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Employment

Lecturer

School of Mechanical and Aerospace Engineering
Queen's University Belfast
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23 May 2012 → present

Research outputs

Critical review of recent advances in AI-enhanced SEM and EDS techniques for metallic microstructure characterization
Abdelal, G., Chan, C. W. & McLoone, S., 18 Jan 2026, (Early online date) In: Applied Sciences. 16, 2, 58 p., 16.

Multiphysics modelling and experimental validation of road tanker dynamics: stress analysis and material characterization
Abdelal, G., Robb, C., McKeefry, P. & Quinn, C., 02 Jan 2026, In: Computation. 14, 1, 21 p., 7.

Faith, reason, and reform: a Reverend and Atheist debate the 11 Pillars of religious education
Abdelal, G., 25 May 2025, 1 ed. UK: Independent Publisher . 705 p.

Insights into phase transformations during selective laser melting of Ti6Al4V: a numerical approach
Abdelal, G., Higgins, D., Chan, C. W. & Falzon, B., Apr 2025, In: Applied and Computational Mechanics. 11, 2, p. 399-415
17 p.

Numerical modelling and experimental validation of selective laser melting processes using a custom argon chamber setup for 316L stainless steel and Ti6Al4V
Abdelal, G., Higgins, D., Chan, C. W. & Falzon, B., 05 Nov 2024, In: Coatings. 14, 11, 33 p., 1406.

Investigating creep performance of Wel-lok BiSN plug for sealing of offshore wells
Abdelal, G., Carragher, P. & Clark, B., Nov 2024, In: Geoenergy Science and Engineering. 242, 16 p., 213153.

Analytical simulation and experimental validation of viscoplastic bending response of textile-reinforced composites for CubeSats
Shafiei, E. & Abdelal, G., 01 Mar 2024, In: The Egyptian Journal of Remote Sensing and Space Sciences. 27, 1, p. 30-40

Feasibility study on Multiphysics H₂-O₂ combustion model for space debris removal system – NIRCSAT-X
Abdelal, G., Stella, L., Mahmoudi, Y., Murphy, M. & Naeem, W., 01 Mar 2024, In: The Egyptian Journal of Remote Sensing and Space Sciences. 27, 1, p. 18-29

Plasma space debris removal system—NIRCSAT-X
Abdelal, G., Mahmoudi, Y., McLoone, S., Murphy, A., May, A. & Connolly, C., 04 Nov 2023, *Applications of remote sensing and GIS based on an innovative vision. Proceeding of The First International Conference of Remote Sensing and Space Sciences Applications, Egypt 2022*. Gad, A. A., Elfiky, D., Negm, A. & Elbeih, S. (eds.). Springer Nature US, p. 31-37 7 p. (Springer Proceedings in Earth and Environmental Sciences; vol. Part F1684).

Investigation of several impact angles for predicting bird-strike damage in a riveted eVTOL composite wing
Kayar, E., Abdelal, G., Falzon, B. & Kazanci, Z., 14 Sept 2023.

Comparison of damage characteristics of adhesively bonded and rivet-connected evtol wing under bird-strike

Kayar, E., Abdelal, G., Falzon, B. G. & Kazancı, Z., 30 Jul 2023, *Proceedings of the 23rd International Conference on Composite Materials, ICCM23*. Falzon, B. & McCarthy, C. (eds.). Queen's University Belfast, 13 p.

Developing test methods for compression after lightning strikes

Xu, X., Millen, S. L. J., Lee, J., Abdelal, G., Mitchard, D., Wisnom, M. R. & Murphy, A., Apr 2023, In: *Applied Composite Materials*. 30, 2, p. 539-556 18 p.

Bismuth Plugs Used to Cap All Wells During the Final Phase of the Valhall DP Abandonment Campaign, Offshore Norway

Thorstensen, E., Vadset, K., Straume, M. K., Delabroy, L., Abdelal, G., Carragher, P., Fulks, J. & Mason, D. L., 25 Apr 2022, *Offshore Technology Conference 2022: Proceedings*. OnePetro, OTC-31897-MS

Gap volume prediction for aircraft wing assembly

Yang, Y., Jin, Y., Price, M., Abdelal, G., Maropoulos, P. & Higgins, C., 11 Oct 2021.

Investigation of point cloud registration uncertainty for gap measurement of aircraft wing assembly

Yang, Y., Jin, Y., Price, M., Abdelal, G., Higgins, C. & Maropoulos, P., 19 Aug 2021, *2021 IEEE 8th International Workshop on Metrology for AeroSpace (MetroAeroSpace): Proceedings*. Institute of Electrical and Electronics Engineers Inc., p. 164-169 6 p. 9511727. (IEEE 8th International Workshop on Metrology for AeroSpace (MetroAeroSpace): Proceedings).

Gap volume prediction for aircraft wing assembly

Yang, Y., Jin, Y., Price, M., Abdelal, G., Maropoulos, P. & Higgins, C., 30 Jul 2021, (Early online date) In: *Procedia Manufacturing*. 54, p. 227-232 6 p.

Investigation of point cloud registration uncertainty for gap measurement of aircraft wing assembly

Yang, Y., Jin, Y., Price, M., Abdelal, G., Higgins, C. & Maropoulos, P., 22 Jun 2021. 6 p.

Correction to: Coupled thermal–mechanical progressive damage model with strain and heating rate effects for lightning strike damage assessment

Millen, S. L. J., Murphy, A., Catalanotti, G. & Abdelal, G., Dec 2020, In: *Applied Composite Materials*. 27, 6, p. 989 1 p.

Understanding the impact of standardized SAE waveform parameter variation on artificial lightning plasma, specimen loading and composite material damage

Millen, S. L. J., Murphy, A., Abdelal, G. & Catalanotti, G., 18 Feb 2020, In: *SAE International Journal of Aerospace*. 13, 1

Coupled Thermal-Mechanical Progressive Damage Model with Strain and Heating Rate Effects for Lightning Strike Damage Assessment

Millen, S. L. J., Murphy, A., Catalanotti, G. & Abdelal, G., 11 Nov 2019, In: *Applied Composite Materials*.

Specimen representation on the prediction of artificial test lightning plasma, resulting specimen loading and subsequent composite material damage

Millen, S. L. J., Murphy, A., Abdelal, G. & Catalanotti, G., 10 Oct 2019, (Early online date) In: *Composite Structures*. 231, C, 13 p., 111545.

Numerical Simulation of Selective Laser Melting manufacturing process

Higgins, D., Abdelal, G. & Falzon, B., 11 Sept 2019.

A Lightning Plasma and Composite Specimen Damage Simulation Framework for SAE Test Waveform B

Millen, S. L. J., Murphy, A., Abdelal, G. & Catalanotti, G., 10 Sept 2019, *ICOLSE 2019 Conference Proceedings*. ICOLSE, 4

Modeling of the Electric Arc Plasma Discharge Produced by a Lightning Strike Continuing Current

Aider, Y., Yeqing Wang, Abdelal, G. & Olesya I. Zhupanska, 10 Sept 2019.

Multi-physics modelling of continuing current waveforms

Campbell, J., Abdelal, G., Mahmoudi, Y. & Falzon, B., 08 Jul 2019.

Sequential finite element modelling of lightning arc plasma and composite specimen thermal-electric damage

Millen, S. L. J., Murphy, A., Abdelal, G. & Catalanotti, G., 05 Jul 2019, In: Computers and Structures. 222, p. 48-62 15 p.

A progressive damage model for simulating lightning strike on composite material

Millen, S. L. J., Murphy, A., Catalanotti, G. & Abdelal, G., 03 Jul 2019, p. 150. 1 p.

Modelling of mechanical failure due to constrained thermal expansion at the lightning arc attachment point in carbon fibre epoxy composite material

Foster, P., Abdelal, G. & Murphy, A., 13 Aug 2018, (Early online date) In: Engineering Failure Analysis.

Quantifying the Influence of Plasma - Solid Mechanics Coupling on the Prediction of Lightning Strike Composite Specimen Damage

Millen, S. L. J., Murphy, A., Abdelal, G. & Catalanotti, G., 02 Jul 2018, *1st International Conference on Advances in Aerospace Structures, Systems & Technology: AASST 2018*. ASRANet Ltd, p. 103-112 10 p.

Quantifying the Influence of Lightning Strike Pressure Loading on Composite Specimen Damage

Foster, P., Abdelal, G. & Murphy, A., 10 Apr 2018, (Early online date) In: Applied Composite Materials.

Understanding how arc attachment behaviour influences the prediction of composite specimen thermal loading during an artificial lightning strike test

Foster, P., Abdelal, G. & Murphy, A., 14 Mar 2018, (Early online date) In: Composite Structures. 192, May 2018, p. 671

Numerical Simulation of Direct Effects of Lightning Strike on Aircraft Skin Composite Laminate

Khalil, M., Abuefoutouh, N., Abdelal, G. & Murphy, A., 01 Feb 2018, *ICCS 2018: 20th International Conference on Composite Structures: Proceedings: London, UK*. London, UK

Numerical and Experimental Investigation on Flow Capacity and Erosion Wear of Blooey Line in Gas Drilling

Zhang, Y., Zhanghua, L., Abdelal, G. & Lin, T., 28 Nov 2017, In: Journal of Energy Resources Technology. 140, 5, p. 1-6

Web crippling behaviour of cold-formed steel channel sections with web holes subjected to interior-one-flange loading condition - part II: parametric study and proposed design equations

Lian, Y., Uzzaman, A., Lim, J. B. P., Abdelal, G., Nash, D. & Young, B., May 2017, In: Thin-Walled Structures. 114, p. 92-106

A Multiphysics Simulation Approach for Efficient Modeling of Lightning Strike Tests on Aircraft Structures

Abdelal, G. F. & Murphy, A., 17 Mar 2017, (Early online date) In: IEEE Transactions on Plasma Science. 11 p.

Web crippling behaviour of cold-formed steel channel sections with web holes subjected to Interior-one-flange loading condition-part I: experimental and numerical investigation

Lian, Y., Uzzaman, A., Lim, J. B. P., Abdelal, G., Nash, D. & Young, B., Feb 2017, In: Thin-Walled Structures. 111, p. 103-112 10 p.

Multiphysics Simulation of Thermal Plasma for Lightning Strike Modelling

Campbell, J., Abdelal, G., Mahmoudi, Y., Murphy, A. & Falzon, B., 2017.

Thermal Plasma Transport Properties for Lightning Plasma Simulation

Campbell, J., Abdelal, G., Mahmoudi, Y. & Falzon, B., 2017.

Experimental and Numerical Investigation of Cold Formed Steel Sections with Web Opening under One-Flange Loading Condition Subjected to Web Crippling

Lian, Y., Uzzaman, A., Lim, J. B. P., Abdelal, G., Nash, D. & Young, B., 07 Dec 2016, *Eighth International Conference on Steel and Aluminium Structures*. Hong Kong, China

Parametric Studies and Design Recommendations of Cold-formed Steel Sections with Web Openings Subjected to Web Crippling

Lian, Y., Uzzaman, A., Lim, J. B. P., Abdelal, G., Nash, D. & Young, B., 07 Nov 2016, *Eighth International Conference on Steel and Aluminium Structures*. Hong Kong, China

Effect of web holes on web crippling strength of cold-formed steel channel sections under end-one-flange loading condition - Part II: Parametric study and proposed design equations

Lian, Y., Uzzaman, A., Lim, J. B. P., Abdelal, G., Nash, D. & Young, B., Oct 2016, In: *Thin-Walled Structures*. 107, p. 489-501 13 p.

Effect of web holes on web crippling strength of cold-formed steel channel sections under end-one-flange loading condition – Part I: Tests and finite element analysis

Lian, Y., uzzaman, A., Lim, J. B. P., Abdelal, G., Nash, D. & Young, B., Oct 2016, In: *Thin-Walled Structures*. 107, p. 443-452

Finite element modelling of cyclic behaviour of cold-formed steel bolted moment-resisting connections

Foster, P., Abdelal, G., Lim, J. B. P., Hajsadeghi, M. & McCrum, D., 2016, In: *Journal of Construction in Developing Countries*. 21, 1, p. 167-180 17 p.

Investigating electrons – ions interactions effect on lightning strike plasma channel

Abdelal, G., Foster, P., Murphy, A. & Graham, W., 02 Sept 2015.

Numerical simulation of a patent technology for sealing of deep-sea oil wells using nonlinear finite element method

Abdelal, G. F., Robotham, A. & Carragher, P., Sept 2015, In: *Journal of Petroleum Science and Engineering*. 133, p. 192-200 9 p.

Magnetohydrodynamics and coupled electrical/thermal/mechanical Finite Element simulation of lightning strike on composite panels

Abdelal, G., Foster, P., Murphy, A. & Graham, W., 15 Jun 2015.

The Collapse Behaviour of Cold-formed Steel Portal Frames at Elevated Temperatures

Johnston, R. P. D., Sonebi, M., Lim, J. B. P., Armstrong, C. G., Wrzesien, A. M., Abdelal, G. & Hu, Y., Jun 2015, In: *Journal of Structural Fire Engineering*. 6, 2, p. 77-101

Numerical and Experimental Investigation of Aircraft Panel Deformations During Riveting Process

Abdelal, G. F., Georgiou, G., Cooper, J., Robotham, A., Levers, A. & Lunt, P., Feb 2015, In: *Journal of Manufacturing Science and Engineering*. 137, 1, 11 p., 011009.

Investigation of Aircraft Panel Deformations during Riveting Process

Abdelal, G. F., Georgiou, G., Cooper, J., Murphy, A., Robotham, A. & Lunt, P., 09 Oct 2014. 15 p.

FE Simulation of Viscoplastic Consistency Model

Foster, P., Abdelal, G. & Goel, S., 07 Oct 2014. 8 p.

Multiphysics Simulation of Thermal Plasma Produced by Lightning Strike on Aircraft Structures

Abdelal, G. & Murphy, A., 07 Oct 2014. 13 p.

Molecular dynamics simulation of nanoindentation of Fe₃C and tetrahedral Fe₄C

Goel, S., Joshi, S. S., Abdelal, G. & Agrawal, A., 12 Mar 2014, In: Materials Science and Engineering: A. 597, p. 331-341 11 p.

Nonlinear numerical modelling of lightning strike effect on composite panels with temperature dependent material properties

Abdelal, G. & Murphy, A., 01 Mar 2014, In: Composite Structures. 109, p. 268-278 11 p.

Autoclave Cure Simulation of Composite Structures Applying Implicit and Explicit FE

Abdelal, G. F., Robotham, A. & Cantwell, W., Mar 2013, In: International Journal of Mechanics and Materials in Design. 9, 1, p. 55-63 9 p.

Reliability Assessment of 3-D Space Frame Structures Applying Stochastic Finite Element Analysis

Abdelal, G. F., Cooper, J. E. & Robotham, A. J., Mar 2013, In: International Journal of Mechanics and Materials in Design. 9, 1, p. 1-9 9 p.

Finite Element Application to Analysis, Testing, and Manufacturing of Satellite Structures

Abdelal, G., Jan 2013, UK: Springer. 334 p.

NONLINEAR NUMERICAL MODELLING OF LIGHTENING STRIKE EFFECT ON COMPOSITE PANELS WITH TEMPERATURE DEPENDANT MATERIAL PROPERTIES

Abdelal, G. & Murphy, A., 2013, p. 1-20. 20 p.

Experimental and Numerical Evaluation of Thermal Performance of Steered Fibre Composite Laminates

Gürdal, Z., Abdelal, G. & Wu, K. C., Dec 2011, *Heat Transfer – Engineering Applications*. Vikhrenko, V. S. (ed.). InTech, p. 121-150 30 p.

Fatigue Damage of Composite Structures Applying a Micromechanical Approach

Abdelal, G. & Barbero, E., 04 Jul 2011, p. 101-108. 9 p.

Virtual Manufacturing of Composite Structures Applying Implicit and Explicit FE Techniques

Abdelal, G., Cantwell, W. & Robotham, A., 04 Jul 2011, p. 109-118. 9 p.

Virtual Engineering Centre - Examples of Virtual Prototyping and Multidisciplinary Design Optimization

K.K.B. Hon, M. Jump, G.D. Padfield, A.J. Robotham, F. Shao, M. Webster, M.D. White., Apr 2011, p. 0-0. 28 p.

Transient Heat Conduction of Variable Stiffness Composite Laminate

Abdelal, G. F., Abdalla, M. M. & Gürdal, Z., 2010, In: Journal of Thermal Stresses. 33, 2, p. 121-134 14 p.

Transient Heat Conduction of Variable Stiffness Composite Laminate

Abdelal, G., Abdalla, M. & Gurdal, Z., Jun 2009, p. 0-0. 18 p.

Design of a deployment rotation mechanism for microsatellite

Abdelal, G., Elhady, A. B. & Kassab, M., Mar 2009, In: International Journal for Simulation and Multidisciplinary Design Optimization. 3, p. 289-296 8 p.

Micro-Satellite Structure Fracture Investigation techniques

Abdelal, G., Elhady, A. B. & Hamdy, A., Mar 2009, p. 1-9. 9 p.

Thermomechanical Response of Variable Stiffness Composite Panels

Abdalla, M., Gurdal, Z. & Abdelal, G., Jan 2009, In: Journal of Thermal Stresses. 32, 1-2, p. 187-208 22 p.

Mechanical fatigue and spectrum analysis of small-satellite

Abdelal, G., Abuelfoutouh, N. & Hamdy, A., 01 Sept 2008, In: International Journal of Mechanics and Materials in Design. 4, 3, p. 265-278 14 p.

Thermal fatigue analysis of solar panel structure for micro-satellite applications

Abdelal, G. & Atef, A., 01 Mar 2008, In: International Journal of Mechanics and Materials in Design. 4, 1, p. 53-62 10 p.

Thermal fatigue analysis of small-satellite structure

Abdelal, G., Abuelfoutouh, N., Hamdy, A. & Atef, A., Feb 2007, In: International Journal of Mechanics and Materials in Design. 3, 2, p. 145-159 15 p.

DESIGN, ANALYSIS, AND RELIABILITY OF SOLAR PANEL ROTATION MECHANISM FOR MICROSATELLITE

Abdelal, G. & Kassab, M., May 2005, p. 373-393. 21 p.

Thermal Deformation Analysis of Micro satellite Structure

Abdelal, G. & Atef, A., May 2005, p. 351-372. 22 p.

A micromechanics approach for damage modeling of polymer matrix composites

Barbero, E., Abdelal, G. & Caceres, A., Mar 2005, In: Composite Structures. 67, 4, p. 427-436 10 p.

A micro-mechanics damage approach for fatigue of composite materials

Abdelal, G., Caceres, A. & Barbero, E., Jun 2002, In: Composite Structures. 56, 4, p. 413-422 10 p.

Awards

Projects

R3805MEE: IntelliResearch

Abdelal, G. (PI), Mai, T. S. (CoI) & Obieke, C. (CoI)
02/10/2025 → ...