor and Francis Publications, Vol 2, No 1. March, 2006, 63-73. Filename: a) [2-06_PAPER-SIE_LR_63-74-ARMY-BRIDGE-FATIGUE.PDF](#), B) [2-06_SIE_PRESENT_63-74-ARMY-BRIDGE-FATIGUE.PDF](#).
3. Xie D, Salvi AG, Waas AM, Caliskan A, "Discrete Cohesive Zone Model to Simulate Static Fracture in 2D Triaxially Braided Carbon Fiber Composites", Journal of Composite Materials, 40(2006), 2025-2046. File Name: [3-06_dexie_J2006-DCZM.pdf](#)
4. Xie D and Biggers, Jr. SB, Strain energy release rate calculation for a moving delamination front of arbitrary shape based on virtual crack closure technique, Part I: Formulations, Engineering Fracture Mechanics, 73 (2006) 771-785. File Name: [4-06_dexie_J2006-StrainEnergy-Part1-EngFract-Mech.pdf](#)
5. Xie D and Biggers, Jr. SB, Strain energy release rate calculation for a moving delamination front of arbitrary shape based on virtual crack closure technique, Part II: Mesh Sensitivity Study, Engineering Fracture Mechanics, 73 (2006) 786-801. File Name: [5-06_dexie_J2006b-StrainEnergy-Part2-EngFractMech.pdf](#)
6. M. Lee, M. Short, Frank Abdi, and J. Qian., "A Math Based Methodology for Longevity Fatigue Prediction of 3D Woven Fiber Glass Reinforced Vynle-ester Composite". SAE, 2006, Detroit, MI. 06M29-M28 Fatigue. Filename: a) [6-06_SAE 2006 M28-06M-29-Fatigue.pdf](#), b) [6-06_Present__SAE 2006 M28-06M-29-Static-composite.ppt](#)
7. Galib H. Abumeri, M. Lee, "A Computational Simulation System for Predicting Performance of Chopped Fibers Reinforced Polymer Composites". **ERM-2006-Elastomer-Reno** Filename: [7-06_Abumeri-Paper-ERM2006.doc](#).
8. Galib H. Abumeri, B. Golid "Deterministic And Probabilistic Durability Analysis Of High Fidelity Filament Wound Army Bottle Tanks". **Alpha STAR Technical Presentation to Army Arsenal, Huntsville Alabama, 2006**. Filename: [8-06_armyTank-durab-relib.ppt](#)
9. Galib H. Abumeri, B. Golid "Parametric Sizing of Composite Metal Lined Tanks for Bimodal Nuclear Thermal Propulsion Applications". **Alpha STAR Technical Presentation to The Space Technology and Applications International Forum (STAIF), Albuquerque, New Mexico, USA, Feb 12-16, 2006**. Filename: [9-06_STAIF-Composite-Tanks-GENOA.pdf](#)
10. Frank Abdi, Rashid Miraj, Ayman Mosallam, and Jian-Juei Wang, "Composite Bridges: Health Monitoring with the Diagnostic Prognostic System (DPS) and an Evaluation of a Temporary Field Repair System". JEC Conference , Paris, France, 3-28-06. Filename: [10-06_JEC_Final_PARIS-3-28-06.pdf](#).

11. **ITAR**-Frank Abdi, J. Morrison, Saiganesh. Iyer, and Dan Thompson “Thermal Aging Failure Analysis of A CMC/FGI Combustor Outer Liner” **Cocoa-Beach, Conference, Presentation, Florida, January 2006**. Filename: [11-06_linerAging_CocoaBeach-1-26-06.ppt](#)
12. **ITAR**-Frank Abdi, J. Morrison, Saiganesh. Iyer, and Dan Thompson “Numerical Characterization of Mechanical Properties of the Oxide/Oxide Ceramic Matrix Composite in Industrial Hot Structural Application” **Cocoa-Beach, Conference, Presentation, Florida, January 2006**. Filename: [12-06_material_Character_CocoaBeach-1-26-06.pdf](#)
13. **ITAR**-Xiaofeng Su and Frank Abdi “Low Cost Three – Dimensional Reinforced Ceramic Matrix Composites” **Alpha STAR Technical Report to NAVAIR, Feb 28, 2006**. Filename [13-06_Navy_CMC_PhaseI_option_report_final](#).
14. J. M. Housner “Overview of the Genoa Analysis Process “, **Alpha STAR Corp White Paper** March 2006, File Name: a) [14-06_Overview-paper of the Genoa Analysis Process.doc](#), b) [14-06_present_Overview of the Genoa Analysis Process.pdf](#).
15. De Xie, Zhongyan Qian, Dade Huang, and Frank Abdi, “Crack Growth Strategy in Composites under Static Loading”, 47th **AIAA-2006-1842, Newport, RI, May 1-5, 2006** File Names: a) [15-06_47AIAA_2006_1842_paper-crackgrowth-Xie.pdf](#), b) [15-06_47AIAA_2006_1842_present-crackgrowth-Xie.ppt](#)
16. Vlastimil Kunc, Lynn Klett., Zhongyan Qian and Frank Abdi, Brian Knouff “The Prediction of Fatigue Sensitivity to Void Content for 3D Reinforced Composites”. **SAE, 2006, Detroit, MI. 06M-265**. Filename: [16-06_composite-Fatigue-SAE5.doc.](#), [16-06-Present_Composite-Fatigue-SAE5.ppt](#)
17. D. Huang, F. Abdi, “Analytical Characterization and Damage Propagation of Three Dimensional Composites”. **AIAA-2006-1842, Newport, RI, May 1-5, 2006** Filenames: a) [17-06_47AIAA_2174-2006_paper-3Dcomp.pdf](#), b) [17-06_47AIAA-2174-2006_PRESENT-3DCOMP.PPT](#)
18. J. Qian, F. Abdi, “The Residual Strength of Composite Army Bridge after Fire Exposure”. **AIAA-2006-1842, Newport, RI, May 1-5, 2006** Filenames: a) [18-06_47AIAA1841-2006_paper-Fire-comp-Bridge.pdf](#), b) [18-06_47AIAA1841-2006_present-Fire-comp-Bridge.ppt](#)
19. X. Su, F. Abdi, R. Kim, “A Study of Ply Thickness and Angle Designs for Preventing Permeability of the IM7/977-2 Polymer Composite Cryogenic Tank”. **AIAA-2006-1842, Newport, RI, May 1-5, 2006** Filenames: a) [19-06_47AIAA-2213-paper-plyThicknessAndLayUpDesign-SU.pdf](#), b) [19-06_47AIAA-2213-present-plyThicknessAndLayUpDesign-SU.ppt](#)
20. **PROBABILISTIC RADIATION-DAMAGE**: L. Minnetyan, H. Zhang, C.Chamis, and F. Abdi “Probabilistic Damage Progression of Composite Structures for Nuclear Power Plants”. **AIAA-2006-2213, Newport, RI, May 1-5, 2006**. Filenames: a) [20-06_47AIAA-2154-paper-PROBABILISTIC_RADIATION-levon.doc](#), b) [20-06_47AIAA-2154-present-PROBABILISTIC_RADIATION-levon.ppt](#)
21. **CARBON-CARBON-SHUTTLE**: V. S.. Sokolinsky, J. Housner , J. Surdenas, and F. Abdi, “Progressive Failure Analysis of Shuttle Reinforced Carbon-Carbon Plate Specimens”. **AIAA-**

- 2006-1789, Newport, RI, May 1-5, 2006** Filename: Filenames: a) 21-06_47AIAA-1789-paper-Shuttle-RCC-Vlad.pdf, b) 21-06_47AIAA-1789-Presnt-Shuttle-RCC-Vlad.ppt
22. **PROBABILISTIC METHODOS:** G. Abumeri, C. Chamis, “Probabilistic Prediction of Four Different Methods”. **AIAA-2006-1831, Newport, RI, May 1-5, 2006** Filenames: a) 22-06_AIAA-2006-1831-paper-MFIM-NLNN-Galib.doc, b) 22-06_AIAA-2006-1831-present-MFIM-NLNN-Galib.ppt
23. F. Abdi, R. Miraj, A. Mosallam, and J. Juei Wang “A Diagnostic/Prognostic System to Monitor the Health of Composite Bridges and an Evaluation of Field Repair”. **SAMPE-2006- Long Beach, CA, May 1-5, 2006.** Filename: 23-06_SAMPE2006_paper_DPS-Miraj.pdf
24. X. Su, J. Surdenas, F. Abdi, J. J. Wang “Numerical Analysis of Thermal Aging Failure of Polymer Composite Structures”. **SAMPE-2006- Long Beach, CA, May 1-5, 2006.** Filenames: a) 24-06_SAMPE06-paper_Aging.pdf, b) 24-06_Sampe06-Present-aging.ppt
25. G. Abumein, F. Abdi, “Thermal Aging and Progressive Failure Fatigue Analysis”. **JEC 2006 Journal Publication.** Filenames: 25-06_JEC-06-Journal-Thermal-Aging-PFA-Fatigue.pdf
26. F. Abdi, “Impact Damage Propagation In Composite Structures”. **JEC 2006 Journal Publication.** Filenames: 26-06_JEC-06_CompMag_Article-impact.pdf
27. F. Abdi, Q. Li, D. Huang and V. S. Sokolinsky, “Progressive Failure Dynamic Analysis for Composite Structures”. **JEC 2006 Journal Publication.** Filenames: 27-06_JEC-06-PFDA4CompStructures.doc
28. R. Miraj, Z. Qian, F. Abdi, “Fire Resistance Simulation of Loaded Deck Sandwich Panel and Deck–Bulkhead Assembly Structures”. **ONR 2006 Journal Publication.** Filenames: 28-06_ONRFireResistArticle.pdf
29. **FATIGUE WIND MILL BLADE:** G. Abumein, F. Abdi, “Manufacturability and durability of a large composite blade”. **NAFEM 2006 Conference, May 31, Denmark.** Filenames: a) 29-06_NAFEM-Denmark-Paper_blade-Fatigue-Sock-Mandrel.pdf, and b) 29-06_Present-NAFEM-Denmark5-31-06.ppt
30. **THERMAL FATIGUE:** M. Lee, F Abdi, and J. Qian., “Analysis of Thermal Fatigue in Microelectronic Packaging Using GENOA”. **ERMIR Conference, Lake Tahoe, May 31, 2006.** Filename: a) 30-06_Paper-ERMIRThermal-Fatigue-Electronics.pdf, b) 30-06_present-Thermal-Fatigue-Microelectronic.ppt, c) 30-06_ExperimentalVerification-Thermal Fatigue-PB10 Micro-Electronic packaging system.ppt
31. C. Chamis, “Composite Erosion By Computational Simulation”. **SAMPE-2006- Long Beach, CA, May 1-5, 2006.** Filenames: a) 31-06_Paper-SAMPE2006_Errosion.pdf, b) 31-06_Present-SAMPE2006-Erosion-Chamis.ppt
32. F. Abdi, X. Su, R. Miraj, and A.. Mosallam, “Environmental Aging Science Of U.S Army Bridges – Experimental Testing And Numerical Simulation”. **Alpha STAR technical report, U.S. Army RDECOM ACQ CTR, Contract No: W911NF-05-1-0514, June-15, 2006.** Filenames: 32-06_Final-Report-Draft-ThermalAging-Army_BAA.pdf

33. F. Abdi, X. Su, A. Mosallam, R. Miraj, "Experimental And Progressive Failure Study On Thermal Aging Performance Of Military Composite Bridges". **Duracosys Conference, September 10-13, 2006, Blacksburg, VA USA.** Filenames: [33-06_Final-paper-pmc_Aging_Duracosys-9-10-06.doc](#)
34. F Abdi, K Kedward, "Simplified Analytical Procedure for Prediction of Fracture Damage in Composite Structures", SBIR Phase II Final Report, Contract No. N00014-02-M-0144", **Alpha STAR Technical Report to Navy**, July 5, 2006. . Filename: [34-06_Final-Report-Deliverables-SAPGEN-NAVY-SBIR-PhaseII.pdf](#)
35. **MSC-VPD-Conference –Presentations-** Ayman Mosallam (University of California at Irvine, CA), "Experimental and Numerical Study on Thermal Aging and Mechanical Properties of Composite Army Bridge", **MSC VPD Conference Proceeding**, July 6, 2006, Huntington Beach, CA. File Name: [35-06_Final-MS-C-Mosallam-July 2006 -Army Bridge.ppt](#)
36. **MSC-VPD-Conference –Presentations-** Levon Minnetyan and Hui Zhang (Clarkson University, Potsdam, NY), "Probabilistic Damage Progression In Composite Structures For Nuclear Power Plants", **MSC VPD Conference Proceeding**, July 6, 2006, Huntington Beach, CA. File Name: [36-06_103_Clarckson U_present-PROBABILISTIC_RADIATION-levon.ppt](#)
37. **MSC-VPD-Conference –Presentations-** Michael C. H. Lee, Delphi Research Labs, "A Thermodynamic Damage Law for Multi-stage Fatigue Longevity and the GENOA Implementation ", **MSC VPD Conference Proceeding**, July 6, 2006, Huntington Beach, CA. File Name: [37-06_78_Delphi_MSCVPD2006-twostage-fatigue.ppt](#)
38. **MSC-VPD-Conference –Presentations-** Vlastimil Kun (Oak Ridge National Laboratory), "Progressive Failure Analysis of Bolted Joints with GENOA", **MSC VPD Conference Proceeding**, July 6, 2006, Huntington Beach, CA. File Name: [38-06-80_ORNL-boltPres.ppt](#)
39. **MSC-VPD-Conference –Presentations-** Arun K. Bhattacharya, Ph.D, Solar Turbines Inc., San Diego, CA, "Thermal Aging Failure Analysis of A CMC/FGI Combustor Outer Liner", **MSC VPD Conference Proceeding**, July 6, 2006, Huntington Beach, CA. File Name: [39-06_79_CMC-linerAging.ppt](#)
40. **MSC-VPD-Conference –Presentations-** Vald Sokolinski (Alpha STAR Corporation), "Delamination Growth in a Composite and Sandwich Specimens—Analysis vs. Experiment " **MSC VPD Conference Proceeding**, July 6, 2006, Huntington Beach, CA. File Name: [40-06_76_AlphaStar_Delamination-Composite_Final.ppt](#)
41. Xiaofeng Su, "Metal Cold Work and Residual Stress in Opehhole and Lug". **Alpha STAR Internal Technical Report**, November, 2006. Filename: A) [41a-06_openHoleColdWork.pdf](#), B) [41b-06_lugTiColdWork.pdf](#)
42. Jay Qian "Progressive Failure Analysis of Composite Test Panel Under Impact and Compression After Impact (CAI) Loading", **Alpha STAR Internal Technical Report** (Impact Was Analyzed Using GENOA's Progressive Dynamic Failure Analysis Module). Filename: [42-06_CAI-Dynamic-Analysis-for-impact.pdf](#)

43. B. J. Frame, V. Kunc, and T. J. Batistte., “Block Loading Fatigue of 3D Glass Fiber Reinforced Composite”. Duracosys Conference, September 10-13, 2006, Blacksburg, VA USA. Filenames: [43-06_2Stage-Fatigue-3DGlass-Duracosys.pdf](#)
44. Xie D, and Wass, Anthony, “Discrete Cohesive Zone Model for Mixed-mode Fracture using Finite Element Analysis”. Engineering Fracture Mechanics, 73 (2006) 1783-1796. File Name: [44-06_DCZM_Engineering Fracture Mechanics2006.pdf](#)
45. Xie D, and Biggers, Jr. SB, “Progressive Crack Growth analysis using Interface Element Based on the Virtual Crack Closure Technique”. Finite elements In Analysis And Design, 42 (2006) 977-984. File Name: [45-06_VCCT2D_FEA-Design, 42-2006.pdf](#)
46. Vlastimil Kunc, Oak Ridge National Laboratory., “Progressive failure Analysis of Bolted Joint using GENOA”, July 2006. MSC VPD Conference File Name: [46-06_Present-ORNL_boltJoint.pdf](#)
47. B. Knouff, J. Batten “Advanced Composite Support Structures”. NCC technical Final Report to ORNL, Contract # 4000039214, 2006, Filename: [47-06_NCC-final-Report-Comp-support-str-ACSS.pdf](#)
48. A. Mossallam, F. Abdi, J. Qian, R. Miraj “Development of a Diagnostic/prognostic System (DPS) For Monitoring the Performance of a repaired Composite Military Bridges”, proceeding of SPIE, Volume 6178, The International Society for Optical Engineering, 27-28 February 2006, San Diego, California, USA. Filename: [48-06_SPIE-DPS-CAB-bridge.pdf](#)

Year 2007 Published Papers

1. **THERMAL FATIGUE:** Frank Abdi, Dan Thompson , Jay Morrison, Saiganesh Iyer, “2d/3d Oxide/Oxide Ceramic Matrix Composites Life Prediction Methods, Virtual Characterization Of Mechanical Properties, And Virtual Testing Of Structural Component”. GT2007-28332, Proceedings of ASME Turbo Expo2007, 2007 Conference of the ASME Gas Turbine Technical Congress and Exposition, May 14-17, 2007, Palais des Congrès, Montréal, Canada. Filename: a) [1-07_Paper-ASME-GT2007-28332-Ceramic.pdf](#), b) [1-07_Present-3D Oxide_ASME-Turbo5-15-07.pdf](#)
2. **THERMAL AGING:** Arun K. Bhattacharya, “Thermal Aging Failure Analysis Of A EBC/CMC Combustor Outer Liner, And Virtual Testing Of Structural Component”. GT2007-27929, Proceedings of ASME Turbo Expo2007, 2007 Conference of the ASME Gas Turbine Technical Congress and Exposition, May 14-17, 2007, Palais des Congrès, Montréal, Canada. Filename: a) [2-07_ASME-paper-EBC-SiC-2007ASME.pdf](#), b) [2-07_ASME-present-EBC-SiC-2007ASME.pdf](#)
3. **PROBABILISTIC COPV:** G. Abumeri, F. Abdi, M. Baker, M. Triplet and, J. Griffin “Reliability Based Design of Composite Over-Wrapped Tanks”. SAE World Congress, 2007, 07M-312, Detroit Mi, April 2007., Filename: a) [3-07_SAE_Army_Reliability_Filament_Tank_Revised.doc](#), b) [3-07_SAE_present-Army_Reliability_Filament_Tank.ppt](#)

4. Xie D, and Biggers, Jr. SB, "Calculation of Transient strain Energy Release Rates Under Impact Loading Based on Virtual Crack Closure technique". International Journal of Impact Engineering, 34(2007) 1047-1060. File Name: [4-07_Starin-energy-Impact-Journal-Impact-Engineering-2007-1047-1060.pdf](#)
5. Pascalis K. Gotsis, Christos C. Chamis, Kostantinos David, De Xie, and Frank Abdi, "Progressive Fracture of Laminated Fiber-Reinforced Composite Stiffened Plate under Thermo-mechanical Loads". For the IXth International conference on Mesomechanics MESO2007, Presquile de Giens, France, May 13-17, 2007. File Name: [5-07_PAPER_FRANCE_Meso-May13-07.pdf](#)
6. B. Farahmand, C. Saff, De Xie and F. Abdi, "Estimation of Fatigue and Fracture Allowables For Metallic Materials Under Cyclic Loading". **AIAA-2007-2381, Honolulu, Hawaii, April, 2007.** Filenames: a) [6-07_AIAA_2007_2381-metal-Fatigue.doc](#), b) [6-07_Present-AIAA_2007_2381-metal-Fatigue.pdf](#), c) [6-07_FTD-FCG-S_N-Data Base.doc](#)
7. D. Xie, "GENOA Progressive Failure Simulation of Blade Impacted into Aircraft Engine Housing". **Alpha STAR Technical-Report, June, 22, 2007.** Filename: [7-07_ASC-technical-report-BladeHousing-Impact](#)
8. Ayman Mosallam, Frank Abdi, Rashid Miraj, "Virtual testing of Army Bridge a Diagnostic/Prognostic Approach". Cobrae Conference In Stuttgart, Germany 29-30 March 2007. Filename: [8-07_paper-COBRAE-ARMY-BRIDGE-Germany-3-07.pdf](#)
9. Masakazu Sano, Tomohiro Yokozeki, Toshio Ogasawara, "VERIFICATION OF PROGRESSIVE FAILURE ANALYSIS OF COMPOSITE SANDWICH CONSTRUCTION". 16th International Conference On Composite Materials, July 8-13, 2007 (Kyoto, Japan), Filename: [9-7_paper-ICCM-PFA-COMP-Sandwich-Japan-July-07.doc](#)
10. **BLADE IMPACT:** F. Abdi, D. Xie, H. Bhugaloo, J.L. Bozec "PROGRESSIVE FAILURE SIMULATION OF AN AIRCRAFT FAN BLADE IMPACT ONTO ENGINE INLET". **Proceedings of COMP07: 6th International Symposium on Advanced Composites, 16-18 May, 2007, Corfu, Greece.** Filename: a) [10-07_Paper-COMP2007-009-BladeHousing-Impact.pdf](#), b) [10-07_Present-COMP2007-009-BladeHousing-Impact.ppt](#)
11. Massood Mehrinfar, B. Farahmand, "Determination of Fracture Toughness for Thin Section Specimens with Optimized Finite Element Mesh". **AIAA-2007-2092, Honolulu, Hawaii, April, 2007.** Filenames: [11-07_AIAA_2007_2092-metal-FTD-Mesh-optim.doc](#)
12. **COMPOSITE COPV:** Composite Optimization Corporation, Technical report to Army., "OPTIMIZING COMPOSITE ROCKET MOTOR DEVELOPMENT USING ADVANCED EVOLUTIONARY ALGORITHMS", SBIR Topic A02-150, Phase II Final Report, February 23, 2007. Filenames: [12-07_COC-Final Report-A02-150-Compositetank.pdf](#)
13. X. Su, "GENOA Effect of Interfacial Defect on Fiber Reinforced Composite Properties – Theory and Application Examples for GENOA PFA". **Alpha STAR Technical-Report, July, 07, 2007.** Filename: [13-07_interfacePFA-theory-examples.pdf](#)
14. **COMPOSITE A_B BASE ALLOWABLE:** M. R. Talagani, Z. Gurdal, and F. Abdi, S. Verhoef "Obtaining A-basis and B-basis Allowable Values for Open-Hole Specimens Using

- Virtual testing” AIAAC-2007-127, 4. Ankara International Aerospace Conference, 10-12 September, 2007 – METU, Ankara. __Filename: a) 14-7_Final-aiac-paper_TU Delft-A-B-Allowable.pdf, b) 14-07_Final-aiac-present_TU Delft-A-B-Allowable.ppt
15. **RELIABILITY COMPOSITE COPV:** G. Abumeri, M. Garg, “Reliability Sizing of Composite Metal Lined Tanks for Space Propulsion Applications”. AIAA Space Conference, Sep, 2007, Long Beach, CA, Filename: a) 15-07_AIAASpace2007-CompositeTankSizing_Paper6121.doc
 16. **COMPOSITE IMPACT (LOW SPEED):** M. Garg and G. Abumeri, “Assessment of Residual Strength in Impacted Composite Panels”. **JEC 2007 Journal Publication**. Filenames: 16-07_JEC-07-paper-Impact-residual-PFDA4CompStructures.pdf, b) 16-07_JEC-07-Present-Impact-residual-PFDA4CompStructures.pdf
 17. **NANO COMPOSITE TEST:** M. Garg, A. Pantano, M. C. Boyce, “An Equivalent Orthotropic Representation of the Nonlinear Elastic Behavior of Multiwalled Carbon Nanotubes”. **Journal of Engineering Material and Tecnology, July 2007, Vol. 129 / 431**. Filenames: a) 17-07_Paper-Nanotubes-EOR_JEM07.pdf, b) 17-07_NanoComposites_ASC_WORK_IN_PROGRESS.ppt
 18. **COMPOSITE FIRE:** A. Mossallam, F. Abdi, J. Qian “Service Fire Resistance Simulation of Loaded deck Sandwich Panel and Deck Bulk Head Assembly Structure” **<http://www.elsevier.com/copyright>, Elsevier Journal Publication, 2007. 1359-836815, 2007.02.2002**. Filename: 18-07-Fire Paper-Elsevier- Published-07.pdf
 19. **PROBABILISTIC COPV:** G. Abumeri, M. Garg, D. Lamb, “Technical Approach for Coupled Reliability-Durability Assessment of Army Vehicle Sub-Assemblies”. SAE World Congress, 2008, 08M-126, Detroit Mi, April 2008. Filename: a) 19-07_SAE_paper-SAE-Army_Reliability_Suspension_system_final_Tardec.pdf, b) 19-07_SAE_present-SAE-Army_Reliability_Suspension_system_final_Tardec.ppt
 20. **PROBABILISTIC COPV:** G. Abumeri, F. Abdi, “ Reliability Based Design Of Composite Over-Wrapped Tanks”, **Proceedings of COMP07: 6th International Symposium on Advanced Composites, 16-18 May, 2007, Corfu, Greece**. Filename: a) 20-07_paper-COMP07-Reliability_based_design_COPV_Corfu_2007.doc, b) 20-07_Present-COMP2007-Reliability_based_design_COPV_Corfu_2007.ppt
 21. B. Farahmand and K. Nikbin (2007), “Predicting Fracture and fatigue crack growth properties using tensile properties”, J Eng Frac Mech: Accepted for publication. Filename: 21-07_paper-EFM_2709.pdf
 22. **COMPOSITE MULTIPLE FAILURE CRITERIA:** M. Garg, “Comparison of Puck Versus GENOA multiple Failure Criteria”. **Alpha STAR Technical-Report, December, 20, 2007**. Filename: 22-07_PUCK-GENOA-FailureVs.test-examples.pdf
 23. X. Su, “Material Characterization of the Air Bus HTA/977-2 Composite Laminates”. **Alpha STAR Technical-Report, February, 20, 2007**. Filename: 23-07_interfacePFA-theory-examples.pdf

24. Pappu L. N. Murthy, John. C. Thesken, S. Leigh Phoenix, and Lorie Grimes-Ledesma, "Stress Rupture Life reliability Measures for Composite Overwrapped Pressure Vessel". **AIAA-2007-2150, Honolulu, Hawaii, April, 2007.** Filenames: 24-07_AIAA_2007_2150-Filament-Tank-Reliability.pdf.
25. G. Sih (2008) Multiscaling of Fatigue. "In: Application of virtual testing for obtaining fracture allowables of aerospace and aircraft materials" Springer, New York.
26. A. Mossallam, F. Abdi, J. Qian, R. Miraj "Residual Strength of Composite Army Bridges Exposed to Fire" Book Chapter, **CDCC 2007, Third International Conference on Durability and Field Applications of Fiber reinforced Polymer (FRP) Composites For Construction.** Filename: 26-07-Paper-CDCC-2007- Published-book-CAB-bridge.pdf
27. D. Abe, J. Ymaki, Y. Yuroshiyama, "Determination of Bending Characteristics of CFRP beam using progressive Fracture Model" **Japan Society of Automotive Engineering, September 2007.** Filename: 27-07-Paper-Honda-Impact-Composite-Beam-JSAE-Sep-07.pdf
28. M. Garg, "Carbon Nanotube Integrated Multi-scale Composites" **Alpha STAR White paper on Nano Composite, October 2007.** Filename: 28-07-White-Paper-Nano-Composite-Oct-07.pdf

Year 2008 Published Papers

1. Frank Abdi, Xiaofeng Su, Jerry Housner, "Durability Evaluation of NASA's X-37 2D/3D C/SiC CMC Assembled Sub-Elements". Sampe 2008 Conference Paper, Long beach, CA, May 2008. Filename: a) 1_08-SAMPE-Paper-X-37-C-SiC-Assembled-SubElements.pdf; b) 1_08-SAMPE-Present-SiC-Assembled-SubElements.ppt
2. Mohit Garg, Galib H. Abumeri and Dade Huang , "Predicting Failure Design Envelop for Composite Material System Using Finite Element and Progressive Failure Analysis Approach". Sampe 2008 Conference Paper, Long beach, CA, May 2008. Filename: a) 2-08_SAMPE-Paper-Multiple-failure-Criteria.pdf, b) 2-08_SAMPE-Present-Multiple-failure-Criteria.ppt
3. A. Mosallam, F. Abdi, R. Miraj "Post Fire Residual Strength of Composite Army Bridge" JEC, Canada, Feb 2008,. Filename: 3-08_Paper-JEC FIRE PAPER FEB 2008.doc
4. **PROBABILISTIC MICRO-CRACK:** L. Minnetyan, and F. Abdi, "Probabilistic Assessment of Matrix Crack Size and Density in Composite Structures". **AIAA-2008-2229, Chicago, Illinois, April, 2008.** Filenames: a) 4-08_Paper-AIAA_2008_2229-microcrackdensity.pdf, b) 4-08_Present-AIAA_2008_2229-microcrackdensity.ppt
5. L. Minnetyan, X. Su, and F. Abdi, "Fiber-Matrix Interphase Effects on Damage Progression in Composite Structures". **AIAA-2008-1732, Chicago, Illinois, April, 2008.** Filenames: a) 5-08_Paper-AIAA_2008_1732.pdf, b) 5-08_Present-AIAA-1732-2008-Interface-Levon.ppt
6. G. Abumeri, F. Abdi, Ayman Mosallam, R. Miraj, "A Health Monitoring System for In-Field Repair of Composite Structures". **AIAA-2008-1736, Chicago, Illinois, April, 2008.** Filenames:

- a) 6-08_Paper-AIAA_2008_1736-Health-Monitor-CAB, b) 6-08_Present-AIAA-2008-1736-Bridge.ppt
7. C. Chamis, Levon Minnetyan, “Progressive Fracture of Composite Structure”. **AIAA-2008-1736, Chicago, Illinois, April, 2008.** Filenames: a) 7-08_Paper-AIAA_2008-Man106173-Chamiz-PFA.pdf,b)7-08_Present-AIAA-2008- Man106173-Chamiz-PFA.ppt
 8. De Xie, Mohit Garg, Dade Huang, and Frank Abdi, “Cohesive Zone Model for Surface Cracks using Finite Element Analysis”. **AIAA-2008-106742, Chicago, Illinois, April, 2008.** Filenames: a) 8-08_Paper-AIAA_2008_106742-Cohesive-3d-dczm.pdf b) 8-08_Present-AIAA-2008_106742-Cohesive-3d-dczm.ppt
 9. F. Abdi, E. Cochran, R. Dutton, and O. Storaasli, “Computational Speed-Up of Complex Durability Analysis of Large-Scale Composite Structures”. **AIAA-2008-106742, Chicago, Illinois, April, 2008.** Filenames: a) 9-08_Paper-AIAA_2008_106604-largescale-PFA-speedup.pdf b) 9-08_Present-AIAA-2008_106604-largescale-PFA-speedup.ppt
 10. Robert M. Taylor, Carl Q. Rousseau, Frank J. Ramirez, and Jeremy L. Morrison, “A Methodology for Adhesive Peel Allowable Development”. **AIAA-2008-1843, Chicago, Illinois, April, 2008.** Filenames: a) 10-08_Paper-AIAA_2008_1843-Pi-Joint-SIFT.pdf
 11. Chamis, G. Abumeri, “Probabilistic Multi-Factor Interaction Model for Complex Material Behavior”. **AIAA-2008-1987, Chicago, Illinois, April, 2008.** Filenames: a) 11-08_Paper-AIAA_2008-Man1987-Chamiz-MFIM.pdf
 12. A. Najafi and M. Rais-Rohani, “Influence of Cross-Sectional Geometry on Crush Characteristics of Multi-cell Prismatic Columns”. **AIAA-2008-2014, Chicago, Illinois, April, 2008.** Filenames: a) 12-08_Paper-AIAA_2008-Man2014-Impact-Metal-shape.pdf, b) 12-08_Present-AIAA_2008-Man2014-Impact-Metal-shape.ppt
 13. Mohammad Rouhi and M. Rais-Rohani, “Topology Optimization of Continuum Structures Using Element Exchange Method”. **AIAA-2008-2014, Chicago, Illinois, April, 2008.** Filenames: a) 13-08_Paper-AIAA_2008-Topology-shape-optimization.pdf, b) 13-08_Present-AIAA_2008-Topology-shape-optimization.ppt
 14. M. Garg, F. Abdi, and S. McHugh, “Analyzing Interlaminar Shear Strength of Multi-Scale Composites Via Combined Finite Element And Progressive Failure Analysis Approach”. **SAMPE 2008, Memphis Tennessee, September, 2008.** Filenames: a) 14-08-SAMPE-Paper-Nano-Composite-ILS-Sep-08.pdf, b) 14-08-SAMPE-Present-Nano-Composite-ILS-Sep-08.ppt
 15. **MATERIAL A_B ALLWOABLE:** G. Abumeri, M. Garg, M. Taleghani, “A Computational Approach for Predicting A- and B-Basis Allowables for Polymer Composites”. **SAMPE -2008, Memphis Tennessee, September, 2008.** Filenames: a) 15-08_Paper-SAMPE_2008-A-B-Base-Allowable-Polymers.pdf, b) 15-08_Present-SAMPE_2008-A-B-Base-Allowable-Polymers.ppt.
 16. **COMPOSITE IMPACT:** D. Abe, Y. Yuroshiyama, “Examination of Dynamic Bending Characteristics of a CFRP beam using progressive Fracture Model” **Japan Society of**

Automotive Engineering (JSAE) Annual Congress (spring) 2008. Filename: [16-08-Paper-Honda-Dynamic-Impact-Composite-Beam-JSAE-Spring-08.pdf](#)

17. Frank Abdi, Bob. Farahmand, “Multidisciplinary Reentry Aero-Thermal-Structural Simulation & Use of Progressive Failure Analysis In The Space Shuttle Columbia Accident Investigation”. 5th International Conference on Composites In Fire (CIF-5), 10-11th, July, 2008, New Castle England. Filename: a) [17-08_CIF5-paper--compositeonfire-July-08-England.doc](#), b) [17-08_CIF5-Present-compositeonfire-July-08-England](#)
18. **NDE:** A. Abdul-Aziz, G. Abumeri, M. Garg, and P. G. Young, “Structural Evaluation of a Nickel Base Super Alloy Metal Foam Via NDE and Finite Element”, Submitted to the SPIE/Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring; Behavior and Mechanics of Multifunctional and Composite Materials II, Conference SSN04; 9-13 March 2008; San Diego, California USA. Filename: [18-08_paper-NDE-PFA-Spie-08-6929-55.pdf](#)
19. F. Abdi, X. Su , Gregory N. Morscher, James DiCarlo, “Predicting In-plane Tensile Properties And Microcrack Density Development For 3d Orthogonal CVI-MI SiC/SiC Composites “ASME Turbo Expo 2008: Power for Land, Sea and Air, GT2008-51323, June 9-13, 2008, Berlin, Germany. Filename: [19-08_paper-Crack-Density-ASME_turbo-Germany.pdf](#)
20. Christopher P. Keddy , “Composite Overwrapped Pressure Vessel Modeling and Analysis”, White Sands Test Facility, Johnson Space Center, July 2008. Filename: [20-08_paper-COPV-Genoa.pdf](#)[WSTF-biennial_research_report.pdf](#)
21. F. Abdi, B. Knouff, G. Abumeri, J. Surdenas and J. Batten, “Advanced Light Weight Vehicle”, SBIR Phase I Final Report, Contract No: H 92222-07-P0082”, March, 2008. Filename: a) [21-08_Report-SBIR-SOCOM_Weight-reduction-Composite.pdf](#), b) [21-08_Present-SBIR-SOCOM_Weight-reduction-Composite.ppt](#)
22. **2 STAGED FATIGUE COMPOSITE (TEST-THEORY):** F. Rognin, F. Abdi, K. Nikbin, V. Kunc, M. Lee, “Influence of the Block Loading Sequence on the Fatigue Life of Fibre-reinforced Composites”, AMERICAN SOCIETY OF CIVIL ENGINEERS, International Committee, Los Angeles Section, 5th International Engineering and Construction Conference (IECC’5), August 27-29, 2008. Filename: a) [22-08_paper-2staged-Fatigue-Composite- IECC5-Irvine.pdf](#)
23. A. Mete, M. Rouhi, F. Abdi, and P. Portal, “Progressive Failure Of Stitched J-Stiffened Composite Shear Panels In The Post Buckling Range”, Cocomat: 2nd Int. Conference on Buckling and Postbuckling Behaviour of Composite Laminated Shell Structures September 3-5, 2008, Technical University of Braunschweig, Pockelsstrasse, Braunschweig, Germany. Filename: a) [23-08_paper-Cocomat-Postbuckling-Sep3-5-Germany.pdf](#), b) [23-08_Present-Cocomat-Postbuckling-Sep3-5-Germany.ppt](#)
24. **2 STAGED FATIGUE COMPOSITE VALIDATION:** F. Rognin, F. Abdi, K. Nikbin, V. Kunc, M. Lee, “INFLUENCE OF THE BLOCK LOADING SEQUENCE ON THE FATIGUE LIFE OF FIBRE-REINFORCED COMPOSITES”, American Society Of Civil Engineers International Committee, Los Angeles Section, 5th International Engineering and Construction Conference (IECC’5), August 27-29, 2008. Filename: a) [24-08_paper-IECC5-2staged-Fatigue-Aug-08.pdf](#), b) [24-08_Present-IECC5-2staged-Fatigue-Aug-08.ppt](#)

25. **WIRELESS STRAIN SENSOR:** Hiroshi Ide, Frank Abdi, Chau Dang, Tatsuya Takahashi, Bruce Sauer, “DEVELOPMENT OF A WIRELESS STRAIN SENSOR SYSTEM FOR STRUCTURAL HEALTH MONITORING”, American Society Of Civil Engineers International Committee, Los Angeles Section, 5th International Engineering and Construction Conference (IECC’5), August 27-29, 2008. [Filename: a\) 25-08_paper-IECC5-DevelopWireless-Sensor-Aug27-08.pdf](#), [b\) 25-08_Present-IECC5-DevelopWireless-Sensor-Aug27-08.ppt](#), [c\) Wireless_Sensor_ZigBee_Brochure.pdf](#)
26. F. Abdi, R. Miraj, A. Mosallam, R. Dutton, “DIAGNOSTIC/PROGNOSTIC HELALTH MONITORING SYSTEM AND EVALUATION OF ARMY COMPOSITE BRIDGE”, American Society Of Civil Engineers International Committee, Los Angeles Section, 5th International Engineering and Construction Conference (IECC’5), August 27-29, 2008. [Filename: a\) 26-08_paper-IECC5-ArmyBridge-DPS-Aug27-08.pdf](#), [b\) 26-08_Present-IECC5-26-08-ArmyBridge-DPS-Aug27-08.ppt](#)
27. **HEALTH MONITORING SENSOR:** Maria Q. Feng, “Research and Implementation of Structural Health Monitoring Part I: Advanced Sensors”, American Society Of Civil Engineers International Committee, Los Angeles Section, 5th International Engineering and Construction Conference (IECC’5), August 27-29, 2008. [Filename: 27-08_paper-IECC5-AdvancedSensors-SHM-PartI-Aug27-08.doc](#).
28. **HEALTH MONITORING SENSOR:** Maria Q. Feng, “Research and Implementation of Structural Health Monitoring Part II: Diagnostic Methods and Experimental Validation”, American Society Of Civil Engineers International Committee, Los Angeles Section, 5th International Engineering and Construction Conference (IECC’5), August 27-29, 2008. [Filename: a\) 28-08_paper-IECC5-AdvancedSensors-SHM-Validation-PartII-Aug27-08.doc](#), [b\) 28-08_Present-IECC5- IECC5-AdvancedSensors-SHM-Validation-PartII.ppt](#)
29. Sawan Shah, Javid Bayandor, Frank Abdi, Bob Farahmand, “MICRO/MACRO CONSTITUTIVE MECHANICS BASED PREDICTION OF DELAMINATION IN ADVANCED AEROSPACE COMPOSITE STRUCTURES”, 26th International Congress Of The Aeronautical Sciences, Septmber-14-19, 2008, Anchorage, Alaska. [Filename: a\) 29-08_paper-ICAS-Impact-FEVSMicro-Sep2008-Alaska.doc](#), [b\) 28-08_Present-ICAS- Impact-FEVSMicro-Sep2008-Alaska.ppt](#)
30. E. Forster, S. Clay, R. Holzwarth, D. Pratt, D. Paul, “Flight Vehicle Composite Structures”, 26th International Congress Of The Aeronautical Sciences, Septmber-14-19, 2008, Anchorage, Alaska. [Filename: a\) 30-08_paper-ICAS-30-08_paper-ICAS820-Pi-Joint.pdf](#)
31. **HEALTH MONITORING SENSOR:** Fei Lu1, Aiqun Li, Wenrang Cheng, and Maria Qing Feng, “CRACK MONITORING EXPERIMENT USING DISTRIBUTED OPTICAL FIBER SENSING”, American Society Of Civil Engineers International Committee, Los Angeles Section, 5th International Engineering and Construction Conference (IECC’5), August 27-29, 2008. [Filename: 31-08_paper-IECC5-AdvancedSensors-EXPERIMENT.pdf](#)
32. **TECHNICAL REPORT:** Peter J. Rohl, Scott Leemans, Dade Huang, Jonas Surdenas “Certification by Analysis”, Contract # C0671523. **Alpha STAR Technical Report to Wichita State University** 11/20/2008. [Filename: a\) 31-08_Technical-Report-NIAR-Certification.pdf](#)

Year 2009 Published Papers

1. Mohit Garg and Frank Abdi, "The Fracture Behavior of Polymer Material Reinforced With Carbon Nanotubes of Varying Aspect Ratio and Orientations". Sampe 2009 Conference Paper, Baltimore, MD, May 18-21, 2009. Filename: a) [1_09-SAMPE-abstract-CNT-PullOut-Nano-highfidelity.pdf](#); b) [1_09-SAMPE-present-CNT-PullOut-Nano-highfidelity.ppt](#)
2. M. Garg, L. Stuart, F. Abdi, "Nano Composite Material Improvement On Low/High Speed Impact Resistance Composite Over Wrapper Pressure Vessel". Mesomechanics 2009 – Conference, Oxford, United Kingdom, 24-26 June 2009. Filename: a) [2_09-MesoMechanics-abstract-CNT-Impact-Nano.pdf](#); b) [2_09-MesoMechanics-present- CNT-Impact-Nano.ppt](#)
3. L. Minnetyan, F. Abdi, C. Chamis, D. Huang, "Prediction/Verification Of Composite Electrical Properties And Nano Insertion Improvement". Mesomechanics 2009 – Conference, Oxford, United Kingdom, 24-26 June 2009. Filename: a) [3_09-MesoMechanics-abstract-CNT-Electrical-Thermal-Conductivity-Nano.pdf](#); b) [3_09-MesoMechanics-present-CNT-Electrical-Thermal-Conductivity-Nano.pdf](#)
4. Mohit Garg, Stuart McHugh and Frank Abdi, "Prediction And Nanomechanics of Interfacial Strength Between Carbon Nanotubes and Resin". ACS National Meeting Salt Lake City, Utah, March 24-26, 2009. Filename: a) [4_09-ACS-abstract-CNT-Toughness-highfidelity.pdf](#)
5. Frank Abdi, J. Surdenas, Jerry Housner, "Proof Load Validation of Honeycomb Sandwich Composite Fuselage Structure". Sampe 2009 Conference Paper, Baltimore, MD, May 18-21, 2009. Filename: a) [5_09-SAMPE-abstract-Proof-Load-Honeycomb.pdf](#).
6. M. Garg, J. Surdenas, F. Abdi, T.E. Lacy, "Impact Damage Resistance And Compression-After-Impact Strength Of Sandwich Composites With Graphite-Epoxy Facesheets And Nomex Honeycomb Cores". Sampe 2009 Conference Paper, Baltimore, MD, May 18-21, 2009. Filename: a) [6_09-SAMPE-abstract-Impact-Honeycomb.pdf](#).
7. **AIAA-abstract- Plam Spring Conference** –A. Najafi, M. Rais-Rohani , F. Abdi, M. Garg, F. Sen, O. Sayman, " Failure Analysis of Composite Bolted Joints in Tension", ,An Extended Abstract Submitted to the 50th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Palm Spring, California, 4 - 7 May 2009. File Name: [7_09-ABSTRACT-AIAA_SDM_Bolted_joints.pdf](#)

GENOA- Verification Test (GVT) Papers and Reports

1. Frank Abdi, and Tina Castillo, "Reduced Testing By Virtual Testing ". Alpha STAR Corporation, **White Paper** .File Name: [1-GVT_Building Block Verification Strategy.doc](#)
2. T. Gates, "Crack Density Counting Procedure in Composite". NASA Langley Publication .File Name: [2-GVT_NASA_Crack Counting Procedure-A.pdf](#)

3. D. Sleight, C.G. Lotts, "Application of Interface Technology in Progressive Failure Analysis of Composite Panels". [AIAA/SDM-2002-1743](#) .File Name: [3-GVT_NASA-aiaa-2002-1743_Sleight.pdf](#)
4. T. Gates, "NASA Push Off test Report". [NASA Langley Publication](#) .File Name: [4-GVT_NASA-pushOffTest-Data.doc](#)
5. R. Goldberg., A. Gilat, "Implementation of an Associative Flow Rule Including Hydrostatic Stress Effects Into the High Strain Rate Deformation Analysis of Polymer Matrix Composites", [NASA/TM-2003-212382](#), June 2003. File Name: [5-GVT_aiaa03tm-Strain-Rate.pdf](#)
6. J. Masters, "Translaminar Fracture Toughness of a Composite Wing Skin Made of Stitched Wrap-Knit Fabric", [NASA Contractor Report 201728](#), 1997, File Name: [6-GVT_NASA-97-cr201728.pdf](#)
7. **PLY THICKNESS EFFECT:** D. L. Flaggs, "Prediction of Tensile Matrix Failure in Composite Laminates", [Journal of Composite Materials](#), January 1985. File Name: [7-GVT_Prediction of Tensile Matrix Failure in Composite Laminates.pdf](#)
8. **PLY THICKNESS EFFECT:** D. L. Flaggs, M. Kural, "Experimental Determination of the In-Situ Transverse Lamina Strength in Graphite/Epoxy Laminates", [Journal of Composite Materials](#), Vol 16 March 1982. File Name: [8-GVT_Experimental Determination of the In Situ Transverse Lamina.pdf](#)
9. M. Robinson, S. Jonson, J. Eichinger, "Trade Study Results for Second Generation Reusable Launch Vehicle Composite Hydrogen Tank", [AIAA/SDM-2002-1743](#). File Name: [9-GVT_Permeation-Robinson-2004_1932.pdf](#)
10. **CRYOGENIC:** S Donaldson, R Kim, "Damage Development in Laminated Mechanically Cycled at Cryogenic Temperature", [AIAA/SDM-2004-1774](#) .File Name: a) [10-GVT-Microcrack-Kim-2004_1774.pdf](#), b) [10-GVT-Present-Microcrack-Kim-2004_1774.ppt](#)
11. **COMPOSITE EDGE DELAMINATION:** N. J. Pagano, G. A. Schoppner, R. Kim, and F. L. Abrams, "*Steady-State Cracking and Edge Effects in Thermo-Mechanical Transverse Cracking of Cross Ply Laminate*". Composite Sciences and Technology, 58(1998). Filename: [11-GVT_Steady-state cracking and edge effects in thermo-mechanical transverse cracking of cross-ply laminates.pdf](#)
12. C. Chamis, P. Murthy "*Fiber Composite Sandwich Thermostructural Behavior: Computational Simulation*". NASA Technical Memorandum 88859 Filename: [12-GVT_Fiber composite sandwich thermostructural behavior computational simulation.pdf](#)
13. C. A. Ginty, N. M. Endres "*Composite Space Antenna Structure: Properties and Environmental Effects*". NASA Technical Memorandum 88859 Filename: [13-GVT_Composite Space Antenna Structures Properties and Environmental Effects.pdf](#)
14. T. W. Smith, G.W. Lively, and H.L. Spencer, "Leading Edge Structural Subsystem Mechanical Design Allowables For Material With Improved Coating System", [Loral/Vought Systems](#),

Technical Report No. 221RP00614, Revision A, 12 October 1994. [Filename:14-GVT-RCC-Loral-Report_221RP00614.pdf](#)

15. **CRYOGENIC:** T. S. Gates, K. S. Whitley, R. W. Grenoble and T. Bandorawalla “Thermal/Mechanical Durability of Polymer-Matrix Composites in Cryogenic Environments”, **44th AIAA/SDM, Norfolk, VA, April 2003** .File Name: [15-GVT_SDM03-Aiaa-7408787-PMC-Cryogenic.pdf](#)
16. **FAILURE CRITERIA:** P. D. Soden, M. J. Hinton, and A. S. Kaddour “A Comparison of the Predictive Capabilities of Current Failure Theories For Composite Laminates”, **Composite Science and Technology 58 (1998) 1225-1254**, File Name: [16-GVT_Soden_PFA_Comparison_98.pdf](#)
17. **FAILURE CRITERIA:** A. Puck, H. Schurmann “Failure Analysis of FRP Laminates by Means of Physically Based Phenomenological Models”, **Composite Science and Technology 58 (1998) 1045-1067**. File Name: [17-GVT_Puck_98.pdf](#)
18. **FAILURE CRITERIA:** P. D. Soden, M. J. Hinton, and A. S. Kaddour “Lamina Properties Lay-up Configurations and Loading Conditions For A Range of Fiber-Reinforced Composite Laminates”, **Composite Science and Technology 58 (1998) 1011-1022**. File Name: [18-GVT_Soden PFA Test config 98.pdf](#)
19. **FAILURE CRITERIA:**M. J. Hinton, and P. D. Soden, “Prediction Failure In Composite Laminates: The Background to the Exercise”, **Composite Science and Technology 58 (1998) 1001-1010**. File Name: [19-GVT_Hinton_PFA_Backgr_98.pdf](#)
20. **SIFT FAILURE CRITERIA:**R. Li, D. Kelly, R. NESS, “Application of a First Invariant Strain Criterion for Matrix Failure in Composite Materials”, Journal of **Composite Materials, Vol. 37, No. 33/2003**. File Name: [20-GVT_SIFT.pdf](#)
21. **SIFT FAILURE CRITERIA:** J. Hartsmith, “Formulation of fiber failure criteria for fiber polymer comp in terms of strain invariants” **Boeing Technical Report** File Name: [21-GVT-Formulation of fiber failure criteria for fiber polymer comp in terms of strain invariants.pdf](#)
22. I. Daniel, , J. J. Luo, Z. Sun, “Constitutive behavior and damage Characterization of High temperature Composite”, Air Force Scientific research Laboratory, Final report, August, 2001. File Name: [22-GVT_Polymer Composites-AFSOR-2001.pdf](#)
23. **PLY THICKNESS EFFECT:** A. Lavoie, “Scaling Effects on Damage Development, Strength, and Strain-Rupture Life of Laminated Composites in Tension”, **PHD Thesis, April 4th, 1997, VPI, Blacksburg, Virginia**, File Name: [23-GVT-Lavoie_phdScalingEffect.pdf](#)
24. **3D COMPOSITE TEST:** B. Cox, M. S. Dadkhah, “The Macroscopic Elasticity of 3D woven Composites,”, **Journal of Composite materials, Vol 29, No. 6 1995** File Name: [24-GVT_Cox-3D-LC-HC-Comp.pdf](#)
25. J. Datsko, “Directionality of Strain Hardening”, **Book published: Material Properties and Manufacturing Processes**, John Wiley & Sons, Inc, March 1966. File Name: [25-GVT_Directionalityofstrainhardening.pdf](#)

26. G. Morsher, and V. Pujar, "Melt Infiltrated SiC Composite for Gas turbine Engine Application" Proceeding of 49th ASME IGTI, Power for Land Sea and Air, June 14-17, Vienna Austria. File Name: 26-GVT-paper-ASME GT2004-53196.pdf.
27. **FAILURE CRITERIA:** F. Abdi, D. Huang "GENOA Failure Mechanisms and formulations". Alpha STAR Internal Technical Report, November, 2006. Filename: A) 27-GVT-Failure_mechanism-Formulations.doc
28. **FAILURE CRITERIA:** A. Puck, H. Schurmann " Failure Analysis of FRP Laminates by Means of Physically Based Phenomenological Models", Composite Science and Technology 62 (2002) 1633-1622. File Name: 28-GVT_Puck-cst.pdf
29. **NDE Technique:** Nondestructive Characterization of heat damage in graphite/epoxy composites: A state-of-the art report, George A. Matzkanin, Nondestructive Testing Information Analysis Center (NTIAC), Texas Research Institute Austin, Inc, 415 Crystal Creek Drive, Austin, TX 78746. File Name: 29-GVT_Thermal-Aging-GR-EP.pdf
30. **METAL MATRIX (Theory):** Pappu Murthy, Christos Chamis, "METCAN Theoretical manual", NASA TM 106025: Feb 1993. 30-GVT_MetcanTheoreticalManual (2).pdf
31. **COMPOSITE DESIGN GUIDE:** B. N. Cox, J. Flanagan, "Hand Book of Analytical Method for Composites", NASA Contractors Report 4750, march 1997. File Name; 31-GVT-Handbook of Analytical Methods for Textile Composites.pdf
32. **COMPOSITE CHOPPED FIBER:** Agarwal, B. D. and Broutman, L. J., "Analysis and Performance of Fiber Composites, Chapter 4 (Short Fiber Composites", 2nd Edition, John Wiley and Sons, Inc., 1990.",. File Name; 32-GVT_Ch4-Short-Fiber-Composite.pdf
33. **NANO-COMPOSITE:** S. J. Farkland, T. Bandorawalla, and T. S. Gates, "Calculation of Non-Bonded Forces Due to Sliding of Bundled Carbon Nano Tubes". 44th AIAA/ASME/ASCE/AHS Structures, Structural Dynamics, and Materials Conference, 7-10 April 2003, Norfolk, Virginia. File Name; 33-GVT_AIAA-2003_1536-Nanotube.pdf
34. **CRACK DENSITY:** J. Zhang., J. Fan, and C. Soutis., " Analysis of multiple Matrix Cracking in [Om/90n]s Composite Laminates-Part 1: In Plane Stiffness Properties],. Composites. Volume 23. Number 5. September 1992. 0010-4361/92/050291-08c 1992. Butterworth-Heinemann Ltd. File Name: 34-GVT-Analysis of Multiple Matrix cracking in composite laminates.pdf
35. **CRACK DENSITY:** J. Zhang., J. Fan, and C. Soutis., " Analysis of multiple Matrix Cracking in [Om/90n]s Composite Laminates-Part 2: Development of transverse ply Cracks],. Composites. Volume 23. Number 5. September 1992. 0010-4361/92/050291-06c 1992. Butterworth-Heinemann Ltd. File Name: 35-GVT-Analysis of Multiple Matrix cracking in composite laminates part 2.pdf.
36. **COMPOSITE A_B BASE ALLOWBLE GUIDE:** R. Rice, R. Randall, J. Bakucakas, S. Thompson., "Development of MMPDS Handbook Aircraft Design Allowables". Prepared for the 7th Joint DOD/FAA/NASA Conference on Aging Aircraft, September 8-11, 2003, New Orleans,

- LA. File Name: a) 36-GVT_Material-Allowable-SKMBT_C450070712141501.pdf, b) 36-GVT_Present-Material-Allowable-SKMBT_C450070712141501.pdf
37. **FAILURE CRITERIA:** C. Davila, P. Pedro Camino, Cherry Rose “ Failure Criteria for FRP Laminates”, Composite Journal of Composite Materials, Vol 39, No. 4/2005. File Name: 37-GVT_Larc failure criteria.pdf
 38. **CRACK DENSITY TEST:** G. N. Morsher, H. M. Yun, J. A. DiCarlo “ Matrix Cracking in 3D Orthogonal Melt-Infiltrated SiC/SiC Composites with Various Z-Fiber Types”, J. Am. Ceram. Soc., 88 [1] 146,153 (2005), DOI: 10.1111/j.155-2916.2004.00029.x File Name: 38-GVT_Matrix-Crack3D-Orthogonal-MorschYunDiCarloJAmCer3D2005.pdf
 39. **CRACK DENSITY THESIS:** Ray Walton Grenoble, “*Mechanical Properties and Durability of a Composite Material at Cryogenic Temperatures*”. Doctor of Philosophy, Thesis in Mechanical engineering, May 2006 . File Name: 39- GVT_Dissertation-Grenoble-2006.pdf
 40. Nicolas Chretien, “*Numerical Constitutive Models of Woven and Braided Textile Structural Composites*”. Master of Science, Thesis in Aerospace engineering, April, 16, 2002 . File Name: 40-GVT_NUMERICAL-CONSTITUTIVE-MODELS-WOVEN-BRAIDED-TEXTILE-STRUCTURAL-COMPOSITES.pdf
 41. J. H. Gosse, “ *An Overview of the Strain Invariant Failure Theory (SIFT)*”, The Boeing Book Publication, 2004. File Name: 41-GVT_Overview-SIF-Gosse.pdf
 42. Fu-Kuo. Chang, Kuo-Yen. Chang, “ *A Progressive Damage Model for Laminated Composites Containing Stress Concentrations*”, Journal of Composite Materials, Vol. 21-September, 1987. File Name: 42-GVT_progressive-damage-model-laminated-composites-containing-stress-concentrations.pdf
 43. S. Tan, “ *A Progressive Damage Model for Laminated Composites Containing Openings*”, Journal of Composite Materials, Vol. 25-May, 1991. File Name: 43-GVT_progressive-failure-Composite-containing-openings.pdf
 44. N. L. Post, John Bausano, Scott W. case, John J. Lesko, “ *Modeling the remaining strength of structural composite material subjected to fatigue*”, International Journal of Fatigue, 28 (2006) 1100-1108, www.elsevier.com/locate/ijfatigue. File Name: 44-GVT_fatiguemod21-06.pdf
 45. Y. Yonggming, S. Mahadevan, “ *A unified multiaxial fatigue damage model for isotropic and anisotropic material*”, International Journal of Fatigue, 29 (2007) 347-359, www.elsevier.com/locate/ijfatigue. File Name: 45-GVT_fatiguemodel-06.pdf
 46. **CRACK DENSITY COMPOSITE (TEST-THEORY):** A. Tounsi, K. H. Amara, A. Benzair, “ *On the transverse cracking and stiffness degradation of aged angle-ply laminates*”, International Journal of Fatigue, 60 (2006) 2561-2564, www.elsevier.com/locate/ijfatigue. File Name: 46-GVT_fatiguemodel3-06.pdf
 47. C. S. Lopes, Z. Gurdal, P. Camanho, B. Talling “*Progressive Failure Analysis of Tow Placed Variable Stiffness composite Panel*” AIAA-2007-2092, Honolulu, Hawaii, April, 2007. Filenames: 47-GVT_Paper_SDM2007-LaRC.pdf

48. **MATERIAL A_B BASE:** DOT/FAA/AR-03/19, Final Report, “*Material Qualification and Equivalency for Polymer Matrix Composite Material System: Updated Procedure*” **Office of Aviation Research, Washington, D.C. 20591, U.S. Department of Transportation Federal Aviation Administration, September, 2003.** Filenames: 48-GVT_DOT-FAA-AR-03-19-Material-Qualification-Equivalency-PolymerMatrixCompositeMaterialSystems-UpdatedProcedure.pdf
49. **COMPOSITE A_B BASE ALLOWBLE GUIDE:** Department of Defense Handbook-OF Polymer Matrix Composites, “Volume 1. Guideline For Characterization of Structural Materials” MIL-HDBK-17-1E, Volume 1of 3, 23 January 1997, Superseding MIL-HDBK-17-1D, 25 February, 1994. Approved for Public Release; distribution unlimited. Filenames: 49-GVT_DOD-HDBK-17_Vol 1 Polymer Matrix Composites.pdf
50. **T_JOINT:** H. J. Phillips., R. A. Sheno, “ Damage Tolerance of Laminated Tee Joints in FRP Structures”, Composite Part A 29A (1988) 465-478, 1988 Elsevier Science Limited , Printed in Great Britain 1359-835X/98/\$19.0. File Name: 50-GVT_laminated_tee_joints_in_FRP_structures.pdf
51. **BOLTED JOINT:** O. Sayman, R. Siyahkoc, and F. Sen, “ Experimental Determination of Bearing Strength in Fiber Reinforced Laminated Composite Bolted Joints under Preload”, Journal of Reinforced Plastics and Composites, Vol 26, No 10/2007. File Name: 51-GVT_SKMBT_C450071226120401.pdf
52. **EPOXY TEST:** N. Kimiyoshi, F. Toru, “ Static and Fatigue crack growth of epoxy adhesive”, 1998 Elsevier Science Ltd International Jopurnal of Adhesion and Adhesives (18 (1998)199-213. Filename: 52-GVT_IntlJournalVOL18Numb3.pdf
53. **COHESIVE:** G. Mabson, L. Deobald, and B. Dopker, “Fracture Interface Elements for the Implemenation of the Virtual Crack Closure Technique”. AIAA-2007-2376, Honolulu, Hawaii, April, 2007. Filenames: 53-GVT_AIAA_2007_2376-VCCT-Mabson.pdf
54. **FATIGUE COHESIVE:** L. Deobald, G. Mabson, and B. Dopker, “Interlaminar Fatigue Element for Crack Growth Based on Virtual Crack Closure technique”. AIAA-2007-2091, Honolulu, Hawaii, April, 2007. Filenames: 54-GVT_AIAA_2007_2091-VCCT-Fatigue-Mabson.pdf
55. **FAILURE CRITERIA:** D. Ambur, VA; N. Jaunky, C. Davila, “Progressive Failure of Composite Laminates Using LaRC02 Criteria”, AIAA Paper 2004-1595, 45th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference. Filename: 55-GVT_AIAA_2004_1595-LaRC-FailureCriteria-Davila.pdf
56. **FAILURE CRITERIA:** C. Davila, “Failure Criteria for FRP Laminate in Plane Stress”, AIAA Paper 2003-1991, 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference. Filename: 56-GVT_AIAA_2003_1991-LaRC-FailureCriteria.pdf
57. **BONDED JOINT:** George F. Leon, Michael F. Trezza, Jeffrey C. Hall,¹ and Kelli Bittick, “Evaluation of a Carbon Thermoplastic to Titanium Bonded Joint”, ASTM-STP1455-11707.081503. Filename: 57-GVT_small.ASTM-STP1455-11707.081503.REV.pdf

58. T. R. Guess, E. D. Reedy, M. E. Stavig, “Mechanical Properties of Hysol EA-9394 Structural Adhesive”, SANDIA REPORT SAND95-0229 UC-704, Unlimited Release, Printed February 1995. Filename: [58-GVTHytrol_EA9394_adhesive_properties.pdf](#)
59. **HONEYCOMB:** Youngkeun. Hwang, “NUMERICAL ANALYSIS OF IMPACT-DAMAGED SANDWICH COMPOSITES”, A Dissertation of DOCTOR OF PHILOSOPHY December 2003, Submitted to the Department of Aerospace Engineering and the faculty of the Graduate School of Wichita State University. Filename: [59-GVT_Impact-Damaged-Sandwich-Composites.pdf](#).
60. **HONEYCOMB:** Suresh Raj Keshavanarayana, “THE STATIC INDENTATION BEHAVIOR OF COMPOSITE SANDWICH PANELS WITH THIN QUASI –ISOTROPIC SKINS”, A Dissertation of DOCTOR OF PHILOSOPHY December 2001, Submitted to the Department of Aerospace Engineering and the faculty of the Graduate School of Wichita State University. Filename: [60-GVT_static.Indentation.Behavior-Composite-Panels.pdf](#).
61. **FATIGUE THEORY:** Michael C. H. Lee, “A thermodynamic Cumulative Damage Theory for Fatigue Longevity Prediction”. Delphi Research lab **Technical Report**, DRLR-0363, December, 2005. Filename: [61-GVT-DRLR-0363Mike Lee.pdf](#)
62. **COHESIVE:** Yuichiro Aoki, “Progressive failure analysis on composite laminates using the cohesive element”. Advanced Composite Technology Center, Japan Aerospace Exploration Agency, November 29, 2005. Filename: a) [62-GVT-paper-Delamination-Impact-aoki-Jaxa.pdf](#), b) [62-GVT-Present-Delamination-Impact-aoki-Jaxa.ppt](#)
63. **ADHESIVE BOND TEST:** T. R. Guess, E. D. Reedy, M. E. Stavig, “Mechanical Properties of Hysol EA-9394 Structural Adhesive”, SANDIA REPORT, SAND95-0229 o UC-704, Unlimited Release, Printed February 1995. Filename: [63-GVT-Hytrol_EA9394_adhesive_properties.pdf](#)
64. **IMPACT TEST:** Edward Wolf, “IMPACT DAMAGE MECHANICS IN SEVERAL LAINATED MATERIAL SYSTEMS”, A Dissertation of MASTER OF SCIENCE March, 1992, Submitted to the Department of Aeronautics and Astronautics, Aerospace Engineering and the faculty of the Graduate School of Technology Laboratory for Advanced Composites, Department of Aeronautics and Astronautics, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, Massachusetts 02139 University. Filename: [64-GVT-MIT-Master-Thesis-1992-Impact-Composite-Several-Laminate_27471893.pdf](#)
65. **IMPACT TEST:** Douglass S. Cairns, “THE IMPACT AND POST –IMPACT RESPONSE OF GRPHITE?EPOXY AND KEVLAR/EPOXY STRUCTURES”, A Dissertation of DOCTOR OF PHILOSOPHY August 1987, Submitted to the Department of Aeronautics and Astronautics, Aerospace Engineering and the faculty of the Graduate School of Technology Laboratory for Advanced Composites, Department of Aeronautics and Astronautics, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, Massachusetts 02139 University. Filename: [65-GVT-Phd-Thesis-1987-Impact-PostImpact-Composite_18263837.pdf](#)
66. **GLARE:** R.C. Alderliesten, J.J. Homan, “Fatigue and damage tolerance issues of Glare in aircraft structures”, International Journal of Fatigue 28 (2006) 1116–1123, www.elsevier.com/locate/ijfatigue. Filename: [66-GVT_Fatigue-damage-tolerance-glare.pdf](#)

67. Yeh, H.Y. and Chen V. L., (1996). "Experimental Study and Simple Failure Analysis of Stitched J-Stiffened Composite Shear Panels," *Journal of Reinforced Plastics and Composites*, Vol 15, November 1996. Pp1070-1087. Filename: [67-GVT_postbuckle-testing.pdf](#)
68. **GLARE**:R.C. Alderliesten, J. Schijve, S. van der Zwaag, "Application of the energy release rate approach or delamination growth in Glare", *Engineering Fracture Mechanics* 73 (2006) 697–709, www.elsevier.com/locate/engfracmech. Filename: [68-GVT-delamination-growth-Glare.pdf](#)
69. **T-JOINT**: A. R. Dodkins., R. A. Shenoj & G. L. Hawkins, "Design of Joints and Attachments in FRP Ships' Structures", *Marine Structures* 7 (1994) 365-398. File Name: [69-GVT_Design_joints_in_FRP_Ship.pdf](#)
70. **T-JOINT**: R.A. Shenoj, P.J.C.L. Read and G.L. Hawkins, "Fatigue failure mechanisms in fibre-reinforced plastic laminated tee joints", *Int. J. Fatigue* Vol. 17. No. 6, pp. 415-426, 1995 Copyright © 1995 Elsevier Science Limited Printed in Great Britain. All rights reserved 0142-1123/95/\$10.00. File Name: [70-GVT_Fatigue_joints_FRP.pdf](#)
71. **T-JOINT**: R.A. Shenoj, and G.L. Hawkins, "Influence of material and geometry variations on the behaviour of bonded tee connections in FRP ships", Received January 1992; accepted in revised form 11 March 1992. File Name: [71-GVT_joints_Material-geometry-Variation-FRP.pdf](#)
72. **T-JOINT**: J. J. Blake. R. A. Shenoj, J. House, T. Turton, "Progressive damage analysis of tee joints with viscoelastic inserts", *Composites Part A; applied science and manufacturing* 11 October 2000. File Name: [72-GVT_joints_PFA-joint-FRP.pdf](#)
73. **T-JOINT**: J. J. Blake. R. A. Shenoj, J. House, T. Turton, "Strength modelling in stiffened FRP structures with viscoelastic inserts for ocean structures", *Ocean Engineering* 29 (2002) 849–869. File Name: [73-GVT_joints_strength-FRP.pdf](#)
74. **NANO**: Y. Dzenis, "Continuous Carbon Nano Fiber for Next Generation Structural nanocomposite", AIR FORCE TECHNICAL REPORT, University of Nebraska, AFR-SR-AR-TR-07-0177, May-15-07. File Name: a) [74-GVT_Report-Continuous-CarbonNanofibers-structuralComposites.pdf](#), b) [74-GVT_Article-carbon-nano-fiber](#)
75. **NANO**: Mohammed F. Uddin and C. T. Sun, "Impact Resistance And Toughness Of Composite Laminates With Nanoparticle-Enhanced Matrix". *Sampe 2008 Conference Paper*, Long beach, CA, May 2008. Filename: a) [75-GVT_SAMPE-Paper-nano-impact-toughness-test.pdf](#).
76. E. Velazquez, and J. B. Kosmatka, "Acoustic Emission Monitoring of Interlaminar Micro-Cracking and Strength". **AIAA-2008-2015, Chicago, Illinois, April, 2008.** Filenames: [76-GVT_SAMPE-Paper-ILT-Acoustic-Emmision-test-Kosmatka.pdf](#).
77. Wen-Zhong Cai, Shan-Tung Tu, "A Physically Based Percolation Model of the Effective Electrical Conductivity of Particle Filled Composites". **Journal of Composite Materials, Vol. 40, No. 23/2006.** November 11, 2005). Filenames: [77-GVT-Paper-JournalofComposite-Conductivity.pdf](#).
78. Wen-Zhong Cai,1 Shan-Tung Tu And Jian-Ming Gong, "A Physically Based Percolation Model of the Effective Electrical Conductivity of Particle Filled Composites". **Journal of Composite**

Materials 2006; 40; 2131 originally published online Dec 11, 2006; *Journal of Composite Materials*, DOI: 10.1177/0021998306062312, [FileNames: 78-GVT-Paper-composite-Percolation-conductivity.pdf](#).

79. **Thesis GLARE:** Michiel HAGENBEEK, “Characterisation of Fibre Metal Laminates under Thermo-mechanical Loadings” doctor of Philosophy Technische Universiteit Delft, 15 november 2005. [FileNames: 79-GVT-Thesis-Phd.Glare-test-Thermo-mechanical-ae_hagenbeek_20051115.pdf](#).
80. K Y Yan, Q Z Xue, Q B Zheng and L Z Hao, “The interface effect of the effective electrical conductivity of carbon nanotube composites”. **IOP PUBLISHING NANOTECHNOLOGY, Nanotechnology 18 (2007) 255705 (6pp) doi:10.1088/0957-4484/18/25/255705**. [FileNames: 80-GVT-Paper-IOP-PUBLISHING-NANOTECHNOLOGY-Conductivity.pdf](#).
81. **NANO TEST:** Asa H. Barber, Sidney R. Cohen, H. Daniel Wagner, “Measurement of carbon nanotube–polymer interfacial strength”. **APPLIED PHYSICS LETTERS, VOLUME 82, NUMBER 23, 9 JUNE 2003**. [FileNames: 81-GVT-Paper-nanotube-interfacialstrength-APPLIED-PHYSICS2003-Barber.pdf](#)
82. **NANO TEST:** Florian H. Gojnya , Malte H.G. Wichmanna, Bodo Fiedlera, Wolfgang Bauhoferb, Karl Schulte, “Influence of nano-modification on the mechanical and electrical properties of conventional fibre-reinforced composites”. **Composites: Part A 36 (2005) 1525–1535**, www.elsevier.com/locate/compositesa [FileNames: 82-GVT-Paper-nano-modification-Elsevier-2005-Gojny.pdf](#)
83. **NANO TEST:** Asa H. Barber, Sidney R. Cohen, H. Daniel Wagner, “Carbon nanotube/carbon fiber hybrid multiscale composites”. **JOURNAL OF APPLIED PHYSICS, VOLUME 91, NUMBER 9, 1 MAY 2002**. [FileNames: 83-GVT-Paper-nanotube-hybrid-multiscale- JOURNAL-APPLIED-PHYSICS2002-Thosteson.pdf](#)
84. S. J. V. Frankland, A. Caglar, D. W. Brenner, and M. Griebel, “Molecular Simulation of the Influence of Chemical Cross-Links on the Shear Strength of Carbon Nanotube-Polymer Interfaces”. **J. Phys. Chem. B 2002, 106, 3046-3048**. [FileNames: 84-GVT-Paper-Molecular-shear-strength-nanotube-JOURNAL-PHYS-chem-2002-Frankland.pdf](#)
85. Kuang-Ting Hsiao, Justin Alms and Suresh G Advani, “Use of epoxy/multiwalled carbon nanotubes as adhesives to join graphite fibre reinforced polymer composites”. **INSTITUTE OF PHYSICS PUBLISHING NANOTECHNOLOGY Nanotechnology 14 (2003) 791–793 PII: S0957-4484(03)58013-8**. [FileNames: 85-GVT-Paper-nanotube-MWCNT- INSTITUTE-PHYSICS-Hsiao.pdf](#)
86. Vinod P. Veedu, Anyuan Cao, Xuesong Li, Kougen Ma, Caterina Soldano, Swastik Kar, Pulickel M. Ajayan, and Mehrdad N. Ghasemi-Nejhad, “Multifunctional composites using reinforced laminae with carbon-nanotube forests”. **nature materials VOL 5 JUNE 2006** www.nature.com/naturematerials, **Nature PublishingGroup**. [FileNames: 86-GVT-Paper-nanotube-MultiFunctional- Nature PublishingGroup.pdf](#)
87. **COHESIVE:** P. P. Camanho, C. G. Davila, S. T. Pinho, “ Fracture Analysis of Composite Co-Cured Structural Joints using Decohesion Elements”, 2004 Blackwell Publishing Ltd. Fatigue

Fract Engng Mater Struct 27, 745-757. File Name: 87-GVT_Larc-Fracture analysis of composite co-cured 87-GVT_Larc-structural joints using decohesion elements.pdf

88. **POST BUCKLING:** Brian G. Falzon, Marco Cerini, “An automated hybrid procedure for capturing mode-jumping in postbuckling composite stiffened structures”, Composite Structures 73 (2006) 186–195. www.elsevier.com/locate/compstruct. File Name: 88-GVT_postbuckling composite stiffened structures.pdf
89. **POST BUCKLING:** D. Sleight, “Progressive Failure Analysis Methodology for Laminated Composite Structures”. NASA/TP-1999-209107, March 1999. File Name: 89-GVT_NASA-PFA-Methodology-Sleight.pdf
90. **COMPOSITE DEFINITION,** “Laminate orientation Code” Advanced Composites Design Guide, Volume 1-A design, July 1983. File Name: 90-GVT_DOD-GUIDE.Lamination-code.pdf
91. **BOLTED-JOINT:** B. Vangrimde a, R. Boukhili, “Analysis of the bearing response test for polymer matrix composite laminates: bearing stiffness measurement and simulation,”, Composite Structures 56 (2002) 359–374, www.elsevier.com/locate/compstruct, 2002 Published by Elsevier Science Ltd. File Name: 91-GVT_Bolted-Joint-bearing-test-PMC.pdf
92. **BOLTED-JOINT-BEARING:** Marie-Laure Dano, Elhassania Kamal, Guy Gendron, “Analysis of bolted joints in composite laminates: Strains and bearing stiffness predictions,”, Composite Structures 79 (2007) 562–570, www.elsevier.com/locate/compstruct, 2006 Published by Elsevier Science Ltd. File Name: 92-GVT_Bolted-Joint-composite- laminates-Strains-bearingstiffness-predictions.pdf
93. **BOLTED-JOINT-BEARING:** F. Pierron, F. Cerisier, M. Grediac, Guy Gendron, “A numerical and Experimental Study of Woven Composite Pin-Joints,”, Journal of Composite Materials, Vol. 34, No 12/2000, July, 14, 1994. File Name:93-GVT_Bolted-Joint-Numerical-Experiment-woven-Composite- Pin-joints.pdf
94. **NANO:** Mohammed F. Uddin and C. T. Sun, “Impact Resistance And Toughness Of Composite Laminates With Nanoparticle-Enhanced Matrix”. Composites Science and Technology journal homepage: www.elsevier.com/locate/compscitech. Filename: a) 94-GVT_CST-Paper-nano-Compressive-strength-Uddin.pdf
95. **POROSITY:** A. M. Rubin and K. L. Jerina, “Evaluation Of Porosity In Composite Aircraft Structures”. Mechanics of Composite Materials, Vol. 30, No. 6, 1994. Filename: 95-GVT-Paper-Porosity-composite.pdf
96. **THICK-COMPOSITE:** J. Lee, C. Soutis, “Measuring the notched compressive strength of composite laminates: Specimen size effects”. Composites Science and Technology 68 (2008) 2359–2366; www.elsevier.com/locate/compscitech. Filename: a) 96-GVT-Paper-Elsevier-thickness-effect-composite-matched_composite_strength.pdf
97. **CRYOGENIC-IM7-Peti5:** Karen S. Whitley and Thomas S. Gates, “Thermal/Mechanical Response And Damage Growth In Polymeric Composites At Cryogenic Temperatures”, 43rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Denver, CO, April 22-25, 2001, American Institute of Aeronautics and

Aeronautics, AIAA-2002-1416 .File Name: 97-GVT_SDM43-AIAA-2002-1416-PMC-Cryogenic IM7-Peti5.pdf

98. **FATIGUE WIND TURBINE BLADE:** R. P. L. Nijssen, A. M. Van Wingerde, D. R. V. Van, “Wind Turbine Rotor Blade Materials: Estimating Service Lives”. SAMPE Journal, Vol 43, No. 2, March /April 2007. Filenames: a) 98-GVT_blade-Fatigue-SAMPEJournal-07.pdf.
99. **FAILURE INVESTIGATION:** J. D. Russell, “Failure Where Do We Go From Here”. SAMPE Journal, Vol 43, No. 2, March /April 2007. Filenames: a) 99-GVT_Failure-Composite-CAI-SAMPE-Journal-07.pdf.
100. **CRYOGENIC-IM7-Peti5:** Theodore F. Johnson and Thomas S. Gates, “High Temperature Polyimide Materials In Extreme Temperature Environments1”, AIAA 42ND SDM CONFERNECE, SEATTLE, WA, APRIL 16, 2001. PAPER (AIAA2001-1214) American Institute of Aeronautics and Astronautics. File Name: 100-GVT_SDM42-AIAA2001-1214-PMC-Cryogenic IM7-Peti5.pdf
101. **ENVIRONMENTAL DEGRADATION-TEST-IM7-PETI5:** “Environmental Exposure Effects on HSCT Developed Metals and Polymeric Composites”, NASA Task Assignment Number 40, NAS1-20220. Technical Report to Boeing Commercial Airplane Group, Seattle, Washington 98124-2207, IDWA No. 5592E9 File Name: 101-GVT_Technical report-Degradation-IM7-Peti5.doc
102. **Environmental degradation-Toughness-IM7-Peti5:** J. Fukushima “Expanded Performance Evaluation Of Materials And Structures”, Technical Report to Boeing Commercial Airplane Group. December 15, 1999. File Name: 102-GVT_Technical report-Degradation-Toughness-IM7-Peti5.doc
103. **CRACK DENSITY COMPOSITE (MODEL-EXPERIMENT):** R. Joe1, J. Varna “Analytical modeling of stiffness reduction in symmetric and balanced laminates due to cracks in 90 layers”, Composites Science and Technology 59 (1999) 1641±1652. File Name: 103-GVT_Jouranl-Paper-Crack-Density-Composite.pdf
104. **CRACK DENSITY COMPOSITE (CTE):** M. Fellah, A. Tounsi, K.H. Amara , E.A. Adda Bedia, “Effect of transverse cracks on the effective thermal expansion coefficient of aged angle-ply composites laminates”, Theoretical and Applied Fracture Mechanics 48 (2007) 32–40 File Name: 104-GVT_Jouranl-Paper-Crack-Density-CTE.pdf

NASA-GRC Reference Published Papers

1. Levon Minnetyan, Christos C. Chamis “*The Compact Tension, C(T), Specimen in Laminated Composite Testing*”. ASTM STP 1285, Composite Materials Fatigue and Fracture (sixth Volume), June 1997, pp. 531-550. [Filename: 1-NASAGRC_The Compact Tension, C\(T\), Specimen in Laminated Composite Testing.](#)
2. Bertrand R. Mauget, Christos C. Chamis, Levon Minnetyan “*Computational Tracking of Composite Manufacturing with Fiber Performs*”. *American Society of Testing and Materials, 2001.* ASTM Journal of Composite Technology and Research, Vol. 23, No. 4, October 2001, pp.

254-258 [Filename: 2-NASAGRC_Computational Tracking of Composite Manufacturing with Fiber Performs](#)

3. Dade Huang, Levon Minnetyan, P.E., Member, ASCE, “*Damage Progression in Carbon Fiber Reinforced Plastic I-Beams*”. ASCE Journal of Composites for Construction, Vol. 2, No. 1, February 1998, pp. 38-45 [Filename: 3-NASAGRC_Damage Progression in Carbon Fiber Reinforced Plastic I-Beams](#)
4. Levon Minnetyan, Christos C. Chamis “*Damage Tolerance of Large Shell Structures*”. ASME Journal of Pressure Vessel Technology, Vol. 121, No. 2, May 1999, pp. 188-195. [Filename: 4-NASA-GRC-Damage Tolerance of Large Shell Structures](#)
5. Levon Minnetyan, James Rivers, Christos Chamis, Pappu Murthy, “*Discontinuously Stiffened Composite Panel Under Compressive Loading*”. Journal of Reinforced Plastics and Composites, Vol. 14, No. 1, January 1995, pp. 85-98. [Filename: 5-NASAGRC_Discontinuously Stiffened Composite Panel Under Compressive Loading](#).
6. Levon Minnetyan, Ryan A. Lund, Christos Chamis, Pascal Gotsis “*Evaluation of Progressive Fracture in Woven and Non-Woven Composite Panels*”. Air Force Structural Integrity program (ASIP), San Antonio, Texas, December 2-4, 1997. [Filename: 6-NASAGRC_Evaluation of Progressive Fracture in Woven and Non-Woven Composite Panels](#).
7. Bertrand Mauget, Levon Minnetyan, Christos Chamis “*Large Deformation Nonlinear Response of Soft Composite Structures Via Laminate Analogy*”. SAMPE Journal of Advanced Materials Volume 34, No. 2, April 2001, pp. 21-26. [Filename: 7-NASAGRC_Large Deformation Nonlinear Response of Soft Composite Structures Via Laminate Analogy](#).
8. Pascal Gotsis, Christos Chamis, Levon Minnetyan “*Prediction of Composite Laminate Fracture; Micromechanics and Progressive Fracture*”. Composites Science and Technology, Vol. 58, 1998, pp. 1137-1149 [Filename: 8-NASAGRC_Prediction of Composite Laminate Fracture; Micromechanics and Progressive Fracture](#).
9. Levon Minnetyan, Christos Chamis “*Pressure vessel fracture simulation*”. ASTM STP 1220, Fracture Mechanics: 25th Volume, August 1995, pp. 671-684. [Filename: 9-NASAGRC_Pressure Vessel Fracture Simulation](#)
10. Levon Minnetyan, Pascal Gotsis, Christos Chamis “*Progressive Damage and Fracture of Un-stiffened and Stiffened Composite Pressure Vessels*”. Journal of Reinforced Plastics and Composites, Vol. 16, No. 18, 1997 pp. 1711-1724. [Filename: 10-NASAGRC_Progressive Damage and Fracture of Un-stiffened and Stiffened Composite Pressure Vessels](#).
11. Christos Chamis, Pascal Gotsis, Levon Minnetyan, “*Progressive Fracture and Damage Tolerance of Composite Pressure Vessels*”. [Filename: 11-NASAGRC_Progressive Fracture and Damage Tolerance of Composite Pressure Vessels](#).
12. Dade Huang, Levon Minnetyan, “*Progressive Fracture of Stitched Stiffened Composite Shear Panels in the Post-Buckling Range*”. Journal of Reinforced Plastics and Composites, Vol. 20, No. 18, 2001, pp. 1617-1632. [Filename: 12-NASAGRC_Progressive Fracture of Stitched Stiffened Composite Shear Panels in the Post-Buckling Range](#).

13. Levon Minnetyan, Christos Chamis “*Progressive Fracture of Composites Cylindrical Shells Subjected to External Pressure*”. **ASTM Journal of Composite Technology and Research, Vol. 19, No. 2, April 1997, pp. 65-71** [Filename: 13-NASAGRC_Progressive Fracture of Composites Cylindrical Shells Subjected to External Pressure.](#)
14. Levon Minnetyan, Pappu Murthy, Christos Chamis, “*Progressive Fracture in Composites Subjected to Hygrothermal Environment*”. International Journal of Damage Mechanics, Vol. 1, No. 1, January 1992, pp. 60-79. [Filename: 14-NASAGRC_Progressive Fracture in Composites Subjected to Hygrothermal Environment.](#)
15. Christos Chamis, Pappu Murthy, Levon Minnetyan “*Progressive Fracture in Composite Structures*”. ASTM STP 1285, Composite Materials Fatigue and Fracture (sixth Volume), June 1997, pp. 70-84. [Filename: 15-NASAGRC_Progressive Fracture in Composite Structures.](#)
16. Levon Minnetyan, Christos Chamis “*The C(T) Specimen in Laminated Composite Testing*”. ASTM STP 1285, Composite Materials Fatigue and Fracture (sixth Volume, June 1997, pp. 531-550. [Filename: 16-NASAGRC_The C\(T\) Specimen in Laminated Composite Testing.](#)
17. Levon Minnetyan, Christos Chamis, Pappu Murthy “*Structural Behavior of Composites with Progressive Fracture*”. Technical Memorandum 102370, January 1990, 18 pp. [Filename: 17-NASAGRC_Structural Behavior of Composites with Progressive Fracture.](#)
18. Levon Minnetyan, Christos Chamis, Pappu Murthy “*Structural Durability of a Composite Pressure Vessel*”. Journal of Reinforced Plastics and Composites, Vol. 11, No. 11, November 1992, pp. 1251- 1269 [Filename: 18-NASAGRC_Structural Durability of a Composite Pressure Vessel.](#)
19. Christos Chamis, Pappu Murthy, Levon Minnetyan, "Progressive Fracture of Polymer Matrix Composite Structures," Theoretical and Applied Fracture Mechanics, Vol. 25, 1996, pp. 1-15. “*Theoretical and Applied Fracture Mechanics 25 (1996) 1 – 15*”. [Filename: 19-NASAGRC_Theoretical and Applied Fracture Mechanics 25 \(1996\) 1 – 15.](#)
20. Levon Minnetyan, Christos Chamis "Progressive Fracture of Adhesively Bonded Composite Structures," Theoretical and Applied Fracture Mechanics, Vol. 31, 1999, pp. 75-84. “*Theoretical and applied fracture mechanics 31 (1999) 75 – 84*”. [Filename: 20-NASAGRC_Theoretical and applied fracture mechanics 31 \(1999\) 75 – 84.](#)
21. Pascal Gotsis, Christos Chamis, Levon Minnetyan .,"Computational Simulation of Damage Progression of Composite Thin Shells Subjected to Mechanical Loads," Theoretical and Applied Fracture Mechanics, Vol. 25, 1996, pp. 211-224. “*Theoretical and Applied Fracture Mechanics 25 (1996) 211 – 224*”. [Filename: 21-NASAGRC_Theoretical and Applied Fracture Mechanics 25 \(1996\) 211 – 224.](#)
22. Christos Chamis, “*Simplified Composite Micromechanics Equations for Hygral, Thermal and Mechanical Properties*”. NASA Technical Memorandum 83320, Thirty Eight Annual Conference of the Society of the Plastics Industry (SPI) Reinforced Plastics/Composites Institute Houston, Texas, February 7-11, 1983. [Filename: 22-NASAGRC_Simplified Composite Micromechanics Equations for Hygral thermal and Mechanical Prop.pdf](#)

23. . Christos Chamis, R. F. Lark, and J,H Sinclair, “*An Integrated Theory for Predicting The Hydrothermomechanical Response of Advanced Composite Structural Components*”. NASA Technical Memorandum 73812, Technical Specialists Conference “Environmental Effects on Advanced Composite Materials” Supported by the American Society of Testing and Materials, Dayton, Ohio, September 29-30, 1977. [Filename: 23-NASAGRC_Integrated theory for predicting the hydrothermomechanical response of advanced composite structu.pdf](#)
24. Christos Chamis, G.H. Abumeri, “*Simulated data for high temperature composite design Hydrothermomechanical*”. Journal of Composite Science and Technology, 200, Vol66-is14-2006 . [Filename: 24-NASAGRC-Metal-Matrix-CST-Vol66-is14-2006.pdf](#)
25. **CERAMIC COMPOSITE THEORY:** P. Murthy, C. Chamis, S.K. Mital, “*Simulated data Computational Simulation of Continious Fiber reinforced Ceramic Matrix Composite Behavior*”. NASA TP-3602, July 1996 . [Filename: 25-NASAGRC_CEMCAN-1996-TP-3602.pdf](#)
26. **CERAMIC COMPOSITE THEORY:** S.K. Mital , P. Murthy, C. Chamis, , “*Modeling of Stress/Strain Behavior of Fiber reinforced Ceramic Matrix Composite including stress redistribution*”. Journal NASA TM-106789, December 1994 . [Filename: 26-NASAGRC_CEMCAN-1994-TM106789.pdf](#)
27. **NANO COMPOSITE:** C. Chamis, Louis M. Handler, “*Nano Composites Mechanistic Property Prediction*”. Proceedings of the American Society for Composites – Twentieth Technical Conference , Philadelphia, PA, Sep 2005, [Filename: a\) 27-NASAGRC_ASC-TechConf-NanoCompMechPropPred-5-18-05.doc](#), b) [27-NASAGRC_Present-ASC-2005-2.ppt](#)
28. C. Chamis, G. Abumeri, “*Probabilistic Dynamic Buckling Of Smart Composite Shells*”. Proceedings of the CANCOM Conference, August 14-17, 2007, Winnipeg, Manitoba, Canada. [Filename: 28-NASAGRC_CANCOM2007-_CDA2_-ProbDynBuck-_15969_-5-8-07 _3_.pdf](#)
29. **EXOSKELETAL BLADE:** C. Chamis, G. Abumeri, “*Aerodynamic Design Of Exo-Skeletal Engine Fan Blades*”, NASA TM2003. [Filename: 29-NASAGRC_TM 2003 AeroDesExoEngFanBla.doc](#)
30. **NODAL BASED FE ANALYSIS:**E. Sutjaho, C. Chamis, G. Abumeri, “*Material Nonlinear Analysis via Mixed Iterative Finite Element Method*”, AIAA-92-2479-CP. [Filename: 30-NASAGRC_Material-Nonlinear-Analysis-Mixed-Iterative-Finite-Element-Method.pdf](#)
31. C. Chamis, Isiah. M. Blankson, “*Exo-Skeletal Engine Novel Concepts*”, NASA TM2004-212621. [Filename: 31-NASAGRC_Exo-NovelEngineConcept-TM-2004-212621.pdf](#)
32. **EXOSKELETAL BLADE:** C. Chamis, G. Abumeri, “*Durability and damage Tolerance Evaluation of a Composite Rotor for Advanced Engine Application*”, AIAA/SDM 46. Austin, Texas, 2005. [Filename: A\) 32-NASAGRC_Exo-Rotor-Durability-AIAA-2005-1834.pdf](#), B) [32-NASAGRC-Present.ppt](#)
33. **DAMPING:** D. A. Saravanos, J. G. Sanfeliz, “*ICAN/Damp-Integrated Composite Analyzer With Damping Analysis Capabilities-User Manual*”, NASA Technical paper 3292, 1992. [Filenames: 33-NASAGRC-ICAN-Dampe-Paper-NASA-TM3292.pdf](#)

34. **DAMPING:** D. A. Saravanos, C. C. Chamis, “Unified Micromechanics of Damping for Unidirectional Fiber reinforced Composites”, NASA Technical Memorandum 102107, August 1989. [FileNames: 34-NASAGRC-Unified-Micromechanics-TM102107.pdf](#)
35. **DAMPING:** D. A. Saravanos, C. C. Chamis, “An Integrated Methodology for Optimizing Structural Composite Damping”, NASA Technical Memorandum 102343, Prepared for the 1989 Winter Annual meeting of the American Society of Mechanical Engineers, San Francisco, Ca, December 10-15, 1989. [FileNames: 35-NASAGRC-Struct-Composite-Damping-TM102343.pdf](#)
36. **NODAL BASED FE ANALYSIS:** S. Nakazawa, “The Mhost Finite Element Program, 3-D Inelastic Method for Hot Structure Components”, Volume 1 Theoretical Manual, , NASA Technical Contract Report CR-182205, March, 1991. [FileNames: 36-NASAGRC-Mhost-Theory.pdf](#)
37. **MICROMECHANICS COMPOSITE THEORY:** P. N. Murthy, C. C. Chamis, “Integrated Composite Analyzer, User-programmers Manual”, NASA Technical Paper 2515, 1986 Winter Annual meeting of the American Society of Mechanical Engineers, San Francisco, Ca, December 10-15, 1989. [FileNames: 37-NASAGRC-ICAN-Manual-1986-TP2515.pdf](#)
38. **PARTICULATE COMPOSITE:** P. N. Murthy, C. C. Chamis, “ICAN/PART: Particulate Composite analyzer, User’s Manual and Verification Studies”, NASA Technical Memorandum 107297, august 1996. [FileNames: 38- NASAGRC-Report-ICAN-Particule-Composite.pdf](#)

Related Reference Published Papers, Reports

1. Frank. Abdi, , “*Concurrent Probabilistic Simulation of High temperature Composite Structural response*”. NASA Contractor Report 198502, July 1994 . [Filename: 1-rpr-96-NASAContractorreport-198502-ConcurrentProbabilisticSimulation.pdf](#)
2. T. Logan, F. Abdi, and J. S. Sobieski, “Multilevel Optimization technique for Aircraft”. **Book Chapter 2- “Multidisciplinary Engineering System: Design and Optimization Techniques and Their Application” Volume 57Academic Press Inc., 1993.** [Filename: 2-rpr-93-Control and Dynamic Systems chapter 1.pdf](#)
3. H. Ide, M. Levin, “Use of 2nd Order CFD Generated Global Sensitivity Derivative for Coupled problems”. **AIAA-1989-1178, Honolulu, AIAA 30th SDM Conference April 3-5, 1989, Mobile, Alabama.** [FileNames: 3-rpr-AIAA-89-1178-2ndorder-CFD-GSE.pdf](#)
4. M. Amirul. Islam, “ 3-D Woven Near Net Shape Structures”, Proceeding of IMECE, Tech Session: TEX-3, Paper # 2., ASME International Congress & Exhibition, November 14-19, 1999, Nashville, TN. [FileNames:4-rpr-3-D Woven Near Net Shape Structures.pdf](#)
5. **HIGH PERFORMANCE COMPUTING:** Junqing Sun, “*High Performance Reconfigurable Computing for Linear Algebra; Design and Performance Analysis*”. Doctor of Philosophy, Thesis in Aerospace engineering, The University of Tennessee, Knoxville, Dec, 2007 . [File Name: 5-rpr-sun-phd-dissertation-final.pdf](#)

6. Structural Design, Analyses, Fabrication, and Testing of the Advanced Enclosed Mast/Sensor System (Advanced Technology Demonstration),” by Carderock Division of the Naval Surface Warfare Center, Materials Sciences Corporation, Ingalls Shipbuilding, and Seemann Composites. NSWCCD-65-TR-1999/2, August 1999.
7. Carpet Plots – High Modulus Graphite/Epoxy, **Prof. H. Kim**, January 1975. File Name: [7-rpr-composite-carpet_plots_high_modulus.pdf](#)
8. Mark Volanthen, and Kalliopi Diamanti “Development of a Practical Optical Fibre System for Health Monitoring Composite Structures”. **AIAA-2006-2213, Newport, RI, May 1-5, 2116.** Filenames: a) [8-rpr_47AIAA-2006-2116-paper-Fiberoptics-Insensys.pdf](#), b) [8-rpr_47AIAA-2006-2116-present-Fiberoptics-Insensys.ppt](#)
9. Jennifer Pierce and Greg Hartman, “MATRIX AND COMPOSITE CHARACTERIZATION OF N720/A”, Final Report, Contract No. 300032, University of Dayton Research Institute, September 2001. Filenames: [9-rpr_UDRI Final Report _N720.pdf](#)
10. **X-33 ACCIDENT INVESTIGATION REPORT:** “Final Report of the X-33 Liquid Hydrogen Tank Test, Investigation Team”, National Aeronautics and Space Administration George C. Marshall Space Flight Center, Huntsville, Alabama 35812, May 2000. Filename: [10-rpr_X-33-Investigation-report_Tank.pdf](#)
11. **COMPOSITE FAILURE CRITERIA:** U. Lcardi, L. Ferrero, “A Comparison Among Several Recent Criteria For the Failure Analysis of Composite”, Journal of Advanced Materials, ISSN 1070-9789, Volume 40, No 4, October 2008. Filename: [11-rpr_failure-Comparison-Composite.pdf](#)
12. **COMPOSITE CRASHWORTHINESS:** David. M. Garner, Danile O. Adams, L. Ferrero, “Test Methods for Composites Crashworthiness; A review ”, Journal of Advanced Materials, ISSN 1070-9789, Volume 40, No 4, October 2008. Filename: [12-rpr_Crash-worthiness-test-Methods-Composite.pdf](#)
13. **OPTIMIZATION:** G. A. Wrenn, “An Indirect Method for Numerical Optimization Using Kreisslmeier Steinhauser Function”, NASA Contractor Report 4220, March 1989. Filename: [13-rpr_MULTI-OBJECTIVE-OPTIMIZATION-Methods.pdf](#)
14. **OPTIMIZATION:** A. R. Dovi, G. A. Wrenn, “Aircraft Design for Mission Performance Using Non-linear Multi-Objective Optimization Method”, Journal of Aircraft, Volume 27, Number 12, December 1990, Pages 1043-1049. Filename: [14-rpr_Aircraft Design-Mission-Performance-Multiobjective-Optimization.pdf](#)
15. **RETROFIT SEISMIC:** Debasis Karmakar, Samit Ray Chaudhuri, Ho Lee, and Masanobu Shinozuka, “PROBABILISTIC EVALUATION OF EFFECT OF RETROFIT ON SEISMIC PERFORMANCE OF VINCENT THOMAS BRIDGE”, AMERICAN SOCIETY OF CIVIL ENGINEERS, International Committee, Los Angeles Section, 5th International Engineering and Construction Conference (IECC’5), August 27-29, 2008. Filename: [15-rpr_Probabilistic-Retro-Fit-Bridge-IECC5.pdf](#)
16. **NANO CONSTRUCTION ENGINEERING** : M. A. Haroun and S. S. Sedky, “NANOTECHNOLOGY AND CONSTRUCTION ENGINEERING”, AMERICAN SOCIETY OF CIVIL ENGINEERS, International Committee, Los Angeles Section, 5th International Engineering and Construction Conference (IECC’5), August 27-29, 2008. Filename: [16-rpr_Nano-Construction-IECC5.pdf](#)
17. **COMPOSITE TEST DATA (Toray):** TORAY COMPOSITES (AMERICA), INC., “AGATE LAMINATE MATERIAL QUALIFICATION OF T700G/#2510, 150 g/m2, Unidirectional Tape

T700s/#2510, 190 g/m², Plain Weave Fabric Style 7781 Finish 558/#2510, 295 g/m², Glass Fiber Fabric TEST REPORT”, REPORT NO.: TCQAL-T-1026 DATE : December 4, 2002. [Filename: 17-rpr_Toray700-Test-Data-Laminate.pdf](#)

18. **SIFT FAILURE CRITERIA:** Jon H. Gosse, “Strain Invariant Failure Criteria For Fiber Reinforced Polymeric Composite Materials”, Journal of **Composite Materials, Vol. 37, No. 33/2003**. File Name: [18-rpr_SIFT-Goss.doc](#)