

Curriculum Vitae

Dr. John C. Lippold

Welding Engineering Program
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PROFESSIONAL EXPERIENCE

1/16-present	Emeritus Professor, Department of Materials Science and Engineering, OSU
3/95-12/15	Professor, Welding Engineering Program, Ohio State University
7/13-12/15	Director, Manufacturing and Materials Joining Innovation Center, (NSF I/UCRC)
10/12-12/15	College of Engineering Distinguished Faculty
10/04-3/06	Interim Chair, Department of Industrial, Welding, and Systems Engineering, Ohio State University
3/95-12/05	Director, National Excellence in Materials Joining Education and Training (NEMJET)
9/01-10/01	Distinguished Lecturer, University of Alberta, Edmonton, Alberta, Canada
11/96-12/96	Visiting Professor, University of São Paulo, São Paulo, Brazil
12/93-3/95	Director, National Excellence in Materials Joining (NEMJ), Edison Welding Institute
9/85-3/95	Adjunct Professor, Department of Welding Engineering, Ohio State University
1/91-11/93	Manager of Research, Edison Welding Institute
7/87-11/93	Chairman, EWI Research Committee
11/89-11/90	Visiting Scientist, Institut de Soudure (French Welding Institute) and the French Iron and Steel Research Institute, Paris, France
7/88-1/91	Manager, Materials Department, Edison Welding Institute
9/85-6/88	Manager, Nonferritic Metallurgy Section, Edison Welding Institute
10/78-8/85	Member, Technical Staff, Sandia National Laboratories, Livermore, CA
9/73-9/78	Graduate Research Assistant, Materials Engineering Department, Rensselaer Polytechnic Institute

EDUCATION

B.S., 1973	Materials Engineering, Rensselaer Polytechnic Institute
M.S., 1975	Materials Engineering, Rensselaer Polytechnic Institute
Ph.D., 1978	Materials Engineering, Rensselaer Polytechnic Institute

PROFESSIONAL EXPERTISE AND RESEARCH INTERESTS

Fundamental concepts of welding metallurgy	Weldability testing
Weld defect formation and control	Physical/welding metallurgy of Al-alloys
Weld solidification behavior	Weldability of advanced materials
Phase transformations	Corrosion of welded structures
Physical/welding metallurgy of structural steels	Failure analysis
Physical/welding metallurgy of stainless steels	Repair weldability
Physical/welding metallurgy of nickel-base alloys	Materials joining education and training
Friction stir welding and processing	Distance education for welding engineering

PROFESSIONAL SERVICE AND AFFILIATIONS

Professional Service

AWS Handbook Committee, 1986-1993

AWS Technical Papers Committee

Member, 1987-2002

Chair, 1996-2002

AWS R&D Committee, 1992-2004

AWS Awards Committee, 1983-1987, 2000-present

ASM Handbook Committee, 1989-1992

ASM Joining Council, 1991-2004

The Welding Institute (TWI) Research Board, 1987-1993

American Delegation, International Institute of Welding (IIW), 1990-present

Chairman, *Welding Journal* Peer Review Committee, 1994-1996

Chairman, AWS Student Poster Committee, 1992-1996

Principal Reviewer, *Welding Journal*, 1992-2010

Review Board, *Metallurgical Transactions*, 1982-present

Editorial Board, *Science and Technology of Welding and Joining*, 1999-2005

Editor, *Welding in the World*, published by IIW, 2008-present

Affiliations

American Welding Society

The Metals Society of AIME (TMS)

ASM International

International Institute of Welding

HONORS AND AWARDS

Fellow of ASM (1994). Citation: For significant contributions to the understanding of welding metallurgy and weldability, particularly of stainless steels.

Fellow of AWS (1996). Citation: For outstanding insight and contributions to the understanding of welding metallurgy and weldability.

Comfort A. Adams Lecture Award (1997). Presented by the American Welding Society for an outstanding scientist or engineer for a lecture describing a new or distinctive development in the field of welding. Lecture Title: *Welding Metallurgy: Past, Present, and Future* (Los Angeles, CA)

Adams Memorial Membership Award (1997). Sponsored by the American Welding Society to recognize educators for outstanding teaching activities in their undergraduate and postgraduate engineering institutions.

William Irrgang Memorial Award (2002). Sponsored by the Lincoln Electric Company to recognize the individual who has done the most to enhance the American Welding Society's goal of advancing the science and technology of welding over the past 5 years.

Plummer Memorial Educational Lecture Award (2002). Sponsored by the American Welding Society, this award recognizes outstanding contributions to the national education lectures at the AWS annual meeting. Lecture Title: *The Trials, Tribulations, and Triumphs of Distance Education*.

Lumley Research Award (2002 and 2010). This award is presented by the Ohio State University College of Engineering "in recognition of outstanding research accomplishments".

Jaeger Lecture Award (2008). Sponsored by the International Institute of Welding, this award is presented to an outstanding scientist for the keynote lecture at an IIW Regional Conference (Sao Paulo, Brazil). Lecture Title: *Recent Advances in the Friction Stir Welding of Steels*.

Yoshiaki Arata Award (2009). Sponsored by the International Institute of Welding, this award is presented annually to a person "who has made extraordinary achievements in fundamental research in welding science and technology and its allied areas, which have been recognized as significant contributions to the progress of welding engineering and related fields."

Best Paper Awards

Charles H. Jennings Award for best university paper published in the Research Supplement of the *Welding Journal*

- 1978** J.C. Lippold, W.F. Savage, E.F. Nippes. An investigation of hot cracking in 5083-O aluminum alloy weldments, **Welding Journal**, 56(6):171s-178s.
- 1980** J.C. Lippold and W.F. Savage. Solidification of austenitic stainless steel weldments, part 2 - the effect of alloy composition on ferrite morphology, **Welding Journal**, 59(2):48s-58s.
- 2004** M.G. Collins, A. Ramirez, and J.C. Lippold. 2004. An investigation of ductility-dip cracking in Ni-base filler metals-Part 3, **Welding Journal**, 83(2):39s-49s.
- 2017** R.A. Wheeling and J.C. Lippold, 2016. Solidification Cracking Susceptibility of Ni-30Cr Weld-Metals with Variable Niobium and Molybdenum, **Welding Journal**, 95(7):229s-238s.

William Spraragen Award for the best paper published in the Research Supplement of the *Welding Journal*

- 1980** J.C. Lippold and W.F. Savage. Solidification of austenitic stainless steel weldments, part 1 - a proposed mechanism, **Welding Journal**, 58(12):362s-374s.
- 1993** J.C. Lippold, I. Varol and W.A. Baeslack. An investigation of heat-affected zone liquation cracking in austenitic and duplex stainless steels, **Welding Journal**, 71(1):1s-14s.
- 2011** J.W. Sowards, D. Liang, B.T. Alexandrov, G.S. Frankel, and J. C. Lippold, 2011. A new chromium-free welding consumable for joining austenitic stainless steels, **Welding Journal**, 90(4):63s-76s.
- 2015** E.W. Fusner, A.T. Hope, and J.C. Lippold, 2014. Development of High-Cr, Ni-base Filler Metals using Combined Computational and Experimental Techniques, **Welding Journal**, 93(5):171s-182s.

Lincoln Gold Medal Award for the best single author paper published in the *Welding Journal*

- 1984** J.C. Lippold. An investigation of heat-affected zone hot cracking in alloy 800, **Welding Journal**, 62(1):1s-11s.

A.F. Davis Silver Medal from the American Welding Society for the best paper published in the *Welding Journal* on the topic of Maintenance and Surfacing.

- 2000** M.C. Balmforth and J.C. Lippold, 2000. A new ferritic-martensitic stainless steel constitution diagram, **Welding Journal**, 79(12):339s-345s.

Warren F. Savage Memorial Award for the best paper on the topic of welding metallurgy published in the *Welding Journal*

- 1994** W. Lin, J.C. Lippold, and W.A. Baeslack. An investigation of heat-affected zone liquation cracking, Part 1 - a methodology for quantification. **Welding Journal**, 71(4):135s-153s.
- 1999** T.W. Nelson, J.C. Lippold, and M.J. Mills. 1999. Nature and evolution of the fusion boundary in ferritic-austenitic dissimilar metal welds, Part 1-Nucleation and growth, **Welding Journal**, 78(10):329s-337s.
- 2009** N.E. Nissley and J.C. Lippold, 2009. Ductility-dip cracking susceptibility of Ni-based weld metals, Part 2 – Microstructural Characterization, **Welding Journal**, 88(6):131s-140s.
- 2010** J. Caron, C. Heinze, C. Schwenk, M. Reithmeier, S.S. Babu, and J.C. Lippold, 2010. Effect of continuous cooling transformation variations on numerical calculation of welding-induced residual stresses, **Welding Journal**, 89(7):151s-160s.
- 2013** X. Yue, J.C. Lippold, B.T. Alexandrov, and S.S. Babu, 2012. Continuous cooling transformation behavior and microstructure evolution in the coarse grain heat-affected zone of naval steels, **Welding Journal**, 91(3):65s-73s.
- 2014** J.L. Caron, S.S. Babu, and J.C. Lippold, 2013. Heat-affected zone liquation cracking susceptibility of naval steels, **Welding Journal**, 92(4):110s-123s.
- 2016** D.K. Hodgson, T. Dai, and J.C. Lippold. 2015. Transformation and tempering behavior of the heat-affected zone in 2.25Cr-1Mo steel forgings, **Welding Journal**, 94(8):250s-256s.

McKay-Helm Award for the best paper on the topic of welding of steels published in the *Welding Journal*

- 1995** J.C. Lippold. Solidification behavior and cracking susceptibility of pulsed-laser welds in austenitic stainless steels. **Welding Journal**, 73 (6):129s-140s
- 1997** J.C. Lippold, S.S. Shademan, and W.A. Baeslack. Effect of specimen strength and thickness on cracking susceptibility during the Sigmajig weldability test. **Welding Journal**, 75(3):81s-92s.
- 2010** J.W. Sowards, J.C. Lippold, D.W. Dickinson, and A.J. Ramirez, 2010. Characterization of Welding Fume from SMAW Electrodes – Part 2, **Welding Journal**, 89(4):82s-90s.

W.H. Hobart Award from the American Welding Society for best paper on pipe welding or structural use of pipe published in the *Welding Journal*

- 2010** S. Shi, J.C. Lippold, and J. Ramirez. 2010. Hot ductility behavior and repair weldability of service-aged, heat-resistant stainless steel castings, **Welding Journal**, 89(10):210s-217s

Buehler Technical Paper Merit Award for the best contribution to *Metallography (Materials Characterization)*

- 1985** D.E. Nelson, W.A. Baeslack III, and J.C. Lippold. Characterization of the weld microstructure in a duplex stainless steel using color metallography, **Metallography**, 18(3): 213-224.
- 1989** I. Varol, W.A. Baeslack, III and J.C. Lippold. Characterization of weld solidification cracking in a duplex stainless steel, **Metallography**, 23:1-19.

ACADEMIC ACTIVITIES

Course Development

Intro. to Welding Metallurgy. A 3-credit course offered at The Ohio State University that reviews the basic metallurgical processes associated with welding and joining. This course is the first in a series on welding metallurgy provides the fundamental “building block” instruction for courses to follow. Normal enrollment is 30-40 students.

Welding Metallurgy I. A 4-credit course with laboratory that teaches the basic metallurgical principles associated with the welding of structural steels. This course was "re-developed" in Autumn 2001. Normal enrollment is 30-40 students.

Welding Metallurgy II. A 4-credit course with laboratory that addresses the basic welding metallurgy principles associated with the joining of stainless steels, nickel-, copper-, aluminum-, and titanium-base alloys. Normal enrollment is 30-40 students.

Weldability - Defect Formation and Control in Welds. A 3-credit course offered at The Ohio State University at the senior/graduate student level. This course consists of 30 lecture hours and over 300 pages of illustrated notes. Since Spring 1999, this course has been offered online to more than 200 students.

Advanced Topics in Welding Metallurgy. This 3-credit course is offered at The Ohio State University at the graduate student level. It consists of 10 lecture hours and 20 discussion hours on topics of pertinent interest, including solidification and phase transformation phenomena, cracking mechanisms, and weldability testing.

Weldability of Steels. A two-day intensive course designed to review the metallurgical principles of joining a wide range of structural steels including C-Mn, Cr-Mo, HSLA, TMCP and stainless grades.

Weldability of Nonferrous Alloys. A three-day intensive course to review the metallurgical and joining process issues associated with aluminum-, titanium-, and nickel-based alloys.

Graduate Students

Primary advisor for 50 M.S. and 30 PhD students in the period from 1987 to present.

Current: 4 PhD

PUBLICATIONS

Over 300 publications in refereed journals, books, conference proceedings, and government (DOE) documents. Some selected recent publications (last 10 years) are listed below.

1. J.W. Sowards, A.J. Ramirez, D.W. Dickinson and J.C. Lippold, 2008. Characterization Procedure for the Analysis of Arc Welding Fume, **Welding Journal**, **87**(3):76s-83s.
2. J.W. Sowards, J.C. Lippold, D.W. Dickinson, and A.J. Ramirez, 2008. Characterization of Welding Fume from SMAW Electrodes – Part I, **Welding Journal**, **87**(4):106s-112s.
3. S. Shi and J.C. Lippold, 2008. Microstructure Evolution during Service Exposure of Two Cast, Heat-Resisting Stainless Steels — HP-Nb modified and 20-32Nb, **Materials Characterization**, **59**(8):1029-1040.
4. J.C. Lippold and N.E. Nissley, 2008. Ductility dip cracking in high-Cr Ni-base filler metals, **Hot Cracking Phenomena in Welds II**, ISBN 978-3-540-78627-6, publ. by Springer,, pp. 409-426
5. B.T. Alexandrov, N.E. Nissley, and J.C. Lippold, 2008. Evaluation of weld solidification cracking in Ni-base superalloys using the cast pin tear test, **Hot Cracking Phenomena in Welds II**, ISBN 978-3-540-78627-6, publ. by Springer, pp.193-214.
6. J.C. Lippold, J. Sowards, B.T. Alexandrov, G. Murray, and A.J. Ramirez, 2008. Weld solidification cracking in Ni-base alloys, **Hot Cracking Phenomena in Welds II**, ISBN 978-3-540-78627-6, publ. by Springer, pp. 147-170.
7. N.E. Nissley and J.C. Lippold, 2008. Ductility-dip cracking susceptibility of Ni-based weld metals-Part 1, **Welding Journal**, **87**(10):257s-264s.
8. M.F. Sinfield, J.C. Lippold, B.T. Alexandrov, and D. Forrest, 2008. Physical simulation of friction stir weld microstructure of a high-strength, low alloy steel (HSLA-65), **Proc. of the 8th Int. Friction Stir Welding Symposium**, TWI Ltd.
9. B.T. Alexandrov, J.K. Tatman, G. Murray and J.C. Lippold, 2009. Non-equilibrium phase transformation diagrams in engineering alloys, **Trends in Welding Research VIII**, Proc. of the 8th International Conference, pub. by ASM International, ISBN 978-1-61503-002-6, pp. 467-476.
10. M. Rubal, J.C. Lippold, and M.C. Juhas, 2009. Physical Simulation of Friction Stir Processed Ti-511. **Friction Stir Welding and Processing V**, Eds. R.S. Mishra, W.W. Mahoney, and T.J. Lienert, publ. by The Minerals, Metals & Materials Society (TMS), ISBN 978-0-87339-737-7, pp. 21-28.
11. N.E. Nissley and J.C. Lippold, 2009. Ductility-dip cracking susceptibility of Ni-based weld metals, Part 2 – Microstructural Characterization, **Welding Journal**, **88**(6):131s-140s.
12. M. Rubal, J.C. Lippold, and M.C. Juhas, 2010. Microstructure evolution during friction stir processing of Ti-5111, **Proc. 9th Int. Symposium on Friction Stir Welding**, Timmendorfer Strand, Germany, May 2010, publ. by TWI, Ltd.
13. M.J. Gonser, J.C. Lippold, D.W. Dickinson, J.W. Sowards, and A.J. Ramirez. 2010. Characterization of welding fume generated by high-Mn consumables, **Welding Journal**, **89**(2):25s-33s.
14. E. Taban, J.E. Gould, and J.C. Lippold. 2009. Characterization of 6061-T6 aluminum alloy to AISI steel interfaces during joining and thermo-mechanical conditioning, **Materials Science and Engineering A**, **527**:1704-1708.
15. E. Taban, J.E. Gould, and J.C. Lippold. 2010. Dissimilar friction welding of 6061-T6 aluminum and AISI steel: properties and microstructural characterization, **Materials and Design**, **31**:2305-2311.
16. J.W. Sowards, J.C. Lippold, D.W. Dickinson, and A.J. Ramirez, 2010. Characterization of Welding Fume from SMAW Electrodes – Part 2, **Welding Journal**, **89**(4):82s-90s. (paper awarded McKay-Helm Award from AWS)
17. J. Caron, C. Heinze, C. Schwenk, M. Reithmeier, S.S. Babu, and J.C. Lippold, 2010. Effect of continuous cooling transformation variations on numerical calculation of welding-induced residual stresses, **Welding Journal**, **89**(7):151s-160s. (paper awarded W.F. Savage Award from AWS)
18. S. Shi, J.C. Lippold, and J. Ramirez. 2010. Hot ductility behavior and repair weldability of service-aged, heat-resistant stainless steel castings, **Welding Journal**, **89**(10):210s-217s. (awarded W.H. Hobart Award from AWS).
19. X. Yu, J.L. Caron, S.S. Babu, J.C. Lippold, D. Isheim, and D. Seidman. 2010. Characterization of microstructural strengthening in the heat-affected zone of a blast-resistant steel, **Acta Materialia**, **58**, pp.5596-5609.

20. B.T. Alexandrov, A.T. Hope, J.W. Sowards, S. McCracken, and J.C. Lippold. 2011. Weldability studies of high-Cr, Ni-base filler metals for nuclear applications, **Welding in the World**, Vol. 55, No. 3/4, pp. 65-76.
21. J.W. Sowards, D. Liang, B.T. Alexandrov, G.S. Frankel, and J. C. Lippold, 2011. A new chromium-free welding consumable for joining austenitic stainless steels, **Welding Journal**, 90(4):63s-76s.
22. X. Yu, J.L. Caron, S.S. Babu, J.C. Lippold, D. Isheim, and D. Seidman. 2011. Strength recovery in a high strength steel during multiple weld thermal simulations, **Metallurgical and Materials Transactions**, 42A: 3669-3679.
23. J.L. Caron, S.S. Babu, and J.C. Lippold. 2011. Weldability evaluation of a Cu-bearing high-strength, blast-resistant steel, **Metallurgical and Materials Transactions, A**, 42A:4032-4044.
24. J.L. Caron, S.S. Babu, and J.C. Lippold. 2011. Welding-induced microstructure evolution of a Cu-bearing high strength blast-resistant steel, **Metallurgical and Materials Transactions**, 42A; 4015-4031.
25. J.W. Sowards, D. Liang, B.T. Alexandrov, G.S. Frankel, J.C. Lippold. (2011). Solidification Behavior and Weldability of Dissimilar Welds Between a Cr-free Ni-Cu Welding Consumable and Type 304L Austenitic Stainless Steel. **Metallurgical and Materials Transactions**, 43A: 1209-1222.
26. J.C. Lippold, 2011. An approach for assessing the weldability of new and advanced materials (Conference keynote address), **Proc. IIW Int. Conf. "Global Trends in Joining, Cutting and Surfacing Technology"**, Chennai, India, July 21-22, 2011, pub. by International Institute of Welding
27. X. Yu, S.S. Babu, J.C. Lippold, H. Terasaki, and Y. Komizo. 2012. In-situ observations of martensitic transformation in a blast resistant steel, **Metallurgical and Materials Transactions**, 43A:1538-1546.
28. X. Yue, J.C. Lippold, B.T. Alexandrov, and S.S. Babu, 2012. Continuous cooling transformation behavior and microstructure evolution in the coarse grain heat-affected zone of naval steels, **Welding Journal**, 91(3):65s-73s.
29. X. Yue and J.C. Lippold. 2013. Evaluation of heat-affected zone hydrogen-induced cracking in Navy steels, **Welding Journal**, 92(1):20s-28s.
30. B.T. Alexandrov, J.C. Lippold, S.W. Sowards, A.T. Hope, and D.R. Saltzmann. 2013. Fusion boundary microstructure evolution associated with embrittlement of Ni-base alloy overlays applied to carbon steel, **Welding in the World**, Vol. 57, No. 1.
31. J.L. Caron, S.S. Babu, and J.C. Lippold, 2013. Heat-affected zone liquation cracking susceptibility of naval steels, **Welding Journal**, 92(4):110s-123s.
32. J.R. Rule and J.C. Lippold, 2013. Physical simulation of Ni-base alloy friction stir welding and processing using hot torsion, **Metallurgical and Materials Transactions A**, 44(8):3649-3663.
33. J.C. Lippold and J.J. Livingstone, 2013. Microstructure evolution during friction stir processing and hot torsion simulation of Ti-6Al-4V, **Metallurgical and Materials Transactions A**, 44(8):3815-3825.)
34. S. S. Babu, J. Livingston, and J. C. Lippold. 2013. Physical Simulation of Deformation and Microstructure Evolution during Friction Stir Processing of Ti-6Al-4V, **Metallurgical and Materials Transactions A**, 44(8):3577-3591.
35. B.T. Alexandrov and J.C. Lippold. 2013. Use of the cast pin tear test to study solidification cracking, **Welding in the World**, 57(5):635-648.
36. X. Yue, X. Feng, and J.C. Lippold, 2013. Strength increase in the coarse-grained heat-affected zone of a high strength, blast resistant steel after postweld heat treatment, **Mat. Sci. and Eng. A**, 585:149-154.
37. X. Yue, X. Feng, J.C. Lippold, 2013. Quantifying heat-affected zone hydrogen cracking in high strength naval steels, **Welding Journal**, 92(9):265s-273s.
38. X.L. Feng, H.J. Liu, and J.C. Lippold. 2013. Microstructure characterization of the stir zone of submerged friction stir processed aluminum alloy 2219, **Materials Characterization**, 82(2013):97-102.
39. X. Yue, X. Feng, J.C. Lippold, 2013. Quantifying heat-affected zone hydrogen cracking in high strength naval steels, **Welding Journal**, 92(9):265s-273s.

40. J.R. Rule, J.M. Rodelas, and J.C. Lippold, 2013. Application of Friction Stir Processing Pre-Treatment for the Modification of Fusion Weld Heat-Affected Zone and Weld Metal Microstructure, **Welding Journal**, 92(10):283s-290s.
41. X. Feng, A. Hope, and J.C. Lippold, 2013. Effect of Cr on eutectic phase formation and solidification temperature range in Ni-Cr-Hf system, **Mat. Sci. Letters**, August 2013.
42. X. Yue, X. Feng, and J.C. Lippold. 2013. Effect of diffusible hydrogen level on heat-affected zone hydrogen-induced cracking of high strength steels, **Welding in the World**, 58(1):101-109.
43. X. Yue, X. Feng, and J.C. Lippold. 2014. Effect of welding parameters on the heat-affected zone hydrogen-induced cracking tendency of a blast-resistant steel, **Welding Journal**, 93(3):98s-105s.
44. E.W. Fusner, A.T. Hope, and J.C. Lippold, 2014. Development of High-Cr, Ni-base Filler Metals using Combined Computational and Experimental Techniques, **Welding Journal**, 93(5):171s-182s.
45. D. Liu, J.C. Lippold, J. Li, S.R. Rokhlin, J. Vollbrecht, and R. Grylls. 2014. Laser Engineered Net Shape (LENS) Technology for the Repair of Ni-base Superalloy Turbine Components, **Metallurgical and Materials Transactions A**, 45A:4454-4469.
46. D. Phillips, A. Benatar, and J.C. Lippold, 2014. Meeting the Demand for Welding Engineers. **Welding Journal**, 93(10):52-58.
47. D.K. Hodgson, T. Dai, and J.C. Lippold. 2015. Transformation and tempering behavior of the heat-affected zone in 2.25Cr-1Mo steel forgings, **Welding Journal**, 94(8):250s-256s.
48. J.C. Lippold. 2016. Elevated Temperature, Solid-State Cracking in Welds. **Cracking Phenomena in Welds IV**, Eds. T. Boellinghaus, C. Cross, and J. Lippold, publ. by Springer, pp. 229-260.
49. A. T. Hope and J. C. Lippold. 2016. Use of Computational and Experimental Techniques to Predict Susceptibility to Weld Cracking. **Cracking Phenomena in Welds IV**, Eds. T. Boellinghaus, C. Cross, and J. Lippold, publ. by Springer, pp. 67-86.
50. V. C. Kreuter and J.C. Lippold, 2016. Ductility-dip cracking susceptibility of Ni-base alloys utilizing the strain-to-fracture test. **Cracking Phenomena in Welds IV**, Eds. T. Boellinghaus, C. Cross, and J. Lippold, publ. by Springer, pp. 145-160.
51. E. Przybylowicz, T. Luskin, B. Alexandrov, J.C. Lippold and S. McCracken. 2016. Weldability Evaluation in High Chromium, Ni-base Filler Metals. **Cracking Phenomena in Welds IV**, Eds. T. Boellinghaus, C. Cross, and J. Lippold, publ. by Springer, pp. 269-288.
52. D. Bourgeois, B. Alexandrov, J. Fenske and J.C. Lippold, 2016. Controlling Factors of Hydrogen Assisted Cracking in Dissimilar Metal Welds under Cathodic Protection. **Cracking Phenomena in Welds IV**, Eds. T. Boellinghaus, C. Cross, and J. Lippold, publ. by Springer, pp. 441-456.
53. K. Strader, X. Feng, B.T. Alexandrov, J.C. Lippold Stress-Relief Cracking in Creep-Resistant Steel Welds. 2016. **Cracking Phenomena in Welds IV**, Eds. T. Boellinghaus, C. Cross, and J. Lippold, publ. by Springer, pp. 475-494.
54. D.C. Tung and J.C. Lippold. 2016. Weldability Testing Approaches for Stress Relaxation Cracking in Gamma-Prime Strengthened Ni-base Alloys. **Cracking Phenomena in Welds IV**, Eds. T. Boellinghaus, C. Cross, and J. Lippold, publ. by Springer, pp. 495-512.
55. J.C. Lenzo and J.C. Lippold. 2016. Effect of Alloying Additions on the Microstructure and Solidification Cracking Susceptibility of High-Mn Steel Filler Metals, **ISOPE 2016**, Rhodes Greece.
56. R.A. Wheeling and J.C. Lippold, 2016. Characterization of Weld Metal Microstructure in a Ni-30Cr Alloy with Additions of Niobium and Molybdenum, **Materials Characterization**, 115:97-103.
57. R.A. Wheeling and J.C. Lippold, 2016. Solidification Cracking Susceptibility of Ni-30Cr Weld-Metals with Variable Niobium and Molybdenum, **Welding Journal**, 95(7):229s-238s.
58. D.C. Tung and J.C. Lippold, 2016. Self-restrained testing for residual stress driven cracking in nickel-based alloys, **Mat. Sci. and Eng. A**, 673(2016):158-166.

59. Tung, D.C. and J.C. Lippold, 2017. Residual Stress Driven Cracking in Superalloy Weldments. **Materials at High Temperatures**, published online, <http://dx.doi.org/10.1080/09603409.2016.1271763>
60. R.A. Wheeling and J.C. Lippold, 2017. Effect of composition on grain boundary wetting characteristics in Ni-30Cr weld metal, **Welding in the World**, **61**(2):315-324.
61. A.T. Hope, C. Fink, and J.C. Lippold, 2017. Development and testing of a high-Cr, Ni-base filler metal resistant to ductility dip cracking and solidification cracking, **Welding in the World**, **61**(2):325-322.
62. M.R. Orr, F. Argentine, and J.C. Lippold, 2017. Evaluation of solidification cracking susceptibility in ERNiCr-3 (Filler Metal 82) weld metal using the cast pin tear test, **Welding in the World**, **61**(5):935-944.
63. R.A. Wheeling and J.C. Lippold, 2017. Use of a Fracture surface Cleaning Method to Evaluate Elevated Temperature Cracking in Steel, **Jour. of Failure Analysis**, June 2017, DOI10.1007/s11668-017-0295-2.
64. T. Dai and J.C. Lippold, 2017. Tempering Behavior of the Fusion Boundary Region of an F22/625 Weld Overlay, **Welding Journal**, **96**(12):467s-480s.
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TECHNICAL SERVICE and CONSULTING

Consultant for over 100 organizations worldwide. The following is a selected list of these organizations.

A.O. Smith	Edison Welding Institute	Nucor Steel
Advanced Steel Technology	EPRI	Pratt & Whitney
AERCO International	ExxonMobil Research	Sandvik Special Metals
Allegheny Ludlum	Foster Wheeler	Scot Forge
Allied Signal	General Electric	Siemens-Westinghouse
Armco Steel	Global Tubing	Southern California Edison
AZZ/Welding Services	Hamilton-Standard	Stanadyne
Babcock&Wilcox	Haynes International	Thermo-King Corp.
Battelle	Hobart Brothers (ITW)	US Air Force
BF Goodrich Aerospace	Hosemaster, Inc.	US Army
Blue Origin	IPSCO	US Dept. of Energy
Boeing	Kellogg	US Navy
Bohler Welding	Lincoln Electric	US NRC
Boston Scientific	Lockheed-Martin	Vallourec
Brush Wellman	Medtronic	Weber Industries
BWX Technologies	Nanosteel	Willamette Industries
Dana Corporation	NASA	

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