GLENN S. DAEHN

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EDUCATION

STANFORD UNIVERSITY — **PALO ALTO, CA**

Ph.D., Materials Science & Engineering, 1988.
Dissertation: Superplasticity and Stability in Ultrahigh Carbon Steel Laminates,
Advisor: Prof. Oleg D. Sherby, Defended November, 1987

STANFORD UNIVERSITY — **PALO ALTO, CA**

M.S., Materials Science & Engineering, 1985.

NORTHWESTERN UNIVERSITY — **EVANSTON, IL**

B.S. (departmental honors), Materials Science & Engineering, 1983.
Research w/Prof. M.E. Fine; Fatigue initiation in polished & oxidized steel
College-wide Gotaas Award for outstanding undergraduate research.

EXPERIENCE

11/87-present — **Professor (1996-pres), Associate, Assistant** — THE OHIO STATE UNIVERSITY, COLUMBUS

Teaching and research focus on mechanical behavior and processing of structural materials. Focus areas are high velocity sheet metal forming, novel manufacturing processes and mechanical behavior of composites

10/20-present — **Co-founder, President** — APPLIED IMPULSE, INC., COLUMBUS

Company to commercialize impulse manufacturing technologies for welding, joining, forming, and other operations. appliedimpulseinc.com

4/11 – 7/15 — **Executive Director, Honda-Ohio State Partnership Program** — THE OHIO STATE UNIVERSITY, COLUMBUS

Led Joint Planning Team of Honda and Ohio State personnel to invest proceeds from a $40M+ endowment in the areas of student development, research and outreach

7/04-10/07 — **V.P. Technology** — EXCERA MATERIALS GROUP, Worthington

Co-founder (1993) developer/manufacturer ceramic composites by reactive processing. Sabbatical in 04-05 academic year. Ohio State-based technology now commercialized by Fireline, Inc. and Rex Materials Group.

1/97-7/97 — **Visiting Scientist** — ROCKWELL SCIENCE CENTER, Thousand Oaks, CA

Sabbatical period; engaged in manufacturing and materials performance projects

9/83-11/87 — **Research Assistant** — STANFORD UNIVERSITY, Palo Alto, CA

Dissertation under Oleg D. Sherby: laminated composites of superplastic ultrahigh carbon steel and stainless steel.

APPOINTMENTS AND LEADERSHIP ROLES

Long-term commitments to engaged scholarship in the related areas of manufacturing technical ecosystems and public policy as well as K-12 materials science education. Brief descriptions of activities and leadership roles are discussed below.

2011 - 2015	**Executive Director; Honda-Ohio State Partnership** Led Joint Planning Team of Honda and Ohio State personnel to invest proceeds from a $40M+ endowment in the areas of student development, from K to postgraduate, research and outreach. The concept for Ohio State's Center for Design and Manufacturing Excellence was developed through the Partnership during this period.

MANUFACTURING INITIATIVES

Played critical roles in forming Ohio State's signature manufacturing programs including initiating the Ohio Manufacturing Institute, co-developing the plans for the Center for Design and Manufacturing Excellence and the light Metals Manufacturing USA Institute, LIFT.

2018	Technical Lead, ONR-sponsored, TMS-organized national study on the future for *Metamorphic Manufacturing*. Team of 14 experts organized for 18-month study to guide federal investment. (link to study)
2018 -	Editorial Board, Journal of Manufacturing and Materials Processing
2017 -	Associate Director, Director of Manufacturing Initiatives (20% appointment), Institute for Materials Research
2016 -	Leadership Team, Discovery Theme Initiative for Materials and Manufacturing fo Sustainability
2015 -	Executive Committee of Leadership Council, MForesight, public-private voice of U.S. Advanced Manufacturing to policy makers (mforesight.org).
2010 -	Founding Director and varied roles over time, Ohio Manufacturing Institute (omi.osu.edu), since June 2017, plays support role as Kathryn Kelly directs
2014 -	Chief Technical Officer, Center for Design and Manufacturing Excellence
2014 -	Ohio State Principal Investigator and Technical Pillar Lead, Agile and Low-Cost Tooling, Lightweight Innovations for Tomorrow (LIFT, lift.technology), National Network of Manufacturing Innovation (NNMI) Institutes. Part of author team for winning proposal for ALMII/LIFT.
2008 -	Founding Vice-Chair, International Impulse Forming Group (I2FG.org)

K-12 EDUCATION

In 2006 helped organize OSU's first Materials Camp for Teachers has been an advocate this important program organized by ASM the Materials Education Foundation. Since this time, he has been quite active in developing and deploying materials for the professional development of K-14 teachers.

2018-2020	Chair, ASM Materials Education Foundation
2016-2018	Vice Chair, ASM Materials Education Foundation
2017 -	Member STEM Scouts Chemical and Advanced Materials STEM Advisory Committee
2010 -	Member, Board of Trustees, ASM Materials Education Foundation
2007 -	Organizer of numerous Materials Camps for Teachers

INTERNATIONAL CONFERENCE ORGANIZATION AND EXECUTION

July 2020	Conference Chair, International Conference on the Technology of Plasticity, Columbus, Ohio (anticipate 700 attendees)
October 2018	Conference Chair, International Cold Forging Research Group, Columbus, Ohio (80 attendees)
May 2018	Conference Chair, International Conference on High Speed Forming, Columbus, OH (90 attendees)
April 2010	Conference Chair, International Conference on High Speed Forming, Columbus, OH (93 attendees)

AWARDS AND RECOGNITIONS

2020	C.S. Barrett Medal from the ASM Rocky Mountain Chapter
2018	Engineering Dean’s award for Distinguished Outreach Achievements
2017	Honda-Ohio State Partnership Award, Ohio State College of Engineering
’92, ’00, ‘04	Lumley Research Award of Ohio State University College of Engineering
2010	Fellow ASM International
2009	Innovators Award of Ohio State College of Engineering
2007	ASM Jacquet-Lucas Award for Excellence in Metallography
1995	Mars G. Fontana Professor of Metallurgical Engineering
1992	Robert Lansing Hardy Gold Medal of TMS, recognizing outstanding promise in the broad field of metallurgy
1990	ASM Marcus A. Grossmann Young Author Award, for "Deformation of Whisker-Reinforced MMC's Under Changing Temperature Conditions"

NATIONAL RESEARCH AWARDS

1992	National Young Investigator of National Science Foundation
1992	Army Research Office Young Investigator Award

OTHER SIGNIFICANT ACTIVITIES

2017 - 2020	Member, Ohio State University Committee on Intellectual Property Patents and Copyrights
2015 - 2016	Member, National Academies Panel on Mechanical Science and Engineering, Review panel for Army Research Laboratory
2011 -	Senior Fellow, Center for Automotive Research, Ohio State University
2010 - 2012	Chair, International Impulse Forming Group, Vice-Chair 2012-2014
2002 - 2003	Member National Research Council Committee on “Use of Lightweight Materials in 21st Century Army Trucks”
1996	One of 13 invited speakers at second National Academy of Engineering Frontier of Engineering Meeting
1995-1997	Chair, TMS Shaping and Forming Committee

MAJOR RESEARCH THEMES & ACCOMPLISHMENTS (a guide to the publications)

IMPULSE MANUFACTURING (1989 – PRESENT)

Daehn's first project at Ohio State was in manufacturing and electrohydraulic forming of thin tubular cylinders. There was almost no work in high strain-rate manufacturing at this time and we discovered superplastic-like ductility at high strain rates. Since this time, interest in this work has grown worldwide and Daehn has been continually active in the leadership of the International Impulse Forming Group. Now Ohio State has leading facilities in impulse processing using electrohydraulic, electromagnetic, laser-impulse and vaporizing foil actuator processing (which was developed & patented wholly at Ohio State). Daehn's group has executed over $10M in research in this area, and the technology is being examined by several auto OEM's and others for welding dissimilar and advanced metals by impact, without gross melting. Details on these activities can be found at the impulse manufacturing lab webpage (iml.osu.edu) and the International Impulse Forming Group page (i2fg.org).

METAMORPHIC AND AGILE MANUFACTURING (2014 – PRESENT)

The newest area of research asks the question – can we create a robotic system that has the key elements of a human blacksmith, but with much greater strength, better sensing and much better reproducibility. This digital reshaping is the natural progression following digital material removal (CNC machining) and digital material addition (additive manufacturing). This idea has been embraced by the LIFT institute and is the subject of a forthcoming national expert study chaired by Daehn.

STRAIN MISMATCH EFFECTS IN PLASTICITY (PRIMARY PERIOD: 1985-2005)

While at Stanford, Daehn developed an original model for the thermal-cycling enhanced creep of metal matrix composites that were being studied in the group of his advisor, Oleg Sherby. This was explained in early papers by Daehn (winning the ASM Marcus A. Grossman Young Author in 1990). Since that time research was carried out to understand the effect strain mismatch may have in increasing creep rates, and the method was used to enhance metal forming (via Mismatch Induced Plasticity) and for enhanced composite powder processing.

PROCESSING OF CERAMIC-METAL COMPOSITES (PRIMARY PERIOD: 1991-2007)

Inspired by an undergraduate project, Daehn became involved in a new process to create ceramic-metal composites via displacement reactions. These composites were tailored in structure and properties for a variety of applications and saw significant development as possible liquid-metal-tolerant materials for foundry applications and high-hardness strike faces for armor. The technology saw significant commercial development under a startup company that Daehn co-founded and the base ideas are still seeing active private R&D.

THEORY OF CREEP AND TIME DEPENDENT PLASTICITY (2000-PRESENT)

As a largely unfunded side project Daehn has worked with alternative theories of creep deformation and has a new approach that is based largely on the coarsening of fields of attractive obstacles. This can recover a range of creep phenomena, and gives the familiar five-power law of strand rate and stress using only data measured from non-creep experiments.

PUBLICATIONS (over 300, total h-index of 40, h=26 since 2014 per Google Scholar)

2020

"Joining aluminum alloy to ultrahigh-strength boron steel through an impact welding approach", Kapil, A., Thurston, B., Vivek, A., Daehn,G., *Manufacturing Letters*, 25, pp. 30-33 (2020). https://doi.org/10.1016/j.mfglet.2020.06.004

"Multi-scale characterization and simulation of impact welding between immiscible Mg/steel alloys", Cheng, J., Hu, X., Sun, X., Vivek, A., Daehn, G., Cullen, D., *Journal of Material Science & Technology*, 59, pp. 149-163 (2020). https://doi.org/10.1016/j.jmst.2020.04.049

"High strength welding of Ti to stainless steel by spot impact: microstructure and weld performance", Song, S., Gilbert, SM., Vivek, A., Yu, Z., Dong, P., Daehn, G., *The International Journal of Advanced Manufacturing Technology,* 108, pp. 1447-1461 (2020). https://link.springer.com/article/10.1007%2Fs00170-020-05506-4

"High Strength Welding of NiTi and Stainless Steel by Impact: Process, Structure and Properties", Li, J., Panton, B., Liang, S., Vivek, A., Daehn, G., *Materials Today Communications*, 25 (2020). https://doi.org/10.1016/j.mtcomm.2020.101306

"Microstructural Investigation of the Impact Weld Interface of Pseudo Single Grained Cu and Ag", M Zhu, T Dittrich, J Hwang, A Vivek, G Daehn, *Materials Transactions A*, 51, pp. 558-561 (2020). https://link.springer.com/article/10.1007/s11661-019-05557-7

"Laser impact welding for joining similar and dissimilar metal combinations with various metal combinations with various target configurations", H Wang, D Liu, J Lippold, G Daehn, *Journal of Materials Processing Technology*, 278 (2020). https://doi.org/10.1016/j.jmatprotec.2019.116498

"Unveiling non-equilibrium metallurgical phases in dissimilar Al-Cu joints processed by vaporizing foil actuator welding", K Wang, SL Shang, Y Wang, A Vivek, G Daehn, ZK Liu, J Li, *Materials and Design*, 186 (2020). https://www.sciencedirect.com/science/article/pii/S0264127519307440

"Process characteristics and interfacial microstructure in spot impact welding of titanium to stainless steel", J Li, B Schneiderman, SM Gilbert, A Vivek, Z Yu, G Deahn, *Journal of Manufacturing Processes*, 50, pp. 421-429 (2020). https://www.sciencedirect.com/science/article/pii/S1526612519304542

"Microstructure development in impact welding of a model system", T Lee, A Nassiri, T Dittrich, A Vivek, G Daehn, *Scripta Materialia*, 178, pp. 203-206 (2020). https://www.sciencedirect.com/science/article/pii/S1359646219306864

2019

"'Robotic blacksmithing': A technology that could revive US manufacturing", G Daehn, *The Conversation* (2019).
https://theconversation.com/robotic-blacksmithing-a-technology-that-could-revive-us-manufacturing-125428

"Microstructural Investigation of the Impact Weld Interface of Pseudo Single Grained Cu and Ag", T Lee, M Zhu, T Dittrich, J Hwang, A Vivek, G Daehn, *Metallurgical and Materials Transactions A* (2019).
https://doi.org/10.1007/s11661-019-05557-7

"Advances in Numerical Simulation of High-Speed Impact Welding", A Nassiri, T Abke, G Daehn, arXiv:1912.10916 [physics.app-ph] (2019).
https://arxiv.org/ftp/arxiv/papers/1912/1912.10916.pdf

"Study on Vaporizing Foil Actuator Welding Process of 5A06/0Cr18Ni10Ti with Interlayer", Shan Su, *Acta Metallurgica Sinica*, 55, pp. 1041-1048 (2019).
http://www.ams.org.cn/EN/10.11900/0412.1961.2018.00432?utm_source=TrendMD&utm_medium=cpc&utm_campaign=Acta_Metallurgica_Sinica_TrendMD_0

"Laser Impact Welding for Joining Similar and Dissimilar Metal Combinations with Various Target Configurations", Huimin Wang, Dejian Liu, John C Lippold, Glenn S Daehn, *Journal of Materials Processing Technology,* 116498 (2019).
https://www.sciencedirect.com/science/article/pii/S0924013619304716

"Joining Performance and Microstructure of the 2024/7075 Aluminium Alloys Welded Joints by Vaporizing Foil Actuator Welding", Zhenghua Meng, Xu Wang, Wei Guo, Zhili Hu, Anupam Vivek, Lin Hua, Glenn S Daehn, *Journal of Wuhan University of Technology-Mater.* Sci. Ed., 34, pp. 368-372 (2019).
https://link.springer.com/article/10.1007/s11595-019-2061-7

"Practical, High-Strength, Solid State Welding of Advanced and Dissimilar Alloys: Vaporizing Foil Actuator Welding", Brian P. Thurston, Anupam Vivek, Bhuvi Nirudhoddi, Glenn S. Daehn**,** in Press *Materials Bulletin* (2019).

"A robust process-structure model for predicting the joint interface structure in impact welding", Varun Gupta, Taeseon Lee, Anupam Vivek, Kyoo Sil Choi, Yu Mao, Xin Sun, Glenn Daehn, *Journal of Materials Processing Technology*, **264**, pp. 107-118 (2019).
https://www.sciencedirect.com/science/article/pii/S0924013618303893

"Unveiling non-equilibrium metallurgical phases in dissimilar Al-Cu joints processed by vaporizing foil actuator welding", K Wang, SL Shang, Y Wang, A Vivek, G Daehn, ZK Liu, J Li, *Materials & Design*, 186 (2019).
https://www.sciencedirect.com/science/article/pii/S0264127519307440?via%3Dihub

"Vaporizing foil actuator welding", BP Thurston, A Vivek, BSL Nirudhoddi, GS Daehn, *MRS Bulletin*, 44, pp. 637-642 (2019).
https://www.cambridge.org/core/journals/mrs-bulletin/article/vaporizing-foil-actuator-welding/D0C8FF456DE718F775D11F5761E2A4B1

"Vaporizing foil actuator welding technique for dissimilar joining of AA3003 and SS321", Shan Su, Shujun Chen, Jun Xiao, Yu Mao, Vivek Anupam, Glenn Daehn, *Materials Technologies Design*, 1, pp. 17-23 (2019).
http://journal.ugatu.ac.ru/index.php/mtd/article/view/1847

"Investigation of Melting Phenomena in Solid State Welding Processes", Ali Nassiri, Tim Abke and Glenn Daehn, *Scripta Materialia,* **168**, pp. 61-66 (2019).
https://doi.org/10.1016/j.scriptamat.2019.04.021

"Impact welding of ultra-high-strength stainless steel in wrought vs. additively manufactured forms", Bert C Liu, Anthony Palazotto, Anupam Vivek, Glenn S Daehn, *The International Journal of Advanced Manufacturing Technology*, **104** pp. 4593-4604 (2019).
https://link.springer.com/article/10.1007/s00170-019-04320-x

"Experimental and numerical investigation of interfacial microstructure in fully age-hardened 15-5 PH stainless steel during impact welding" Bert C. Liu, Anthony N. Palazotto, Ali Nassiri, Anupam Vivek, and Glenn S. Daehn, *J. Mater. Sci.* (2019).
https://doi.org/10.1007/s10853-019-03546-0

"Wave Formation in Impact Welding: Study of the Cu-Ti System", T. Lee, S. Zhang, A. Vivek, G. Daehn and B. Kinsey, *CIRP Annals*, in press.

https://doi.org/10.1016/j.cirp.2019.04.058

"Joining Aluminum Alloy 5A06 to Stainless Steel 321 by Vaporizing Foil Actuators Welding with an Interlayer, S Su, S Chen, Y Mao, J Xiao, A Vivek, G Daehn, *Metals,* 9 (1), 43 (2019).
https://doi.org/10.3390/met9010043

"Cascading microstructures in aluminum-steel interfaces created by impact welding", Niyanth Sridharan, Jonathan Poplawsky, Anupam Vivek, Arunodaya Bhattacharya, Wei Guo, Harry Meyer, Yu Mao, Taeseon Lee, and Glenn Daehn, in press, *Materials Characterization* (2019).
https://www.sciencedirect.com/science/article/pii/S1044580318331747

"Spot impact welding of an age-hardening aluminum alloy: Process, structure and properties", Angshuman Kapil, Taeseon Lee, Anupam Vivek, Ronald Cooper, Elizabeth Hetrick, Glenn Daehn, *J. Manufacturing Processes*, **37,** 42-52 (2019).

"A State of the Art Review of Solid-State Metal Joining", W. Cai, G. S. Daehn, J. Li, A. Vivek, R. Mishra, H. Kahn and M. Komarasamy*, Journal of Manufacturing Science and Engineering*, **141,** (3), pp 368-372. doi:10.1115/1.4041182 (2019).

2018

"Harnessing Materials Innovations to Support Next Generation Manufacturing Technologies", workshop report organized by: K. Anderson, C. Anders, C. Brice, G. Daehn, D. Frear and K. Sandhage, TMS (2018).

https://www.tms.org/portal/Publications/Studies/MForesight/TMS-MForesight_Workshop_Report.aspx,

"Impact welding of wrought and additively manufactured 15-5 PH stainless steel", B. Liu, A. Palazotto, A. Vivek and G. S. Daehn, in *2018 AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference*, (2018).

https://doi.org/10.2514/6.2018-0488

"Flyer Impact Velocity in Vaporizing Foil Actuator Welding Process and Its Influencing Factors", C. Shujun, S. Shan, X. Jun, M. Yu, A. Vivek, G. Daehn, Rare Metal Materials and Engineering, **47**, 3439-3443 (2018).

"Characterization of High-Speed Flyer Evolution by Multi-Probe Photon Doppler Velocimetry", T. Lee, G. Taber, A. Vivek, G.S. Daehn, Peer reviewed Conference Proceedings from 8th International Conference on High-Speed Forming, Columbus Ohio May 14, 2018, https://eldorado.tu-dortmund.de/handle/2003/36961.

"On Process, Structure, Property Relationships in Impact Welding of Aluminum 6061 and Steel 4130", Y. Mao, V. Gupta, B. Ufferman, A. Vivek, K.S. Choi, X. Sun, G.S. Daehn, Peer reviewed Conference Proceedings from 8th International Conference on High-Speed Forming, Columbus Ohio May 15, 2018, https://eldorado.tu-dortmund.de/handle/2003/36292.

"Welding of 2024 and 7075 Aluminum Alloys by Vaporizing Foil Actuator", Z. Meng, Y. Mao, S.Y. Huang, L. Hua, A. Vivek, G.S. Daehn, Peer reviewed Conference Proceedings from 8th International Conference on High-Speed Forming, Columbus Ohio May 15, 2018, https://eldorado.tu-dortmund.de/handle/2003/36292.

"Prediction of Achievable Energy Deposition for Vaporizing Foil Actuators", M. Hahn, S.R. Hansen, S. Gies, A. Vivek, G.S. Daehn, A.E. Tekkaya, Peer reviewed Conference Proceedings from 8th International Conference on High-Speed Forming, Columbus Ohio May 15, 2018, https://eldorado.tu-dortmund.de/handle/2003/36292.

"Civilized explosive welding: Impact welding of thick aluminum to steel plates without explosives", Taeseon Lee, Yu Mao, Richard Gerth, Anupam Vivek, Glenn Daehn, *J. Manufacturing Processes*, **36,** 550-556 (2018). https://doi.org/10.1016/j.jmapro.2018.11.005

A robust process-structure model for predicting the joint interface structure in impact welding", Varun Gupta, Taeseon Lee, Anupam Vivek, Kyoo Sil Choi, Yu Mao, Xin Sun and Glenn S. Daehn, *Journal of Materials Process Technology,* available online Aug 31, 2018. Doi: https://doi.org/10.1016/j.jmatprotec.2018.08.047

"Mechanical properties of joints in 5052 aluminum made with adhesive bonding and mechanical fasteners", B. Ufferman, T. Abke, M. Barker, A. Vivek and G. S. Daehn, *International Journal of Adhesives and Adhesion*, https://doi.org/10.1016/j.ijadhadh.2018.02.030 (2018).

"Extreme Twinning and Hardening of 316L from a Scalable Impact Process", Ankur Kumar Agrawal, Apurna Singh, Anupam Vivek, Steve Hansen and Glenn Daehn, *Materials Letters*, Accepted, https://doi.org/10.1016/j.matlet.2018.04.044, (2018).

"Metamorphic manufacturing: The Third Wave of Digital Manufacturing", Glenn S. Daehn and Alan Taub, *Manufacturing Letters* **15** (2018) 86–88.

"American Firms are Offshoring Innovation. Here's How to Reverse the Trend" Mike Russo, Pramod P. Khargonekar and Glenn S. Daehn; Guest post: *Alliance for American Manufacturing*

Blog; July 31, 2018. http://americanmanufacturing.org/blog/entry/guest-post-american-firms-are-offshoring-innovation.-heres-how-to-reverse-t

"Benchmarking strength and fatigue properties of spot impact welds", Angshuman Kapil, Taeseon Lee, Anupam Vivek, John Bockbrader, Tim Abke, Glenn Daehn, *Journal of Materials Processing Technology,* **255,** pp 219-233, (2018). https://doi.org/10.1016/j.jmatprotec.2017.12.012

18-12 "Dissimilar Impact Welding of 6111-T4, 5052-H32 Aluminum Alloys to 22MnB5, DP980 Steels and the Structure-Property Relationship of a Strongly-Bonded Interface", Bert Liu, Anupam Vivek, Michael Presley and Glenn S. Daehn, *Met and Mater Transactions A*, 49, pp. 899-907, (2018). https://doi.org/10.1007/s11661-017-4429-7

18-13 "Flyer Thickness Effect in the Impact Welding of Aluminum to Steel", Taeseon Lee, Shunyi Zhang, Anupam Vivek, Brad Kinsey and Glenn Daehn, *Journal of Manufacturing Science and Engineering*, **140**, Dec, 2018. https://manufacturingscience.asmedigitalcollection.asme.org/article.aspx?articleid=2698524

2017

"High Strain Rate Embossing with Copper Plate" H. Wang, A. Vivek, Y. Wang, G. Viswanathan and G. Daehn, *International Journal of Metal Forming*, 10, pp. 697-705 (2017). https://link.springer.com/article/10.1007/s12289-016-1312-9

"Joining sheet aluminum AA6061-T4 to cast magnesium AM60B by vaporizing foil actuator welding: input energy, interface, and strength", Bert Liu, Anupam Vivek and Glenn Daehn, *Journal of Manufacturing Processes*, 30, pp. 75-82 https://www.sciencedirect.com/science/article/pii/S1526612517301044 (2017).

Microstructural Design of Metal Matrix Composites for High Temperature Strength and Superplastic Behavior by Strain Mismatch", G. S. Daehn, In: Beaumont, P.W.R. and Zweben, C.H. (eds.), *Comprehensive Composite Materials II*. vol. 4, pp. 242–274. Oxford: Academic Press (2018). doi:10.1016/B978-0-12-803581-8.09966-5

"Profile Indentation Pressure Evaluation Method for Impulse Manufacturing Technologies", Ryan C Brune, Steven R Hansen, Anupam Vivek, John M Sosa, Glenn S Daehn, Submitted to *Journal of Material Process Technologies,* 248, pp185-97, (2017). http://dx.doi.org/doi:10.1016/j.jmatprotec.2017.05.023

"Numerical investigation of CP-Ti & Cu110 impact welding using Smoothed Particle Hydrodynamics and Arbitrary Lagrangian-Eulerian methods", A. Nassiri A., S. Zhang, T. Lee, T. Abke, A. Vivek, B. Kinsey., G. Daehn G., (accepted-*Journal of Manufacturing Processes-DOI: 10.1016/j.jmapro.2017.04.032*), 2017

"Depiction of interfacial morphology in high-velocity impact welded Ti/Cu bimetallic systems using smoothed particle hydrodynamics", A. Nassiri, A. Vivek, T. Abke, B. Liu, T. Lee, G. Daehn, *Applied Physics Letters*, 110**,** pp. 558-564 (2017). – *Images from paper were featured on journal cover.* https://aip.scitation.org/doi/full/10.1063/1.4984742

2015-2016 Assessment of the Army Research Laboratory, Army Research Laboratory Technical Assessment Board Laboratory Assessments Board Division on Engineering and Physical Sciences, National Academies Press, 2017. DOI: 10.17226/24653

"Numerical Modeling of High-Velocity Impact Welding", Ali Nassiri, Shunyi Zhang, Tim Abke, Anupam Vivek, Brad Kinsey and Glenn Daehn, in M.A. Meyers et al. (eds.), Proceedings of the 3rd Pan American Materials Congress, The Minerals, Metals & Materials Series, DOI 10.1007/978-3-319-52132-9_9, pp 83-93 (2017).

"A Microsample Tensile Test Application: Local Strength of Impact Welds Between Sheet Metals": J. T. Benzing, M. He, A. Vivek, G. A. Taber, M. J. Mills and G. S. Daehn, *Journal of Materials Engineering and Performance*, DOI: 10.1007/s11665-017-2514-0 (2017).

2016

"Suitability of the electromagnetic ring expansion test to characterize materials under high strain rate deformation", Kang Yang, Geoffrey Taber, Thaneshan Sapanathan, Anupam Vivek, Glenn S Daehn, Rija Nirina Raoelison, Nicolas Buiron and Mohamed Rachik, *NUMIFORM 2016,* MATEC Web of Conferences 80, 15002 (2016) DOI: 10.1051/matecconf/20168015002

"Laser Impact Welding Application in Joining Aluminum to Titanium", H Wang, A. Vivek, Y. Wang, G. Taber and G. S. Daehn, *Journal of Laser Applications*, 28, (3), pp. 032002-1 – 7 (2016).

Democratizing Manufacturing: Bridging the Gap Between Invention and Manufacturing, G. S. Daehn, J, Ervin, S. Kota, M. Russo and C. Wessner; MForesight Rapid Response Report Number: MF-RR-2016-0104, December 2016.

"Vaporizing Foil Actuator Welding as a Competing Technology to Magnetic Pulse Welding", M. Hahn, C. Weddeling, G. A. Taber, G. S. Daehn and A. E. Tekkaya, *J. Mat. Process Tech*., 230, pp. 8-20 (2016).

"In-situ measurement of relative motion during ultrasonic spot welding of aluminum alloy using Photonic Doppler Velocimetry", Y. Lu, H. Song, G. A. Taber, G. S. Daehn and W. Zhang, *J. Mater Proc. Tech.* DOI: 10.1016/j.jmatprotec.2016.01.006 (2016).

"Interfacial microstructures and mechanical property of vaporizing foil actuator welding of aluminum alloy to steel", Shuhai Chen, Glenn S. Daehn, Anupam Vivek, Bert Liu, S.R. Hansen, Jihua Huang, Sanbao Lin, *Materials Science and Engineering: A*, 659, 12-21 (2016).

"Benchmarking and Refining the Vaporizing Foil Actuator Spot Welding Process", A. Vivek, S. M. Wright, B. C. Liu, S. R. Hansen, R. C. Brune, B. P. Thurston, G. A. Taber, T. Lee, Y. Mao, T. J. Dittrich, G. S. Daehn, *Proceedings of 7th International Conference on High Speed Forming,* Dortrmund, Germany April (2016).

"Impact Welding Structural Aluminium Alloys to High Strength Steels Using Vaporizing Foil Actuator", B. Liu, A. Vivek and G. S. Daehn, *Proceedings of 7th International Conference on High Speed Forming,* Dortrmund, Germany April (2016).

"Low-Energy Impact Spot Welding of High-Strength Aluminum Alloys", Anupam Vivek, Scott Wright, Taseon Lee, Geoffery Taber and Glenn Daehn, *Welding Journal,* February 2016, pp. 32-34 (2016).

2015

"Reddit Ask Me Anything on Manufacturing Innovation", Glenn Daehn on, *New Reddit Journal of Science*: https://doi.org/10.15200/winn.144707.72007 (Nov 9, 2015).

"Arbitrary Lagrangian-Eulerian Finite Element Simulation and Experimental Investigation of Wavy Interfacial Morphology during High Velocity Impact Welding", Ali Nassiri, Greg Chini, Anupam Vivek, Glenn S. Daehn, Brad Kinsey, *Materials and Design,* 88, 345-358 (2015).

"Openable electromagnetic actuator as a non-contact, agile tool for crimping operations", G. Taber, A. Vivek, J. Coffey and G. S. Daehn, *Manuf. Letters*, **5,** pp 21-24 (2015).

"Fe-25Mn-3Al-3Si TWIP–TRIP Steel Deformed at High Strain-Rates", J. T. Benzing, J. E. Wittig, T. M. Smith, M. J. Mills, J. R. Johnson, G. S. Daehn, J. Bentley, D. Raabe, C. Ophus, *Microscopy and Microanalysis, 21,Sup. S3 / August 2015, pp 1745-1746. DOI: http://dx.doi.org/10.1017/S1431927615009502 , Published online: 23 September 2015.* Related poster in Proceedings Microscopy and Microanalysis Conference, Awarded First Place in Physical Sciences.

"In-Situ Observation of Relative Motion in Ultrasonic Spot Welding of Aluminum Alloy using Photonic Doppler Velocimetry", Y. Lu, H. Song, G. A. Taber, D. R. Foster, G. S. Daehn and W. Zhang, Submitted to *Journal of Materials Process Technology* (2015).

"Solid-State Dissimilar Joining of Ti-Fe with Nb and Cu Interlayers", B. Liu, A. Vivek, W. Lin, C. Prothe and G. S. Daehn, *Welding Journal*, 94, pp. 219s-224s July (2015).

"Laser impact welding: design of apparatus and parametric optimization", H. Wang, G. A. Taber, D. Liu, S. Hansen, E. Chowdhry, S. Terry, J. C. Lippold and G. S. Daehn, *J. Manufacturing Processes*, 19**,** pp. 118-124, (2015).

"Impact welding of aluminum alloys 6061 and 5052 by vaporizing foil actuators: heat affected zone size and peel strength", S. A Hansen, A. Vivek and G. S. Daehn, Accepted for Publication, *J. Manufacturing Science and Engineering* (2015).

"Use of Vaporizing Foil Actuator for Impact Welding of Aluminum Alloy Sheets with Steel and Magnesium Alloys, B. Liu, A. Vivek and G. S. Daehn, *Light Metals 2015*, TMS-Wiley, pp. 463-468 (2015).

"Vaporizing Foil Actuator: a Tool for Creating High-Pressure Impulses for Metalworking", A. Vivek, G. A. Taber, J. R. Johnson, and G. S. Daehn, Chapter 12 of *60 Excellent Inventions in Metal Forming*, A. E. Tekkaya, W. Homberg and A. Borsius, Editors, Springer-Verlag, Berlin, pp. 77-82 (2015).

"Electromagnetically Assisted Sheet Metal Stamping and Deep Drawing" , J. Shang, A. Vivek, and G. S. Daehn, Chapter 17 of 60 *Excellent Inventions in Metal Forming*, A. E. Tekkaya, W. Homberg and A. Borsius, Editors, Springe-Verlag, Berlin, pp. 107-112 (2015).

“Plastic Consolidation of Metal Matrix Composites by Pressure Cycling”, G. S. Daehn, Chapter 64 of 60 *Excellent Inventions in Metal Forming*, A. E. Tekkaya, W. Homberg and A. Borsius, Editors, Springe-Verlag, Berlin, pp. 415-419 (2015).

“Solid State Impact Welding of BMG and Copper by Vaporizing Foil Actuator Welding”, A. Vivek, M. Presley, K. M. Flores, N. H. Hutchinson And G.S. Daehn, *Materials Science and Engineering A*, A 634, pp. 1-19 (2015).

“Impact Welding of Aluminum Alloy 6061 to Dual Phase 780 Steel Using Vaporizing Foil Actuator”, A. Vivek, B. Liu, D. Sakkinen, M. Harris, G. Daehn, *SAE Technical Paper 2015-01-0701* (2015).

2014

“Electrically Driven Plasma via Vaporization of Metallic Conductors: A Novel Tool for Joining Tubular Workpieces”, A. Vivek, C. Weddeling, M. Hahn, G.S. Daehn, A.E. Tekkaya, *Procedia, CIRP*, 18, pp. 62-67 (2014).

“Uniform Pressure Electromagnetic Actuator–An Innovative Tool for Magnetic Pulse Welding”, C Weddeling, M Hahn, G. S Daehn, AE Tekkaya. *Procedia CIRP*, 18 156-161 (2014).

“Solid State Impact Welds Between Dissimilar Metals Utilizing Vaporizing Foil Actuators: A Microstructural Evaluation” Katrina N Boos”, Anupam Vivek, Steven R Hansen, Bert C Liu, Glenn S Daehn, *Microscopy and Microanalysis,* 20, 1850-1851 (2014).

“Openable Electromagnetic Actuator as a Non-Contact, Agile Tool for Crimping Operations”, G. Taber, A. Vivek, J. Coffee and G. S. Daehn, Submitted to *Manufacturing Letters,* December 2014.

"High Strain Rate Metalworking with Vaporizing Foil Actuator: Control of Flyer Velocity by Varying Input Energy and Foil Thickness”, A. Vivek, S. R. Hansen and G.S. Daehn, *Review of Scientific Instruments,* 85, 075101-1, 8 (2014).

“Impact Welding of Aluminum to Copper and Stainless Steel by Vaporizing Foil Actuator: Effect of Heat Treatment Cycles on Mechanical Properties and Microstructure”, A. Vivek, S. Hansen, J. Benzing, M. He and G.S. Daehn, *Metallurgical Transactions A*, Published online 18 June 2014. DOI 10.1007/s11661-014-2404-0

“Vaporizing Foil Actuator: a Versatile Tool for High Energy-Rate Metal Working”, Anupam Vivek and Glenn S. Daehn, 11th International Conference on Technology of Plasticity, ICTP 2014, 19-24 October 2014, Nagoya Congress Center, Nagoya, Japan, *Procedia Engineering* (2014).

“Control of Velocity, Driving Pressure, and Planarity in Flyer Launch with Vaporizing Foil Actuator, S. Hansen, A. Vivek and G.S. Daehn, Submitted to 6th International Conference on High Speed Forming, Daejon Korea, April 2014.

“Collision Welding of Tungsten Alloy 17D and Copper Using Vaporizing Foil Actuator Welding”, A. Vivek, S. Hansen and G.S. Daehn, Submitted to 6th International Conference on High Speed Forming, Daejon Korea, April 2014.

“Electrically Driven Plasma via Vaporization of Metallic Conductors: A Novel Tool for Joining Tubular Workpieces”, A. Vivek, C. Weddeling, M. Hahn, G.S. Daehn, A. E. Tekkaya, *International Conference on Manufacture of Lightweight Components – ManuLight2014, Published in Procedia, CIRP* (2014), in press.

“Uniform Pressure Electromagnetic Actuator – An innovative tool for magnetic pulse welding”, C. Weddeling, M. Hahn, G.S. Daehn and A. E. Tekkaya, *International Conference on Manufacture of Lightweight Components – ManuLight2014, Published in Procedia, CIRP* (2014), in press.

“Identification of material constitutive parameters for dynamic applications: Magnetic Pulse Forming (MPF) and electrohydraulic forming (EHF)”, A-C Jeanson, G. Avrillaud, G. Mazars, G. Taber, G. Daehn, F.Bay, N. Jacques, M. Arrigoni, Submitted to 6th International Conference on High Speed Forming, Daejon Korea, April 2014.

“Sustainable Design and Manufacturing of Lightweight Vehicle Structures”, G. S. Daehn Chapter 13 in *Alternative Fuels and Advanced Vehicle Technologies*, R. Folkson, Editor, Woodhead Publishing, (2014).

“Vaporizing Foil Actuator Used for Impulse Forming and Embossing of Titanium and Aluminum Alloys", A. Vivek, R. C. Brune, S. R. Hansen and G.S. Daehn, *Journal of Materials Process Technology*, 214 (4), pp. 865–875, (2014).

“Vaporizing Foil Actuator Welding of AA6061 with Cu110: Effect of Heat Treatment Cycles on Mechanical Properties and Microstructure”, A. Vivek, S. R. Hansen, B. C. Liu and G.S. Daehn, Submitted to Proceedings of the 2014 ASME Manufacturing Science and Engineering Conference, June 9-13, 2014, University of Michigan, USA. doi:10.1115/MSEC2014-4118

“Vaporizing Foil Actuator: Controlling the Pressure Pulse for Impulse Metalworking”, S. R. Hansen, A. Vivek and G.S. Daehn, Proceedings of the 2014 ASME Manufacturing Science and Engineering Conference, June 9-13, 2014, University of Michigan, USA. doi:10.1115/MSEC2014-4125

"Dynamic Compaction of Titanium Powder by Vaporizing Foil Actuator Assisted Shearing", A. Vivek, J. D. Defouw and G.S. Daehn, *Powder Technology,* 254, pp. 181-186 (2014).

“Assessing Collision Welding Process Windows with Vaporizing Foil Actuators and Grooved Targets”, A. Vivek, B. C. Liu, S. R. Hansen and G.S. Daehn, *Journal of Materials Process Technology*, 214 (8), pp. 1583-1589 (2014).

“In-Situ Velocity Measurements of Very High Power Ultrasonic Additive Manufacturing using a Photonic Doppler Velocimeter”, D. R. Foster, G. Taber, S. S. Babu and G.S. Daehn, *Science and Technology of Joining and Welding*, 19, 156-163 (2014).

2013

“Vaporizing Foil Actuators: A Tool for Collision Welding”, A. Vivek, S. R. Hansen, B. C. Liu, G.S. Daehn, *Journal Materials Process Technology,* 213 (12), pp. 2304-2311 (2013).

“Shape Calibration of High Strength Metal Sheets by Electromagnetic Forming”, E. Iriondo, J. L. Alcaraz, G.S. Daehn, M. A. Gutiérrez and P. Jimbert, *Journal of Manufacturing Processes*, 15, pp. 183-193 (2013). http://dx.doi.org/10.1016/j.jmapro.2013.01.007

“Electrically Driven Plasma via Vaporization of Metallic Conductors: A Tool for Impulse Metalworking”, A. Vivek, G. A. Taber, J. R. Johnson, S. T. Woodward and G.S. Daehn, *Journal of Materials Processing Technology,* 213 (8), pp. 1311-1326 (2013). http://dx.doi.org/10.1016/j.jmatprotec.2013.02.010

“Study and Simulation of Critical Factors Affecting Final Quality in Electromagnetically Hemmed Automotive Aluminum”, P. Jimbert, I. Eguia, G.S. Daehn, E. Iriondo, M. A. Gutierrez and I. Hurtado, *Journal of Materials Engineering and Performance,* 22 (6), pp. 1601-1610 (2013) DOI 10.1007/s11665-012-0440-8*.*

“Shape Calibration of High Strength Metal Sheets by Electromagnetic Forming”, E. Iriondo, J. L. Alcaraz, G.S. Daehn, M. A. Gutiérrez, P. Jimbert, *Journal of Manufacturing Processes,* 15 (2), pp.183-193 (2013).

2012

“An Electromagnetically Driven Metalworking Press“, G. A. Taber, B. A. Kabert, A. T. Washburn, T. N. Windholtz, C. E. Slone, K. N. Boos and G.S. Daehn, Peer Reviewed Proceedings of the 5th International Conference on High Speed Forming, Dortmund, Germany, April 2012. http://hdl.handle.net/2003/29541

“Laser Impact Welding – Process Introduction and Key Variables”, H. Wang, D. Liu, G. Taber, J. C. Lippold, G.S. Daehn, Peer Reviewed Proceedings of the 5th International Conference on High Speed Forming, Dortmund, Germany, April 2012. http://hdl.handle.net/2003/29542

“Rapidly Vaporizing Conductors Used for Impulse Metalworking”, A. Vivek, G. Taber, J.R. Johnson, G.S. Daehn, Peer Reviewed Proceedings of the 5th International Conference on High Speed Forming, Dortmund, Germany, April 2012. http://hdl.handle.net/2003/29529

“Creep Behavior and Deformation Mechanisms for Nanocluster-Strengthened Ferritic Steels”, M.C. Brandes, L. Kovarik, M. Miller, G.S. Daehn and M. J. Mills, *Acta Materialia* 60, 1827-1839 *(*2012).

2011

“Linking Transformational Materials Processing for an Energy Efficient and Low Carbon Economy: Creating the Vision and Accelerating Revitalization”, one of many contributors, Process led by US-DOE Advanced Manufacturing Office and TMS, available at http://energy.tms.org/initiatives/LTMP.aspx (2011).

“Predictive Mechanism for Anisotropy Development in the Earth's Inner Core” D.M. Reaman, G.S. Daehn, W.R. Panero, *Earth and Planetary Science Letters*, 312 (3-4)**,** pp. 437-442 (2011).

“Dislocation Mediated Time-Dependent Deformation in Crystalline Solids”, M.J. Mills and G.S. Daehn, Chapter in: *Computational Methods for Microstructure-Property Relationships*, S. Ghosh and D. M. Dimiduk, editors, Springer Science, pp. 311-363 (2011).

“Energy Field Methods and Electromagnetic Metal Forming”, G.S. Daehn, Chapter 18 in: *Intelligent Energy Field Methods and Interdisciplinary Process Innovations,* Wenwu Zhang, Editor, CRC Press, pp. 471-504 (2011).

“Production of Low-Volume Aviation Components Using Disposable Electromagnetic Actuators” Steven Woodward, Christian Weddeling, Glenn Daehn, Verena Psyk, Bill Carson, A. Erman Tekkaya, *Journal of Materials Processing Technology*, 211 (5), pp. 886-895 (2011).

“Electromagnetic Impulse Calibration of High Strength Sheet Metal Structures”, E. Iriondo, M. A. Gutiérrez, B. González, J. L. Alcaraz and G.S. Daehn, *Journal of Materials Processing Technology*, 211 (5), pp. 909-915 (2011).

“Simulation and Instrumentation of Electromagnetic Compression of Steel Tubes”, A. Vivek, K-H Kim, and G.S. Daehn, *Journal of Materials Processing Technology*, 211 (5), pp. 840-850, (2011).

“Application of High Velocity Impact Welding at Varied Different Length Scales”, Y. Zhang, S.S. Babu, C. Prothe, M. Blakely, J. Kwasegroch, M. LaHa, G.S. Daehn, *Journal of Materials Processing Technology*, 211 (5), pp. 944-952, (2011).

“Electromagnetically Assisted Sheet Metal Stamping”, J. Shang and G.S. Daehn, *Journal of Materials Processing Technology*, 211 (5), pp. 868-874, (2011).

“Collision Welding of Sheet Metals: A Practical and Green Technology”, Y. Zhang, H. Wang, S. Babu, J.C. Lippold, J. Kwasegroch, M. LaHa, and G.S. Daehn, *Welding Journal,* 90 (5) pp. 46-51 (2011).

2010

“Manufacturing: Essential to our Well Being and Under Threat”, G.S. Daehn, Ohio Matters*, Publication of the Ohio Chamber of Commerce, July/August 2010.*

"Study of Pd-Ag Dental Alloys: Examination of Effect of Casting Porosity on Fatigue Behavior and Microstructural Analysis", D. Li, S. Alpathi, R. Heshmati, G.S. Daehn and W.A. Brantley, *Journal of Materials Science: Materials in Medicine,* 21, pp. 2723-2731 (2010).

“Interfacial Ultrafine Grained Structures on Aluminum Alloy 6061 and Copper Alloy 110 Joint Fabricated by Electromagnetic Pulse Welding”, Y. Zhang, S.S. Babu and G.S. Daehn, *Journal of Materials Science*, 45,(17), pp. 4645-4651 (2010).

“A TEM Study of Creep Deformation Mechanisms in AllVac 718 Plus”, Raymond R. Unocic, K.A. Unocic, R.W. Hayes, G.S. Daehn, and M.J. Mills: 7th International Symposium on Superalloy 718 and Derivatives, June, 2010.

“Impact Welding in a Variety of Geometric Configurations”, Y. Zhang, H. WanG.S. Babu and G.S. Daehn, in Peer Reviewed *ICHSF 2010 Proceedings; 4th International Conference on High Speed Forming*, Columbus, Ohio, pp. 97-107, March 9-10, (2010).

"Agile Production of Sheet Metal Aviation Components Using Disposable Electromagnetic Actuators", S. Woodward, C. Weddeling, G.S. Daehn, V. Psyk, W. Carson and E. Tekkaya, in Peer Reviewed *ICHSF 2010 Proceedings; 4th International Conference on High Speed Forming*, Columbus, Ohio, pp. 35-46, March 9-10, (2010).

"Dimensional Control and Formability in Impact Forming", S. Srinivasan, H. Wang, G. Taber and G.S. Daehn, in Peer Reviewed *ICHSF 2010 Proceedings; 4th International Conference on High Speed Forming*, Columbus, Ohio March 9-10, 2010.

"Commercialization of Fuel Cell Bipolar Plate Manufacturing by Electromagnetic Forming", J. Shang, L. Wilkerson, S. Hatkevich and G.S Daehn in Peer Reviewed *ICHSF 2010 Proceedings; 4th International Conference on High Speed Forming*, Columbus, Ohio, pp. 47-56, March 9-10, (2010).

"Pressure Heterogeneity in Small Displacement Electrohydraulic Forming Processes", V. J. Vohnout, G. K. Fenton and G.S. Daehn, in Peer Reviewed *ICHSF 2010 Proceedings; 4th International Conference on High Speed Forming*, Columbus, Ohio, pp. 65-74, March 9-10, (2010).

"Microstructrural Features Leading to Enhanced Grain Boundary Resistance to Grain Boundary Creep Cracking in Allvac 718 Plus", K. A. Unocic, R. W. Hayes, and G.S. Daehn, *Metallurgical Transactions A,* 42 (2), pp. 409-420 (2010).

"Effect of Gallium Focused Ion Beam Milling on Preparation of Aluminum Thin Foils", K.A. Unocic, M.J. Mills and G.S Daehn, *Journal of Microscopy*, 240, pp. 227-238, (2010).

"Comparison of Fully Coupled Modeling and Experiments for Electromagnetic Forming Processes in Finitely Strained Solids", J.D. Thomas, N. Triantafyllidis, A. Vivek, G.S. Daehn and J.R. Bradley, *International Journal of Fracture,* 163, pp. 67-83 (2010).

2009

"Shock-less High Rate Compaction of Porous Brittle Materials", G. Fenton, T. Caipen, G. Daehn T. Vogler and D. Grady, in Shock Compression of Condensed Matter -2009 (the Proceedings of the 16th APS Topical Conference on Shock Compression of Condensed Matter), Nashville, TN, (2009).

"Experimental Study and Numerical Simulation of Magnetic Pulsed Welding for Pre-Flanged AA6061-T6 and Cu101 Sheets", Y. Zhang, G.S. Daehn, P. L"Eplattenier and B. Suresh, 8th International Conference on*Trends in Welding Research*, S. A. David *et.al.* editors, June 1-6, 2008. Pp. 715-720, *(2009).*

"Low-Cost Manufacturing of Fuel Cell Bipolar Plates by Electromagnetic Forming", J. Shang, L. Wilkerson, S. Hatkevich, G.S. Daehn, S. Srinivasan, H. Wang and J. R. Bradley, in *Emerging Materials Forming Technology*, MS&T Proceedings (2009).

"High Strain Rate Constitutive Relations and Ductility Parameters via Electromagnetic Launch and Velocimetry", J. R. Johnson, G. K. Fenton, G. Taber, A. Vivek and G.S. Daehn, *Proceedings International Deep Drawing Research Group*, Golden CO, (2009).

“Dynamic Characterization of Granular Materials”, G. Fenton, G.S. Daehn, G. Taber, T. Vogler, and D. Grady, in *Proceedings of Society of Engineering Mechanics*, Albuquerque, NM June 1-3, (2009).

“Springback Elimination in Structural Components by Means of Electromagetic Forming”, Leire Vadillo, Iñaki Pérez, Iñaki Eguía, Mª Ángeles Gutiérrez, Beatriz González, Uwe Paar, Glenn S. Daehn and Rafel Iturbe, SAE Paper 09M-134, Proceedings of SAE World Congress and Exhibition, (2009).

“Coupling Experiment and Simulation in Electromagnetic Forming Using Photon Doppler Velocimetry”, Jason R. Johnson, Geoff Taber, Anupam Vivek, Yuan Zhang, Scott Golowin, Kristin Banik, Gregg K. Fenton, and Glenn S. Daehn, *Steel Research International*, 80, pp. 359-365 (2009).

2008

“Microstructure characteristic of magnetic pulse welded AA6061-T6 by electron backscattered diffraction”, Zhang, Y, Babu, SS, Zhang, P, Kenik, AE, Daehn, GS, Sci & Tech of Welding and Joining, 13, pp. 467-471, (2008).

“TEM Sample Preparation Method for Grain Boundary Phase Identification in Al-Mg alloys” G.S. Daehn and K.A. Unocic, *Adv Mat Proc*, 166, pp. 42-43, (2008).

“Material Constitutive Parameter Identification Using an Electromagnetic Ring Expansion Experiment Coupled with LS-DYNA and LS-OPT”, I. Henchi, P. L’Eplattenier, G.S. Daehn, Y. Zhang, A. Vivek and N. Stander, in 10th International LS-DYNA Users Conference (2008) pp. 14.1-14.11.

“Numerical Simulation and Experimental Study for Magnetic Pulse Welding Process on AA6061-T6 and Cu101 Sheet”, Y. Zhang, P. L’Eplattenier, G. Taber, A. Vivek, G.S. Daehn and S. Babu, in 10th International LS-DYNA Users Conference (2008) pp. 8.13- 8-25

“Flanging and Hemming Auto Body Panels using Electromagetic Forming”, P. Jimbert, I. Eguia, M. A. Gutierrez, B. Gonzalez, G.S. Daehn, Y. Zhang, R. Andersson, H. Sundberg, S. O. Olsson, P. Brännström”, In Proceedings of Third International Conference on High Speed Forming, E. Tekkaya, M. Kleiner, Editors, pp. 163- 172 (2008).

“Application of Pulsed Electromagnetic Energy for Shape Calibration of Compound Curved Thin Plates”, V. J. Vohnout, G.S. Daehn and W. Hayes, 17th Conference Metal 2008, 13.-15.5.2008, Hradec and Moravicí, Česká republika (2008).

2007

"Forming Limits for Electromagnetically Expanded Aluminum Alloy Tubes: Theory and Experiment", J. D. Thomas, M. Seth, G.S. Daehn, J. R. Bradley and N. Triantafylidis, *Acta Mater.,* 55, pp. 2863-2873 (2007).

“Co-continuous composites for high-temperature applications”, E. Del Rio, J. M. Nash, J.C. Williams, M. C. Breslin, G.S. Daehn, *Mat Sci & Eng A*, 463, pp. 115-121, (2007).

“Fatigue limits and SEM/TEM observations of fracture characteristics for three Pd-Ag dental casting alloys” D. F. Li, W. A. Brantley, W. Gao, WAT Clark, S.B. Alpati, H. Reza and G.S. Daehn, *J Mat Science-Mat in Med*, 18, 119-125, (2007).

“Application of a Uniform Pressure Actuator for Electromagnetic Processing of Sheet Metal”, S. Golowin, M. Kamal, J. Shang, J. Portier, A. Din, J. R. Bradley S. Hatkevich and G.S. Daehn, *J. Mater. Eng. Perform.,* 16, pp. 455-460, (2007).

"A Uniform Pressure Electromagnetic Actuator for Forming Flat Sheets", Manish Kamal and Glenn S. Daehn, *J of Manuf. Sci. and Eng.,* 129, pp. 369-379, (2007).

"Agile Manufacturing of a Micro-Embossed Case by a Two-Step Electromagnetic Forming Process", M. Kamal, J. Shang, V. Cheng, S. Hatkevich and G.S. Daehn, *J. Mater. Proc. Tech.*, 190, pp. 41-50, (2007).

“Straight Hemming of Aluminum Sheet Panels Using the Electromagnetic Forming Technology: First Approach”, P. Jimbert, I. Perez, I. Eguia, G.S. Daehn, *Key Engineering Materials*, 344 pp. 365-372, (2007).

“Hemming of Aluminum Sheet Panels Using the Electromagnetic Forming Technology”, P. Jimbert et. al., *Proceedings from IDDRG 2007*, Győr, Hungary, May 21-23, (2007).

"Agile Sheet Metal Forming: Basic Concepts and the Role of Electromagnetic Metal Forming", G.S. Daehn, *Proceedings from IDDRG 2007*, Győr, Hungary, May 21-23, (2007).

“An Initial Study of Diffusion Bonds Between Superplastic Ti-6Al-4V for Implant Dentistry Application”, K. L. Elias, G.S. Daehn, W.A. Brantley and E. A. McGlumphy, Journal of Prosthetic Dentistry 97 pp.357-65 (2007).

“Machine Tool” Entry in *World Book Encyclopedia,* revision in use 2007 and beyond.

2006

“Effect of load redistribution in transient plastic flow”, W Gan, P.H Zhang, R.H. Wagoner, G.S. Daehn, *Met and Mat Trans A*, 37A pp. 2097-2106 (2006).

“Efficiency Improvement and Analysis of Microstructure Associated with Use of a Uniform Pressure Actuator”, P. Jimbert, A. Arroyo, I. Eguia, J. I. Fernandez, E. Silveria, I Garuz and G.S. Daehn, *Proceedings from 2nd Annual ICHSF 2006:* Dortmund, Germany March 20-21, pp. 175-186 (2006).

“Introduction of an Electromagnetism Module in LS-DYNA For Coupled Mechanical-Thermal-Electromagnetic Simulations”, P. L’Eplattenier, G. Cook, C. Aschraft, M. Berger, A. Shapiro, G.S. Daehn and M. Seth, 9th International LS-DYNA Users Conference, (2006).

“Design, Construction, and Applications of the Uniform Pressure Electromagnetic Actuator” Manish Kamal, Vincent Cheng, John Bradley, Steve Hatkevich, Glenn S. Daehn, *Proceedings from 2nd Annual ICHSF 2006:* Dortmund, Germany March 20-21, pp. 217-226 (2006).

“Vickers hardness investigation of work-hardening in used NiTi rotary instruments”, S. B. Alapati, W. A. Brantley, J. M. Nussten, G.S. Daehn, T. A. Svec, J. M. Powers, W. M. Johnston, W. Gao, *Journal of Endodontics*, 32, pp. 1191-1193, (2006).

“New Approach for Springback Correction: Electromagnetic Impulses”, E. Iriondo, B. González, M. A. Gutiérrez, G.S. Daehn, *Proceedings from the International Conference New Developments in Sheet Metal Forming*, Stuttgart, Germany May 10-12, pp. 415-428, (2006).

“Replication of Microfeatures by Electromagnetic Launch and Impact” M. Kamal, V. Cheng, T.K. Sue, J. Shang and G.S. Daehn, *Proceeding from International Conference on Micromanufacturing 2006*, Urbana, IL September 13-15, pp. 197-203 (2006).

“Electromagnetic Springback Reshaping”, E. Iriondo, B. Gonzalez, M. Gutierrez, V. Vonhout, G. Daehn, B. Hayes*, Proceedings from 2nd Annual ICHSF 2006:* Dortmund, Germany, pp. 153-160 (2006).

“Electromagnetic and High Velocity Forming: Opportunities for Reduced Cost and Extended Capability in Sheet Metal Forming” G.S. Daehn, E. Iriondo, M. Kamal, M. Seth and J. Shang, SME, SME Publication: TP05PUB184 (2006).

“Grain boundary precipitate modification for improved intergranular corrosion resistance, K.A. Unocic, P. Kobe, M.J. Mills, G.S. Daehn, Aluminum Alloys 2006, 519-521, pp 327-332.

“Co-Continuous Composite Materials for Friction and Braking Applications” G.S. Daehn and M.C. Breslin *JOM*, 58, pp. 87-91, (2006).

2005

“Experimental Study of Spingback Elimination Using Electromagnetic Forming” Edurne Iriondo, Beátriz Gonzalez, Iñaki Eguia, Marian Gutiérrez, Glenn Daehn, *Proceedings from the 2005 DDRG*: Conference, Besançon, France, June 20-22, 2005.

“A Uniform Pressure Electromagnetic Actuator for Forming Flat Sheets**”** M. Kamal and G.S. Daehn, *Journal of Manufacturing Science and Engineering*, 129, pp. 369-380*,* (2005).

"High Velocity Metal Forming", G.S. Daehn, Chapter in *ASM Handbook*, Volume 14B, Metalworking: Sheet Forming, pp. 405-418, ASM International, Metals Park Ohio, (2005).

"Formability of Sheet Steel in High Velocity Impact” M. Seth, V.J. Vohnout and G.S. Daehn, *J Mater. Proc*. Tech., 168, pp 390-400, (2005).

"Effect of Aspect Ratio on High Velocity Formability of Aluminum Alloy" M. Seth and G.S. Daehn, *TMS Trends in Materials and Manufacturing Technologies for Transportation Industries Symposium,* San Francisco, California, February 13–17, p 59, (2005).

“Transient Plastic Flow at Nominally Fixed Structure Due to Load Redistribution” W. Gan, P. Zhang, R.H. Wagoner and G.S. Daehn, *Zietschrift für Metallkunde*, 96, pp. 572-577 (2005).

“SEM observations of nickel-titanium rotary endodontic instruments that fractured during clinical use”, S. B. Alapati et al., Journal of Endodontics, 31, pp. 40-43, (2005).

“Bending fatigue study of nickel-titanium gates glidden drills” N.H. Luebke et al., Journal of Endodontics, 31, pp 523-525, (2005).

2004

“Proposed Role of Embedded Dentin Chips for the Clinical Failure of Nickel-Titanium Rotary Instruments” S.B. Alapati, W.A. Brantley, T.A. Svec, J.M. Powers, J.M. Nusstein, G.S. Daehn, *Journal of Endodontics*, 30, 339-341 (2004).

“Analysis of the Electromagnetic Impulse Joining Processes With a Field Concentrator” P. Zhang, S.Yushanov, G.S. Daehn, *MATERIALS PROCESSING AND DESIGN: Modeling, Simulation and Applications - NUMIFORM 2004 - Proceedings of the 8th International Conference on Numerical Methods in Industrial Forming Processes.* AIP Conference Proceedings, 712, pp. 1253-1258 (2004).

"Improved Formability by Control of Strain Distribution in Sheet Stamping Using Electromagnetic Impulses", V.J. Vohnout, J Shang, G.S. Daehn, *Proceedings from ICHSF 2004*: pp. 211-220, Dortmund, Germany March 31-April 1, (2004).

"Improved Crimp-joining of Aluminum Tubes onto Mandrels with Undulating Surfaces", I. Eguia, P. Zhang, G.S. Daehn, *Proceedings from ICHSF 2004:* pp. 161-170 Dortmund, Germany March 31-April 1, (2004).

2003

“Use of Lightweight Materials in 21st Century Army Trucks”, H. A. Lipsett, R. A. Baranescu, J.V. Busch, G.S. Daehn, L. J. Howell, M. Metha, W. D. Pilkey and O.D. Sherby, National Research Council of the National Academies Report, 96 pages, (2003), available at www.nap.edu.

“Electromagnetically Assisted Sheet Forming: Enabling Difficult Shapes by Controlled Energy Distributions”, G.S. Daehn, J. Shang and V.J. Vohnout, TMS MPMD Fourth Global Innovation Symposium (2003).

"Prediction of Limit Strains in Superplastic Materials", M.P. Miles, G.S. Daehn and R.H. Wagoner, *Metallurgical and Materials Transactions A*, 34A, 2559-2564, (2003).

"Observations on the Densification of Al-Al_2O_3 Composite Powder Compaction by Pressure Cycling", G. Jiang, G.S. Daehn and R. H. Wagoner, *Powder Metallurgy*, 46, 78-82, (2003).

"Investigation of Yield Surface of Monolithic and Composite Powders by Explicit Finite Element Simulation", X.J. Xin, P. Jayaraman, G.S. Daehn and R.H. Wagoner, *International Journal of Mechanical Sciences*, 45, 707-723, (2003).

2002

“Deformation Mechanisms During Creep of Titanium Alloys at Low Temperature” M. J. Mills, T. Neeraj, M. F. Savage and G.S. Daehn, *Creep Deformation: Fundamentals and Applications*, R. S. Mishra, J. C. Earthman and S. V. Raj, Eds., TMS, pp. 389-398 (2002).

"Spot Impact Welding of Sheet Aluminum", A. Turner, P. Zhang, V.J. Vohnout and G.S. Daehn, *Materials Science Forum; Proceedings of the 8th International Conference ICAA8*, Cambridge, UK, 2-5 July, 396-402, P.J. Gregson and S. Harris, eds. pp. 1573-1578, (2002).

"Explicit Finite Element Method Simulation of Consolidation of Monolithic and Composite Powders", X.J. Xin, P. Jayaraman, G. Jiang, R.H. Wagoner and G.S. Daehn, Materials and Metallurgical Transactions, 33A, 2649-2658, (2002).

"Effect of Cyclic Compaction on the Uniformity of Metal Matrix Composites", Y. Fu, J. J. Lannutti, R. H. Wagoner and G.S. Daehn*, Materials and Metallurgical Transactions,* 33A, 183-191, (2002).

"Fatigue Studies of High-Palladium Dental Castings Alloys: Part 1. Fatigue Limits and Fracture Characteristics" D. Li, W.A. Brantley, J.C. Mitchell, G.S. Daehn, P. Monaghan, E. Papazoglou, *Journal of Materials Science-Materials in Medicine, 13(4):* 361-367 (2002).

"A Scaling Analysis of Recovery Creep", G. S Daehn, H. Brehm and B-S Lim in Modeling the Performance of Engineering Structural Materials III, *Proceedings of TMS Fall Meeting*, eds. D.R. Lesuer, T.S. Srivatsan, and E.M. Taleff, pp. 371-382, (2002).

"A Model for Slip Creep Based on Sub-Structural Coarsening" H. Brehm and G.S. Daehn, *Creep Deformation Fundamentals and Applications*, R.S. Mishra, J.C. Earthman and S.V. Raj Eds. *TMS*, pp. 421-429 (2002).

"A Framework for Modeling Creep in Pure Metals", H. Brehm and G.S. Daehn, *Materials Transactions A*, 33A, 363 -371, (2002).

2001

"Inclusion Particle Size Effects on the Cyclic Compaction of Powder Composites", G. Jiang, G.S. Daehn and R. H. Wagoner*, Scripta Materialia,* 44, 1117-1123, (2001)

"Effects of Lubrication and Aspect Ratio on the Consolidation of Metal Matrix Composites under Cyclic Pressure", G.Jiang, G.S. Daehn, J. J. Lannutti, Y. Fu and R. H. Wagoner*, Acta Mater*. 49 (8) 1471-1477 (2001).

"Primary Creep in Polycrystalline Alpha-Titanium: Coupled Observations and a Stochastic Cellular Automaton Model", N. Thirumalai, M.F. Savage, M. J. Mills and G.S. Daehn, *Proceedings of the 9th International Conference on Creep and Fracture of Engineering Materials and Structures*, J.D. Parker, Ed., Swansea, Wales, pp. 49-54 (2001).

"Modeling Thermally Activated Deformation with a Variety of Obstacles and its Application to Creep Transients", G.S. Daehn, *Acta Mater*. 49, pp. 2017-2026 (2001).

"Void Filling and Cluster Breaking of Metal-Ceramic Composites Under Pressure Cycling", G. Jiang, G.S. Daehn and R. H. Wagoner, *Scripta Mater*. 44**,** pp. 287-292, (2001).

"Experimental and Numerical Investigations of Idealized Solid State Consolidation, Part I: Static Compaction", W. Wu, G. Jiang, R. H. Wagoner and G.S. Daehn, *Acta Mater*. 48 (17), pp. 4323-4330, (2000).

2000

"Experimental and Numerical Investigations of Idealized Solid State Consolidation, Part II: Cyclic Compaction", G. Jiang, W. Wu, R, G.S. Daehn and R. H Wagoner, *Acta Mater*. 48 (17), pp. 4331-4335, (2000).

"Primary Creep Transients due to Non-Uniform Obstacle Sizes", G.S. Daehn, *Mater. Sci & Eng A-Structural Materials*, 319, pp. 765-769.

"Phenomenological and Microstructural Analysis of Room Temperature Creep in Titanium Alloys", T. Neeraj, D-H Hou, G.S. Daehn and M. J. Mills, *Acta Mater*. 48, pp. 1225-1238 (2000).

"Effects of Zn additions on the grain boundary precipitation and corrosion of Al-5083", Carroll MC, Gouma PI, Mills MJ, et al. *Scripta Mater*, 42, pp. 335-340 (2000).

"Thermal Cycling and Related Strain Mismatch in Metal Matrix Composites", G.S. Daehn, Volume 3, *Chapter 15 Comprehensive Composite Materials*, invited book chapter, edited by A. Kelly and C. Zweben, Elsevier, pp. 419-445 (2000).

"Experimental and Numerical Examination of Idealized Powder Compaction under Cyclic Pressure, G. Jiang, W. Wu, G.S. Daehn and R. H. Wagoner, *Acta Mater*. 48 (17), pp. 4331-4335, (2000).

1999

"Improved Formability with Electromagnetic Forming: Fundamentals and a Practical Example", G.S. Daehn, V. J. Vohnout and L. DuBois, in *TMS Sheet Metal Forming Symposium* M.Y. Demeri, Editor, *The Minerals*, Metals & Materials Society (1999), pp. 105–116 (1999).

"Hyperplastic Forming: Process Potential and Factors Affecting Formability", G.S. Daehn, V. J. Vohnout and S. Datta, *Proceedings of 1999 MRS Fall meeting, Symposium HH, Superplasticity and Superplastic Forming*, T. Langdon, ed., pp. 141-153 (1999).

"A Hybrid Quasi-Static-Dynamic Process for Increased Limiting Strains in the Forming of Large Sheet Aluminum Parts", V. J. Vohnout, G.S. Daehn and R. Shivpuri, in Advanced Technology of Plasticity, *Proceedings of the 6th ICTP Conf*., M. Geiger, Ed., pp. 1359-1364 (1999).

"Effects of Minor Sc and Zr Additions on Commercial Al-Mg-Mn Alloys, M.C. Carroll, M. J. Mills G.S. Daehn, P. I. Gouma, M. F. Savage and B. R. Dunbar, *In TMS Proceedings: Aluminum Alloys for Automotive Applications*, S. Das, Ed., TMS, San Diego, Feb., pp. 239-247 (1999).

“A Model of Creep Based on Interacting Elements and its Application to the Primary Creep of Fully-Lamellar γ-TiAl", Glenn S. Daehn, G. B. Viswanathan, Michael J. Mills and V. K. Vasudevan, *Creep and Creep Resistant Materials for the 21st Century*, R. Mishra, Ed., TMS, pp. 178-191 (1999).

"A Numerical Method to Solve for General Dislocation Configurations: The Finite Segment Method", X. J. Xin, R. H. Wagoner and G.S. Daehn, *Materials Transactions*, 30A, pp. 2073-2087 (1999).

1998

"Tribiological behaviour of Al-20%Si/Al2O3 high reinforcement content composites produced by a displacement reaction", L. Ceschini, M.C. Breslin, G.S. Daehn, G.L. Garagnani, G. Poli, *Proceedings of ECCM-8 (European Conference on Composite Materials)*, Napoli, 3-6 giugno 1998, pp. 285-293 (1998).

"Modeling of Electromagnetically Formed Sheet Metal", G. K Fenton and G.S. Daehn, *J. Mater. Proc. Tech*. 75, Issue: 1-3, pp. 6-16 (1998).

"Finite Segment Method for Dislocation Mechanics", X. J. Xin, R. H. Wagoner and G.S. Daehn, *Scripta Mater*.39, 397-407 (1998).

"Modeling the Generation Equilibrium and Emission of Dislocations at Misfitting Particles", X. J. Xin, G.S. Daehn and R. H. Wagoner, *Acta Mater*, 46, pp. 6131-44 (1998).

"Friction and wear behaviour of Co Continuous Al_2O_3/Al composites under dry sliding conditions", L. Ceschini, G.S. Daehn, G.L. Garagnani, C. Martini, *Wear* 216, pp. 229-38 (1998).

1997

"Thermal Cycling Creep of Metal Matrix Composites: Modeling With Continuum and Dislocation-Based Approaches", G.S. Daehn, X. J. Xin and R. H. Wagoner, in *Creep and Fracture of Engineering Materials and Structures*, J. C. Earthman and F. A. Mohamed, Editors, TMS, pp. 257-266 (1997).

"Superplasticity and Interdiffusion in Laminated Composites based on Ultrahigh Carbon Steel", G.S. Daehn and O. D. Sherby, in *Thermomechanical Processing and Mechanical Properties of Hypereutectoid Steels and Cast Irons*, D. Lesuer and O. D. Sherby, Editors, *TMS*, pp. 219-239 (1997).

"Opportunities in High Velocity Forming of Sheet Metal", A.A. Tamhane, M. Padmanabhan, G. Fenton, M. Altynova and G.S. Daehn, *Metal Forming*, pp. 42-49 January, (1997).

"Microstructure and tribological properties of a co-continuous alumina/aluminum composite", L. Ceschini, G.S. Daehn, G.L. Garagnani, C. Martini, *Proceedings of the "5th European Conference on Advanced Materials and Applications",* Vol.3 - Surface Engineering and Functional Materials, Netherlands Society for Materials Science, Zwijndrecht, NL (1997) pp. 319-322.

"Equilibrium Configuration of Coaxial Prismatic Dislocation Loops and Related Size-Dependent Plasticity", X. J. Xin, G.S. Daehn and R. H. Wagoner, *Acta. Mater*, 45, pp. 1821-1836 (1997).

"Effect of Cyclic Pressure on the Low Temperature Consolidation of Several Composite Powder Systems", C-Y Huang and G.S. Daehn, *Acta Mater*, 45, pp. 4283-96, (1997).

"Mechanisms of Primary Creep in α/β Titanium Alloys at Lower Temperatures", S. Suri, T. Neeraj, G.S. Daehn, D-H Hou, J. M. Scott, R. W. Hayes and M. J. Mills, *Materials Science and Engineering A,* 234-236, pp. 996-999 (1997).

“Mechanisms of Creep in Titanium Alloys at Lower Temperatures", S. Suri, T. Neraj, G.S. Daehn, D. H. Hou, J. M. Scott, R. W. Hayes and M. J. Mills, in Creep and Fracture of Engineering Materials and Structures, J. C. Earthman and F. A. Mohamed, Editors, *TMS*, pp. 119-129 (1997).

"Co-Continuous Composite Materials from Net-Shape Displacement Reactions", G.S. Daehn, in *Frontiers of Engineering: Reports on Leading Edge Engineering from the 1996 NAE Symposium on Frontiers of Engineering*, National Academy Press, pp. 91-94 (1997).

1996

"Modeling of Enhanced Composite Creep and Plastic Flow in Temperature Cycling", invited chapter to, *Numerical Analysis and Modeling of Composite Materials*, edited by J. W. Bull, Blackie Academic and Professional Publishing, pp. 327-55, 1996.

"Effect of Velocity on Flow Localization in Tension", X. Hu and G.S. Daehn, Acta Mater., 44, pp. 1021-33 (1996).

"Increased Ductility in High Velocity Electromagnetic Ring Expansion", M. M Altynova, X. Hu and G.S. Daehn, *Metallurgical and Materials Transactions*, 27A, 1837-44 (1996).

"Effect of Sample Size on Ductility in Electromagnetic Ring Expansion", A. A. Tamhane, M. M. Altynova and G.S. Daehn, *Scripta Metallurgica*, 34, pp. 1345-50 (1996).

"Densification of Composite Powder Compacts in Pressure Cycling", C-Y Huang and G.S. Daehn, *Acta Mater*, 44, pp. 1035-45 (1996).

"Processing, Microstructure and Properties of an Al-Al2O3 Co-Continuous Ceramic Composite", in *Processing and Fabrication of Advanced Materials* IV, ed. T.S. Srivasan and J. J. Moore, TMS, pp. 225-33 (1996).

"Elastic and Plastic Behavior of a Co-Continuous Alumina-Aluminum Composite", G.S. Daehn, B. Starck, L. Xu, K. F. ElFishawy, J. Ringnalda and H. L. Fraser, *Acta Mater.*, 44, pp. 249-261 (1996).

"Effect of Multiaxial Stress on Creep Damage of 316 Stainless Steel Weldments", Y.H. Hsiao, H. Zhang and G.S. Daehn, *Metallurgical Transactions*, 27, pp. 891-900 (1996).

1995

"Processing Microstructures and Properties of Co-Continuous Alumina-Aluminum Composites", M. C. Breslin, J. Ringnalda, L. Xu, M. Fuller, J. Seeger, G.S. Daehn, T. Otani and H. L. Fraser, *Materials Science and Engineering A*, A195, pp. 113-119 (1995).

"High Velocity Metal Forming--An Old Technology Addresses New Problems", G.S. Daehn, M. Altynova, V. S. Balanethiram, G. Fenton, M. Padmanabhan, A. Tamhane and E. Winnard, *JOM,* July 1995, pp. 42-45.

"An Approach to the Design of Composites for Service at Elevated and Non-Steady Temperatures", K. F. ElFishawy and G.S. Daehn, *Metallurgical Transactions A*, 26A, pp. 3091-3105 (1995).

"Superplastic Forming of Metal Matrix Composites by Thermal and Pressure Cycling", C-Y Huang and G.S. Daehn, in Superplasticity and Superplastic Forming, A. K. Ghosh and T. R. Bieler, eds. TMS, pp. 135-142 (1995).

"Isothermal and Thermal Cycling Creep of an Al-40 Si Particle Reinforced Composite (CMSH A-40)", Y. C. Chen and G.S. Daehn, in Low Thermal Expansion Alloys and Composites, J. J. Stephens and D. R. Frear Eds. TMS, 1994. pp 185-193 (1995).

"Improved Densification and Uniformity of Composite Powder Compacts Due to Pressure Cycling", C-Y Huang and G.S. Daehn, in Net Shape Processing of Powder Materials, (edited by S. Krishnaswami, R. M. McMeeking and J. R. L. Trasssorras), Vol. 216, p. 69-75, ASME, New York, NY (1995).

"Hyperplasticity - A Competitor to Superplastic Sheet Forming?" G.S. in Superplasticity and Superplastic Forming, A. K. Ghosh and T. R. Bieler, eds. *TMS* 1995, pp. 11-16.

1994

“Comparison of Explicit and Implicit Finite Element Methods in the Quasistatic Simulation of Uniaxial Tension", X. Hu, R. H. Wagoner, G.S. Daehn and S. Ghosh, *Communications in Numerical Methods in Engineering*, 10, pp. 993-1003 (1994).

“The Effect of Inertia on Tensile Ductility", X. Hu, R. H. Wagoner, G.S. Daehn and S. Ghosh" *Metallurgical Transactions*, 25A, pp. 2723-2735 (1994).

"Hyperplasticity: Enhanced Formability at High Rates", V. S. Balanethiram, X. Hu, M. Altynova and G.S. Daehn, *Journal of Materials Processing Technology*, 45, pp. 595-600 (1994).

"Hyperplasticity-Increased Forming Limits at High Workpiece Velocities", V. S. Balanethiram and G.S. Daehn, *Scripta Metallurgica*, 31, pp. 515-520 (1994).

"Analysis of Thermally Induced Stress and Strain in Continuous Fiber Reinforced Composites", H. Zhang, P. M. Anderson and G.S. Daehn, *Metallurgical Transactions* 25A, pp. 415-425 (1994).

"Microstructural Analysis of Plastically Deformed Co-Continuous Ceramic Composite Materials", J. Ringnalda, M. C. Breslin, B. Starck, J. Seeger, G.S. Daehn and H. L. Fraser in High Performance Composites: Commonality of Phenomena, eds. K. K. Chawla, P. K. Liaw, S. G. Fishman, TMS, Warrandale, PA (1994).

"Effects of Transformation and Chemistry on the Microstructure and Properties of Co Continuous Ceramic Composite Materials", J. Seeger, M. C. Breslin, B. Commentz, A. L. Marasco, J. Ringnalda, G.S. Daehn and H. L. Fraser, in Composite Materials: Commonalty of Phenomenon, *Proceedings of TMS Annual Meeting* , eds. K. K. Chawla, P. K. Liaw and S. G. Fishman, TMS (1994).

"Development of Co-Continuous Ceramic Composites for Specific Applications", J. Ringnalda, M. C. Breslin, J. Seeger, D. LeJune, G.S. Daehn and H. L. Fraser, *SAE Technical Paper Series #940850*, SAE International Congress (1994).

"Co-Continuous Alumina-Aluminum Composites for Heat Sinks and Substrates", M. C. Breslin, G.S. Daehn and H. L. Fraser, in *Low Thermal Expansion Alloys and Composites*, J. J. Stephens and D. R. Frear Eds. TMS, (1994) pp. 171-183.

"Alumina/Aluminum Co-Continuous Ceramic Composites Produced by Solid-Liquid Displacement Reactions: Processing Kinetics and Microstructures", M. C. Breslin, J. Ringnalda, J. Seeger, A. L. Marasco, G.S. Daehn and H. L. Fraser, *Ceramic Engineering and Science Proceedings*, 5, 4, p. 104-112 (1994). Winner of conference best paper award (of >200 papers).

"Allegatoring and Damage in the Cold Rolling of Spheroidized Steels", L. Xu and G.S. Daehn, *Metallurgical Transactions*, 25A, pp. 589-98 (1994).

1993

"Yield of Continuous Fiber Composites Under Axisymmetric Loading", H. Zhang, S. Krishnaswami, P. M. Anderson and G.S. Daehn, *Scripta Metallurgica*, 29, pp. 1477-1484 (1993)

"Non-Isothermal Deformation Behavior of a High Performance Aluminum Matrix Composite", G.S. Daehn, K. Hebbar, Y-S Suh and H. Zhang, *Composites Engineering*, 3, 699-713 (1993).

“Transformation Kinetics and Properties of Co-Continuous Ceramic Composites", A. L. Marasco, J. Ringnalda, M. C. Breslin, G.S. Daehn and H. L. Fraser Proc. TMS (1993).

"Applications of Co-Continuous Ceramic Composites for Automotive Components", M. C. Breslin, G.S. Daehn and H. L. Fraser, SAE Technical Paper 930184, International Congress, Detroit (1993).

1992

"Enhanced Formability of Interstitial Free Iron at High Strain Rates", V. S. Balanethiram and G.S. Daehn, *Scripta Metallurgica et Materialia*, 27, pp. 1783-1789 (1992).

1991

"Thermal Cycling Deformation of a Particle Reinforced Metal Matrix Composite: Comparison Between a Model and Experimental Observation", *Scripta Met et Mat*., 25, pp. 1543-1548 (1991).

"The Deformation of an Aluminum-Silicon Eutectic Alloy Under Thermal Cycling Conditions", Y. C. Chen and G.S. Daehn, *Metallurgical Transactions*, 22A, pp. 1113 (1991).

"Temperature Change Induced Plasticity in Metal Matrix Composites: Effect of Reinforcement Morphology", G.S. Daehn, P. M. Anderson and H. Zhang, *Scripta Metallurgica*, 25, (1991) pp. 2285-2290.

"Simulation of the Plastic Response of Whisker Reinforced Metal-Matrix Composites Under Thermal Cycling Conditions" H. Zhang, G.S. Daehn and R. H. Wagoner, *Scripta Metallurgica*, 25, (1991) pp. 2279-2284.

"Approaches to Modeling the Plastic Deformation of Metal Matrix Composites Under Thermal Cycling Conditions", G.S. Daehn, H. Zhang, Y. C. Chen and R. H. Wagoner, Modeling the Deformation of Crystalline Solids, Physical Theory, Application and Experimental Comparisons, T. C. Lowe, P. Follansbee, T. Rollett, and G. S Daehn eds., TMS, 1991. pp. 665-678.

Modeling the Deformation of Crystalline Solids, Physical Theory, Application and Experimental Comparisons, T. C. Lowe, P. Follansbee, T. Rollett, and G. S Daehn eds., New Orleans, 1991. (Proceedings editor).

1990

"The Temperature-Cycling Deformation of Particle Reinforce Metal Matrix Composites -- A Finite Study", G.S. Daehn, H. Zhang, R. H. Wagoner, *Scripta Metallurgica et Materialia,* 24, pp. 2151-2155 (1990).

"The Potential for Forming Metal Matrix Composites Via Thermal Cycling", Y. C. Chen, G.S. Daehn and R. H. Wagoner, *Scripta Metallurgica et Materialia,* 24, pp. 2157-2162 (1990).

1989

"Plastic Deformation of Continuous-Fiber Reinforced Composites Subjected to Changing Temperature", G.S. Daehn, *Scripta Metallurgica*, 23, pp. 247-252 (1989).

"Deformation of Whisker-Reinforced Metal-Matrix Composites under Changing Temperature Conditions", G.S. Daehn and G. González Doncel, *Metallurgical Transactions*, 20A, pp.2289-355 (1989).

1988

"The Mechanism of Thermal Cycling Enhanced Deformation in Whisker-Reinforced Composites"; G.S. Daehn and T. Oyama, *Scripta Metallurgica*, 22 (7) 1988 pp. 1097-1102.

Effects of Environmental and Microstructural Variables on the Plastic Deformation of Metal Matrix Composites Under Changing Temperature Conditions", G.S. Daehn, Proceedings -- ASTM Symposium on Thermal and Mechanical Behavior of Ceramic and Metal Matrix Composites, pp. 70-86, Atlanta, 1988.

1986

"Superplasticity of a Stainless Clad Ultrahigh Carbon Steel"; G.S. Daehn, D. W. Kum and O. D. Sherby, *Metallurgical Transactions*, 17A (1986) pp.2295-98.

PATENTS AND APPLICATIONS

ISSUE DATE	
21 Nov 2017	“Method of Forming a Refrigeration Heat Exchanger”, United States Patent 9,821,420, S. J. Kuehl, G. Wu, G. S. Daehn (cooperative with Whirlpool Corp.)
May 5, 2015	“Electrically Driven Rapidly-Vaporizing Foils, Wires and Strips Used for Collision Welding and Sheet Metal Forming”, Anupam Vivek, Glenn S. Daehn, Jason R. Johnson, Geoffrey Taber, U.S. Patent, 9,021,845
March 6, 2012	“High Velocity Forming of Medical Device Casings”, L. M. Johnson-Morke and G.S. Daehn, US Patent 8,127,582 (Cooperative with Medtronic Corp.)
December 27, 2011	“Low Temperature Spot Impact Welding Driven Without Contact”, Glenn S. Daehn and John C. Lippold. US Patent 8,084,710
April 19, 2008	“Electromagnetic Actuator for Multiple Operations”, Glenn S. Daehn, PCT Application: PCT/US08/61066
June 7, 2011	“Driver Plate for Electromagnetic Forming of Sheet Metal”, John R. Bradley and Glenn S. Daehn, US Patent 7,954,357. (Cooperative with General Motors)
July 4, 2006	“Electromagnetic Metal Forming” (Uniform Pressure Actuator), G.S. Daehn, U. S. Patent, 2,069,756. (Cooperative with General Motors)
July 18, 2006	“Electromagnetic Formation of Fuel Cell Plates” John, R. Bradley, James G. Schroth and Glenn S. Daehn, U.S. Patent 7,076.981. (Cooperative with General Motors)
February 21, 2006	“High Velocity Forming of Local Features Using a Projectile”, G.S. Daehn, U. S. Patent 7,000,300
May 13, 2004	“5000 series alloys with improved corrosion properties and methods for their manufacture and use”, M. C. Carroll, M. J. Mills, R. G. Buchheit, G.S. Daehn, B. Morere, P. Kobe, and H. S. Goodrich, US Patent Application 10/628579
May 8, 2001	“Hybrid Matched Tool-Hydraulic Forming Methods”, G.S. Daehn and Vincent J. Vohnout, U.S. Patent 6,227, 023
April 11, 2000	"Hybrid matched tool-electromagnetic forming apparatus incorporating electromagnetic actuator", G.S. Daehn, V. J. Vohnout, L. DuBois, U.S. Patent 6,047,582
April 18, 2000	"Hybrid matched tool-electromagnetic forming apparatus", G.S. Daehn, V. J. Vohnout and L. DuBois, U. S. Patent 6,050,120. (Cooperative with General Motors)
April 18, 2000	"Hybrid methods of forming using electromagnetic forming", G.S. Daehn and V. J. Vohnout, U.S. Patent 6,050,121
July 11, 2000	"Hybrid matched tool forming methods", G.S. Daehn, V. J. Vohnout and E. A. Herman, U. S. Patent 6,085, 562
January 19, 1999	"Electromagnetic actuator, method of use and article made therefrom", G.S. Daehn, V. J. Vohnout and A. Tamhane, U. S. Patent 5,860,306

Ph.D. ADVISEES

BHUVI NIRHUDOODI, PH.D., 2019

"Impact Welding and Shape Calibration of Nickel and Titanium Alloys"
Employer: ATI Metals

TAESEON LEE, PH.D., 2018

"Impact Welding: Fundamental Studies on Weld Interface Structure"
Employer: Hyundai Motors

STEVEN R. HANSEN, PH.D., 2018

"Vaporizing Foil Actuator Process Parameters: Input Characteristics, Energy Deposition, and Pressure Output"
Employer: Lincoln Electric

RYAN C. BRUNE, PH.D., 2016

"Effect of Geometric Parameters on Pressure Distributions of Impulse Manufacturing Technologies"
Employer: Center for Design and Manufacturing Excellence, The Ohio State University

BERT C. LIU, PH.D., 2016

"Joining of Dissimilar Metals by Vaporizing Foil Actuator Welding for Vehicle Weight Reduction"
Employer: Air Force Institute of Technology

JASON R. JOHNSON, PH.D., 2013

"Developing the Axisymmetric Expanding Ring: A High Strain-Rate Materials Characterization Test"
Employer: Orchid Orthopedic Solutions, Holt, MI

HUIMIN WANG, PH.D., 2013

"Laser Impact Welding", Employer: The Ohio State University,
Employer Post Doc, The Ohio State University, Welding Engineering Program

ANUPAM VIVEK, PH.D. 2012

"Rapid Vaporization of Thin Metallic Conductors for Impulse Metalworking"
Employer: The Ohio State University

DR. YUAN ZHANG PH.D., 2010

"Investigation of magnetic pulse welding on lap joint of similar and dissimilar materials"
Employer: Intel

KINGA UNOCIC (CO-ADVISED WITH M.J. MILLS) PH.D., 2008
"Structure-composition-property relationships in 5xxx series aluminum alloys"
Employer: Oak Ridge National Laboratory

MALA SETH, PH.D., 2006
"High velocity formability and factors affecting it"

JIANHUI SHANG PH.D., 2006
"Electromagnetically assisted sheet metal stamping"
Employer: EWI

PEIHUI ZHANG, PH.D. 2003
"Joining enabled by high velocity deformation"
Employer: ABAQUS

MARK J. CARROLL, (CO-ADVISED WITH M.J. MILLS), PH.D., 2001
"Improvements to the strength and corrosion resistance of Al-Mg-Mn Alloys of near-AA5083 Chemistry"
Employer: Federal Mogul, Plymouth, MI

GUANGBIN JIANG, PH.D., 2000
Consolidation of Metal Matrix Composites under Cyclic Pressure"
Employer: Intel

KARIM ELFISHAWY, PH.D1998
"Analytical and numerical modeling of the mechanical behavior of metal matrix composites"
Employers: Delphi / BondDesk Group

VINCENT VOHNOUT, PH.D., 1998
"A hybrid quasi-static / dynamic process for forming large sheet metal parts from aluminum alloys"
Employer: Navajo Institute of Technology

CHING-YAO HUANG, PH.D.1996
"Applications of Pressure Cycling on Metal Matrix Composite Processing"
Employer: Shu Zen College of Medicine and Management

V. S. BALANETHIRAM, PH.D,1996
"Hyperplasticity: enhanced formability of sheet metals at high velocity"
Employer: Trellborg Vibracoustic

YU-HSIAN HSIAO, PH.D., 1994
"Factors affecting creep damage accumulation and mechanical properties of 316 stainless steel weldments"

LIANG XU, PH.D1994

"The deformation and fracture of co-continuous alumina-aluminum composites under monotonic and cyclic loading"
Employer: Stanley Electric

HONGYAN ZHANG, PH.D., 1993

"Numerical and Analytical Predictions of Thermomechanical Behavior of Metal Matrix Composites"
Employer: Professor, University of Toledo

YONG-CHING CHEN, PH.D., 1991

"Elevated Temperature Deformation and Superplasticity of Metal Matrix Composites".
Employer: Cummins Engine

M.S. ADVISEES

JACKSON PECK, M.S. 2018

"Design Factors in Laser Driven Impact Welding"
Employer: CGI Federal

ALEX KOENIG, M.S. 2018

"Process Selection for Manufacturing of a Light and Simple Automobile"
Employer: Startup & entrepreneur

BETH A. YOAK, M.S. 2014 (CO-ADVISED WITH TONY LUSCHER)

"Rapid Nailing Method for Joining Dissimilar Materials"
Employer: Timken Steel

ILYA GOTLIB, M.S., 2014 (CO- ADVISED WITH TONY LUSCHER)

"An Analysis of High-Speed Impact Nailing for Lightweight Automotive Structures"
Employer: Lego Corp.

SHWETA GUPTA, M. S., 2013 (CO-ADVISED WITH TONY LUSCHER)

"Determination of Constitutive Equations by Instrumented Ring Expansion"
Employer: General Electric

DAVID BACKUS, M.S., 2013 (CO-ADVISED WITH TONY LUSCHER)

Employer: Bosch Corp.

NOLAN WINDHOLTZ, M.S., 2012

"Plane-strain formability of sheet metal at high velocity"
Employer: Black Diamond Equipment Co.

MATTHEW HANSEN, M.S. 2012 (MAE, CO-ADVISOR WITH TONY LUSCHER)

"Optimization of conformal joints in axial tension"
Employer: Whirlpool Corp.

STEVE WOODWARD, M.S. 2011

“Springback calibration of sheet metal components using impulse forming methods”
Employer: Tosoh

BRAD KABERT, M.S. 2011

“High strain rate consolidation and forming of Armstrong and HDH titanium powder and sheet material”
Employer: General Motors

SHEKHAR SRINIVASAN, M.S. 2010

“A simulation perspective on dimensional control and formability in impact forming”
Employer: Feedback Consulting, Mumbai

SCOTT GOLOWIN, M.S. 2008

“Path actuators for magnetic pulse assisted forming and punch-less shearing”
Employer: AK Steel

KRISTIN BANIK (BLANDFORD), M.S. 2008

“Factors effecting electromagnetic flat sheet forming using the uniform pressure coil”
Employer: Navair/Navy

JON EVARTS, M.S. 2008

“Advanced processing techniques for co-continuous ceramic composites”
Employer: Puget Sound Naval Shipyard

EDUARDO DEL RIO PEREZ, M.S. 2007

"Co-continuous composites for high temperature applications"
Employer: Tosoh

JAMES M. NASH, M.S., 2004

“An orientation study of Al_2O_3/Al co-continuous ceramic composites”

ANTHONY TURNER, M.S. 2002

“Spot impact welding of aluminum sheet”
Employer: U.S. Army

ASHISH KAPOOR, M.S. 2001

“Electromagnetic forming of aluminum-computational simulation, shrink flanging and dimensional reproducibility issues”
Employer: GE Power and Water

SUBHRANGSHU DATTA, M.S. 2000

"Electromagnetic forming and flanging of aluminum 6061 tubes"
Employer: Smith and Nephew

HEMANT PANSHIKAR, M.S. 2000

"Computer modeling of electromagnetic forming and impact welding"
Employer: Altair

YUEHONG FU, M. S. 2000

"The Effect of Pressure Cycling on Density and Particle Distributions in Metal Matrix Composites"
Employer: Lam Research

SRIDHARAN SRIVATSAN, M.S.1997

"Torsion creep of tungsten reinforced copper composites under thermal cycling conditions"

PRAMOD AGARWAL, MS. 1997

"Processing of co-continuous ceramic composite materials: precursor material selection and composite cleaning"
Employer: Oracle

MAHADEVAN PADMANABHAN, M.S.1997

"Wrinkling and Springback in electromagnetic sheet metal forming and electromagnetic ring compression"

GREGG FENTON, M.S. 1996

"Development of numerical tools to model plasticity in aluminum due to electromagnetic forces", Employer: Applied Research Associates

MICHAEL FULLER, M.S. 1995

"The effects of precursor porosity and chemistry on the formation and strength of co-continuous ceramic composite materials"
Employer: Morton Thiokol

MARINA ALTYNOVA, M.S. 1995

"The Improved Ductility of Aluminum and Copper Rings (Tubes) by Electromagnetic Forming Technique"

MICHAEL C. BRESLIN, M.S. 1994 (CO-ADVISED WITH H. L. FRASER)

"Transformation kinetics of Al_2O_3/Al Co- continuous ceramic/metal composite materials (C^4) produced by a displacement reaction between liquid Al and fused SiO_2"
Employer: Protective Materials Group

KAVITHA HEBBAR, M.S.1994

"Isothermal and non-isothermal deformation behavior of aluminum- based metal matrix composites"

COURSES DEVELOPED AND RECENTLY TAUGHT

Developed MSE 794: Materials Science for High School Educators

Developed: Engineering 198a “Engineering, Manufacturing and the Creation of Wealth”

Developed: MSE 605: Quantitative Introduction to Materials Science and Engineering

MSE 581.02: Materials Science Lab II (Junior Level)

MSE 765: Mechanical Behavior of Materials

MSE 863: Time Dependent Deformation of Solids

MSE 561 Mechanical Behavior of Materials