Xiaoyuan Lou

Associate Professor
Nuclear Engineering
Materials Engineering (by courtesy)
Purdue University

363 North Grant Drive
LMBS 5262
Purdue University
West Lafayette, IN 47907

Office: (765) 496-2327
E-mail: lou49@purdue.edu
Website: https://web.ics.purdue.edu/~lou49/

EDUCATION

Georgia Institute of Technology, Atlanta, GA, USA
PhD, Materials Science and Engineering, 12/2010

The Ohio State University, Columbus, OH, USA
M.S., Materials Science and Engineering, 8/2005

Nanjing University, Nanjing, Jiangsu, China
B.S., Physics, 6/2002

PROFESSIONAL EXPERIENCE

Purdue University, West Lafayette, IN, USA **08/2022 ~ present**
Tenure-track Associate Professor in Nuclear Engineering and Materials Engineering (by Courtesy)

Manufacturing and materials technologies for fission and fusion energy

- Metal additive manufacturing
- Advanced manufacturing for nuclear
- Material degradation in nuclear environments
- Cracking and fracture mechanisms
- Grain boundary phenomena
- Development of structural alloys and composites

Auburn University, Auburn, AL, USA **2018 ~ 2022**
Tenure-track Associate Professor in Materials Engineering

- Advanced manufacturing
- Environmentally assisted cracking and irradiation assisted stress corrosion cracking
- Corrosion and radiation resistant alloys and composites
- High-throughput alloy discovery and testing
- Small-scale mechanical and corrosion testing

General Electric Global Research Center, Niskayuna, NY, USA **2011 ~ 2017**
Lead Material Scientist

Understanding environmental degradation and fracture failure issues of various alloys used in high temperature and harsh environments of light water reactor, aircraft engine, energy storage and oil & gas exploration.

- Environment-assisted cracking of structural alloys in light water reactors
- Additive manufacturing technology and additive alloy development
- High temperature corrosion/oxidation/cracking of nickel based superalloys in turbine blade and disk
- Degradation of sodium-metal halide molten salt battery
- Development of environment resistant coating for high temperature turbine blade and disk
- Water chemistry control and electrocatalytic mitigation technology for light water reactors

Georgia Institute of Technology, Atlanta, GA, USA **2006 ~ 2010**
Graduate Research Assistant

- Stress corrosion cracking mechanism of carbon steel in fuel-grade ethanol environment
- Cathodic reaction study and cathode material development for solid oxide fuel cells

The Ohio State University, Columbus, OH, USA **2003 ~ 2005**
Graduate Research Associate
The plasticity and deformation mechanism of magnesium sheet alloys

HONORS AND AWARDS

- Paul C. Zmola Scholar of Nuclear Engineering Award, Purdue University (2024)
- 2023 Best Paper Award, Journal of Nuclear Materials
- Outstanding Faculty Teaching Award, Auburn University Samuel Ginn College of Engineering (2/2021)
- 2020 Best Paper Award, Journal of Nuclear Materials
- Top Cited Paper, Journal of Nuclear Materials, 2020-2021
- GE Above & Beyond Bronze Award for empower and inspire each other, 12/2016
- GE Above & Beyond Silver Award for outstanding leadership as principal investigator to develop additive manufacturing technology for nuclear application, 3/2015
- GE Above & Beyond Bronze Award for significant technical contribution to high temperature corrosion advanced technology program, 12/2014
- Top Topics Research Front in Materials Science, Thomson Reuters
- Most Cited Paper in International Journal of Plasticity, 2009-2012
- BP Scholarship, NACE, 03/2010
- 1st Place, Harvey Herro Award, NACE Corrosion 2010 Conference and EXPO, 03/2010

GRANTS (PI and Co-PI)
(Purdue and Auburn are both under tenure clock period)

Purdue University (2022/8-2025/6, tenure-track)

(Total by 2022/8-2025/1: ~ $759,893 (R&D) and ~$100,000 (User Facility))

- **Pacific Northwestern National Laboratory**, Manufacturing and Testing of Components by Laser Additive Manufacturing, **PI, $53,717 (8/2025-9/2026)**
- **Pacific Northwestern National Laboratory**, Additive Manufacturing of Nuclear Materials by DED Methods, **PI, $50,000 (4/2024-3/2025)**
- **Novelis Global Research Center**, Laser Based High-throughput Development for 3xxx Al Alloys-Phase 3, **PI, $130,950 (1/2024-3/2025)**
- **Novelis Global Research Center**, 6xxx series Al Alloy Development by Laser Direct Energy Deposition, **PI, $ 147,356 (1/2024-6/2025)**
- **US DOE Nuclear Science User Facilities RTE**, Visualizing the root cause of dislocation channel broadening through in-situ TEM experiments, **co-PI (my student is PI), Facility Access (equivalent cost $50,000) (2024)**
- **US DOE Nuclear Science User Facilities RTE**, The effects of high-temperature creep on irradiation damages of 316H stainless steel made by laser additive manufacturing, **co-PI (my student is PI), Facility Access (equivalent cost $50,000) (2024)**
- **National Institute of Standards and Technology**, Real-time In Situ Microstructure Characterization by Ultrasound in Additive Manufacturing, **co-PI, $178,758 (total project funding of $957,290) (8/2023-07/2025)**
- **US DOE Office of Fusion Energy Science**, Novel Additive Manufacturing for Plasma Facing Materials, **co-PI ($125,000), $500,000 (2/2023-1/2025)**
- **Novelis Global Research Center**, **PI, $74,112 (2022/9-2023/8)**

Auburn University (2018-2022, tenure-track)

(Total by 2018/1-2022/7: ~ $3,320,000 (R&D) and ~$100,000 (User Facility))

- **US Nuclear Regulatory Commission**, A high-throughput approach to establish the regulatory basis for qualifying laser additive-manufactured stainless steel for nuclear applications, **PI, $500,000 (2021-2024)**

- **US Department of Energy NEUP**, Technical Basis of Microstructure Criteria and Accelerated Testing for Qualifying Additively-manufactured 316H Stainless Steel for High-temperature Cyclic Service, **PI, $800,000 (2021-2024)**
- **Novelis Global Research Center,** High-throughput Al alloy development - Phase II, **PI, $90,000 (2021-2022)**
- **US Department of Energy NEUP**, HIP Cladding and Joining to Manufacture Large Dissimilar Metal Structures for Modular and GEN IV Reactors, **PI, $1,000,000 (10/2020-9/2023)**
- **US Department of Energy NEUP**, Enhancing Mechanical Testing Capabilities to Support High-throughput Nuclear Material Development, **PI, $210,000 (10/2020-9/2021)**
- **US DOE Nuclear Science User Facilities RTE**, The origin of exceptional IASCC resistance of the additively-manufactured stainless steel after hot isostatic pressing, **PI, Facility Access (equivalent cost $50,000) (2/2020-12/2020)**
- **Novelis Global Research Center,** high-throughput Aluminum alloy development, **PI, $90,000 (01/2020-12/2020)**
- **Auburn University Intramural Grants Program**, 1D and 2D carbon structured copper nanocomposites by laser based additive manufacturing, **PI, $20,000, (4/2019-4/2021)**
- **National Institute of Standards and Technology**, NIST Center for in-situ Metrology and Process Science for Advanced Manufacturing, **co-PI, $250,000 (total project funding of $3,087,090) (10/2018-09/2021)**
- **US DOE Idaho National Laboratory LDRD**, Mitigating irradiation assisted stress corrosion cracking by rapid alloy design, **co-PI, $360,000 (total project funding of $1,500,000) (10/2018-09/2021)**
- **US DOE Nuclear Science User Facilities RTE**, Heavy ion irradiation on SCC resistant austenitic stainless steel by laser additive manufacturing, **PI, Facility Access (equivalent cost $50,000) (6/2018-02/2019)**

General Electric Global Research (external non-GE grants, 2011-2017)

(Total funding 2011/1-2017/2: ~ $2,540,000 (R&D))

- **Electric Power Research Institute**, Effect of chemical transients on stainless steel and nickel based alloys in BWR environments, **PI, $300,000 (08/2017-08/2019)**
- **Electric Power Research Institute**, Stress corrosion cracking of NitroMaxx alloy in BWR and PWR environments, **PI, $70,000 (11/2016-05/2017)**
- **US Department of Energy NEET**, Environmental Cracking and Irradiation Resistant Stainless Steel by Additive Manufacturing, **PI, $850,000 (10/2015-09/2017)**
- **US Department of Energy CRADA**, Evaluation of Additive Manufacturing for Stainless Steel Components, **PI (GE side), $80,000 (09/2015-07/2016)**
- **Electric Power Research Institute**-BWRVIP, Hydrogen and Memory Effect on Low Alloy Steel in Chloride Containing Environment, **PI, $240,000 (02/2015-12/2016)**
- **Electric Power Research Institute**-BWRVIP, Effects of ppb Level Chloride on Stress Corrosion Cracking Susceptibility of Pressure Vessel Steel in High Temperature Water, **PI, $500,000 (01/2011-08/2015)**
- **Electric Power Research Institute**-PSCR, Role of Creep and Creep Crack Growth in Stress Corrosion Cracking (SCC) of Austenitic Stainless Steel Materials, **Co-PI, $300,000 (09/2011-05/2014)**
- **Electric Power Research Institute**-PSCR, Rapid Fracture Phenomenon in High Temperature Water, **Co-PI, $200,000 (02/2011-12/2013)**

I also served as PI and Co-PI in a number of GE internal R&D programs to support GE's product lines for GE Power & Water, GE-Hitachi Nuclear, GE Aviation, GE Energy Storage, GE Transportation, GE Oil & Gas, etc. The details were not listed due to business confidential reason

TEACHING

Purdue University (2023-present):

Couse Level	Course Name
Undergraduate/Graduate	NUCL597 - Manufacturing and Materials for Modern Nuclear Reactors (SP23, SP24)
Undergraduate/Graduate	NUCL 520 - Radiation Effects And Reactor Materials (SP25)
Undergraduate	NUCL325 - Nuclear Materials Lab (FA23, FA24)
Undergraduate	NUCL320 - Introduction To Materials For Nuclear Applications (FA24)
Undergraduate	NUCL200 - Introduction to Nuclear Engineering (SP24)

Auburn University (2018-2022):

Couse Level	Course Name
Undergraduate	MATL3100 - Engineering Materials-Metals
Undergraduate	MATL3101 - Metallography Laboratory
Undergraduate/Graduate	MATL5500/6500 - Numerical Simulation of Materials Processing
Undergraduate/Graduate	MATL5600/6600 - Corrosion
Graduate	MATL7050 - Deformation and Failure of Engineering Materials

Teaching Award:

Outstanding Faculty Teaching Award, Auburn University Samuel Ginn College of Engineering (2/2021, elected by undergraduate student body)

MENTORSHIP

Ph.D.

- Qianwen Zhang, Nuclear Engineering, Purdue University (Current, expected graduation Spring 2028)
- Chenglu Tang, Materials Engineering, Purdue University (Current, expected graduation Fall 2026)
- John Snitzer, Nuclear Engineering, Purdue University (Current, expected graduation Fall 2026)
- Qingyu Pan, Materials Engineering, Purdue University (Current, expected graduation Spring 2026)
- Logan Joyce, Nuclear Engineering, Purdue University (Summer 2025)
- Dr. Jingfan Yang, Materials Engineering, Purdue University (Summer 2024)
- Dr. Houshang Yin, Materials Engineering, Auburn University (Summer 2022)
- Dr. Pu Deng (co-advising with Dr. Bart Prorok), Materials Engineering, Auburn University (Summer 2020)

M.S. with Thesis

- Aleena Masaeng, Materials Engineering, Purdue University (Summer 2025)
- Evan McDermott, Nuclear Engineering, Purdue University (Summer 2025)
- Josh Le, Materials Engineering, Auburn University (Summer 2022)

M.S. Non-Thesis

- Catherine McConatha, Materials Engineering, Auburn University (Summer 2022)
- Gregory Steiger, Materials Engineering, Auburn University (Spring 2022)
- Ricardo Vinicius Barroso Gomes, Materials Engineering, Auburn University (Fall 2021)
- Ilkin Hajiyev, Materials Engineering, Auburn University (Spring 2020)

Visiting Scholar

- Prof. Jiangfeng Song, Visiting Scholar, Auburn University (2018)

PROFESSIONAL SERVICE

- Member, ABD-900 Public Steering Committee, American Make and EPRI
- International advisory board, 2024 EPRI-ASM 10th International Conference on Advances In Materials, Manufacturing, and Repair for Power Plants
- Editorial board member of Scientific Reports-Nature
- Editorial board member of ASTM materials performance and characterization
- Committee member of Nuclear Science User Facilities (NSUF) Users Organization
- Member of ASME Division 5 Task Group on AM components
- Symposium organizers for *Additive Manufacturing for Energy Applications* (2020-2026) and *Environmental Degradation of Additively Manufactured Alloys* (2019-2026) in TMS annual conference
- JOM guest editor and technical advisor
- Panelist for NSF CMMI manufacturing machines and equipment
- Panelist for NSF advanced manufacturing
- Proposal reviewer for multiple programs (NEUP, NEET, NSUF, SBIR, RTE) in US Department of Energy
- Committee members of Corrosion & Environmental Effects Committee, Nuclear Materials Committee, and Additive Manufacturing Bridge Committee in TMS
- Paper reviewer for Journal of Nuclear Materials, Acta Materialia, Additive Manufacturing, Journal of the Electrochemical Society, Corrosion Science, JOM, Materials Characterization, Materials Letters, International Journal of Pressure Vessels and Piping, Electrochimica Acta, Journal of ASTM International, Corrosion, Corrosion Review, Fuel, Engineering Fracture Mechanics, Journal of Iron and Steel Research International, NACE Conference, TMS Conference
- 2/2020, chair, “Environmental Degradation of Additively Manufactured Alloys”, TMS 2020, San Diego, CA
- 8/2015, chair, “BWR SCC and Water Chemistry” session, 17th International Conference on Environmental Degradation of Materials in Nuclear Power Systems, Ottawa, Ontario, Canada, August 9-13, 2015
- 3/2015, chair, “Environment Assisted Cracking” session, NACE Corrosion 2015 Conference and EXPO, Dallas, Texas, USA
- 3/2014, vice chair, “Environment Assisted Cracking” session, NACE Corrosion 2014 Conference and EXPO, San Antonio, Texas, USA, March 9-13, 2014
- 8/2013, chair, “RPV SCC and Embrittlement” session, 16th International Conference on Environmental Degradation of Materials in Nuclear Power Systems, Asheville, NC, USA

PATENTS

1. US Patent US10639719B2, Grain boundary engineering for additive manufacturing, Xiaoyuan Lou, Evan Jarrett Dolley, Martin Matthew Morra, (Issued)
2. European Patent EP3184591B1, Corrosion protection of metals, Shizhong Wang, Martin Matthew Morra, Lei Cao, Yiteng JIN, Xiao Zhang, Qunjian Huang, Minghu Guo, Xiaoyuan Lou, Xiaxi Li, Qijia Fu, Qianqian Xin, (Issued)
3. US Patent US20180193916A1, Additive manufacturing method and materials, Xiaoyuan Lou, Martin Matthew Morra, 1/6/2017, (Issued)
4. European Patent EP3565681B1, Core-shell alloy powder for additive manufacturing, an additive manufacturing method and an additively manufactured precipitation dispersion strengthened alloy component, Xiaoyuan Lou, Martin Matthew Morra, (Issued)

PUBLICATIONS (Google Scholar Citation 3850, H-index 24, i10-index 36)

Journal Papers:

Superscript “G” indicates the graduate students supervised by Dr. Lou.
Superscript “*” indicates the corresponding author of the paper.

1. C. Tang[G], J. Yang[G], F. Zhang, J.W. Aroh, E. Porterfield, B.C. Prorok, **X. Lou***, “Twin-related grain boundary engineering of additively manufactured 316L stainless steel”, Acta Materialia, 2025 (under review)
2. Q. Pan[G], M. Kapoor, J. Carsley, **X. Lou***, “Simulating cast-like microstructure using laser-directed energy deposition – a critical step to high-throughput combinatorial development for DC-cast Al alloys”, Materials Characterization, 2025 (under review)

3. A Mahmud, S Meher, P Renner, A Rieffer, C Silva, J Snitzer[G], Q Zhang[G], **X Lou** and I van Rooyen, “Optimizing Laser Powder Directed Energy Deposition for Grade-91 and Grade-92 Ferritic/Martensitic Steels for Nuclear Applications: Linking Process Parameters to Microstructure”, Frontiers in Nuclear Engineering, 2025 (under review)
4. J. Snitzer[G], B. Sutton, J. Shingledecker, **X. Lou***, “Creep properties of solution annealed 316H stainless steel made by laser-powder directed energy deposition additive manufacturing”, Materials Science and Engineering A, 2025 (under review)
5. E. McDermott[G], J. Yang[G], J. Snitzer[G], Z. Hu, L. Shao, **X. Lou***, “A parametric study of irradiation-assisted stress corrosion cracking of additively manufactured 316L stainless steel by using microstructurally-graded specimen”, Journal of Nuclear Materials, 2025 (under review)
6. J. Yang[G], WY Chen, **X. Lou***, “In-situ observation of dislocation dynamics during dislocation channel broadening”, Scripta Materialia, 2025 (under review)
7. J. Snitzer[G], B. Wei, J. Shingledecker, J. Wang, **X. Lou***, “High-temperature creep of additively manufactured 316H stainless steel by high-throughput microstructurally graded specimen: the effects of process and microstructure”, Materials Science and Engineering A, 2025 (accepted) (Tier 1, impact factor 7.0)
8. J. Weaver, H. Yin[G], J. Redford, **X. Lou**, “Instrumented micro/macroindentation of porosity defects in laser powder bed fusion 316L stainless steel”, Journal of Materials Science, 2025 (Tier 1, impact factor 3.5)
9. Q. Pan[G], F. Zhang, D.V. Pillai, Z. Zhang, Y. Zheng, L. Yuan, M. Kapoor, J. Carsley, **X. Lou***, “Insights into the grain refinement of Al-Mn-Fe-Si alloy via in situ reaction during laser additive manufacturing”, Journal of Alloys and Compounds, 1016, 178983, 2025 (Tier 1, impact factor 6.3)
10. A Lin, J Lee[G], **X Lou**, Y Zhang, “Phase-field Modeling of interdiffusion between dissimilar Fe-Cr-Ni alloys during non isothermal processing”, Computational Materials Science, Volume 246, 113357 2025 (Tier 1, impact factor 3.3)
11. Q Pan[G], J Lee[G], J Yang[G], V Samarov, **X Lou***, “Solid-to-solid diffusion bond between SA508 low alloy steel to 316L stainless steel by hot isostatic pressing”, JOM, 7, 2024 (Tier 2, impact factor 2.1)
12. J Yang[G], L Hawkins, Z Shang, E McDermott[G], B Tsai, L He, Y Lu, M Song, H Wang, **X Lou***, “Dislocation channel broadening – a new mechanism to improve irradiation-assisted stress corrosion cracking resistance of additively manufactured 316L stainless steel”, Acta Materialia, 119650, 2024 (Tier 1, impact factor 9.3)
13. H Yin[G], J Yang[G], RD Fischer, Z Zhang, B Prorok, L Yuan, **X Lou***, "Pulsed laser additive manufacturing for 316L stainless steel – a new approach to control subgrain cellular structure", JOM, 75, 5027–5036, 2023 (Tier 2, impact factor 2.1)
14. Q Pan[G], M Kapoor, S Mileski, D Li, J Yang[G], Y Zheng, J Carsley, **X Lou***, “Phase transformation and microstructural evolution in Al-Mn-Fe-Si 3104 aluminum alloy made by laser directed energy deposition”, Additive Manufacturing, 103797, 2023 (Tier 1, impact factor 11.1)
15. AJ Summers, H Yin[G], RD Fischer, BC Prorok, **X Lou**, QP He, "Constructing Process Maps for Pulsed Wave Laser Additive Manufacturing with Interpretable Machine Learning", Journal of Manufacturing Processes, 104, 138-149, 2023 (Tier 1, impact factor 6.8)
16. L Hawkins, J Yang[G], M Song, D Schwen, Y Zhang, L Shao, **X Lou**, L He, “The effect of secondary phases on microstructure and irradiation damage in an as-built additively manufactured 316L stainless steel with a hafnium compositional gradient”, Journal of Nuclear Materials, 154708, 2023 (Tier 1, impact factor 3.2)
17. J. Le[G], J. Yang[G], H. Yin[G], V. Samarov, D. Gandy, **X. Lou***, SA508 low alloy steel to 316L stainless steel dissimilar metal joint made by powder metallurgy hot isostatic pressing, *Materials Science and Engineering A*, 875, 145060, 2023 (Tier 1, impact factor 7.0)
18. H Yin[G], B Wei, A Shmatok, J Yang[G], F Salek, L Beckingham, B Prorok, J Wang, **X Lou***, “On the nanoscale oxide dispersion via in-situ atmospheric oxidation during laser powder bed fusion”, Journal of Materials Processing Technology, 118191, 2023 (Tier 1, impact factor 7.5)
19. M Song[G], J Yang[G], X Liu, L Hawkins, Z Jiao, L He, Y Zhang, D Schwen, **X Lou***, “Void swelling in additively manufactured 316L stainless steel with Hf composition gradients under self-ion irradiation”, *Journal of Nuclear Materials*, 578, 154351, 2023 (Tier 1, impact factor 3.2)
20. J. Yang[G], L. Hawkins, L. He, S. Mahmood, M. Song, K. Schulze, **X. Lou***, “Intragranular irradiation-assisted stress corrosion cracking (IASCC) of 316L stainless steel made by laser direct energy deposition additive

manufacturing: delta ferrite-dislocation channel interaction", *Journal of Nuclear Materials*, 577, 154305, 2023 (Tier 1, impact factor 3.2)

21. J. Snitzer[UG], **X. Lou***, "Sensitization of 316L stainless steel made by laser powder bed fusion", *CORROSION*, 79(2), 240–251, 2023 (Tier 3, impact factor 1.1)
22. Y. Wang, Y. Liang, A. Bansode, **X. Lou**, X. Zhang, B.S. Beckingham, M.L. Auad, "3D Printed Poly(acrylic acid-vinylimidazole) Ionic Polymer Metal Composite Actuators", *Macromolecular Materials and Engineering*, 2200440, 2022 (Tier 1, impact factor 4.6)
23. H. Yin[G], Y. Zhang, L. Crilly, J. Yang[G], B.C. Prorok, R.L. Jackson, **X. Lou***, "Carbon nanotubes (CNTs) reinforced 316L stainless steel composites made by laser powder bed fusion: microstructure and wear response", *Wear*, 204281, 2022 (Tier 1, impact factor 6.1)
24. P. Deng[G], M. Song, J. Yang[G], Q. Pan[G], S. McAllister, L. Li, B.C. Prorok, **X. Lou***, "On the thermal coarsening and transformation of nanoscale oxide inclusions in 316L stainless steel manufactured by laser powder bed fusion and its influence on impact toughness", *Materials Science and Engineering A*, 142690, 2022 (Tier 1, impact factor 7.0)
25. J. Yang[G], L. Hawkins, M. Song, L. He, M. Bachhav, Q. Pan[G], L. Shao, D. Schwen, **X. Lou***, "Compositionally graded specimen made by laser additive manufacturing as a high-throughput method to study radiation damages and irradiation-assisted stress corrosion cracking", *Journal of Nuclear Materials*, 153493, 2022 (Tier 1, impact factor 3.2)
26. J. Yang[G], X. Liu, M. Song, L. He, S. Bankson, M. Hamilton, **X. Lou***, "Sensitization, desensitization and carbide evolution of Alloy 800H made by laser powder bed fusion ", *Additive Manufacturing*, 102547, 2022 (Tier 1, impact factor 11.1)
27. Q. Pan[G], M. Kapoor, S. Mileski, J. Carsley, **X. Lou***, " Technical basis for using laser direct energy deposition as a high-throughput method for combinatorial Al-Mn alloy development", *Materials & Design*, 212, 110290, 2021 (Tier 1, impact factor 7.9)
28. J. Yang[G], M. Song, L.R. Hawkins, X. Liu, L. He, **X. Lou***, "Effects of heat treatment on corrosion fatigue and stress corrosion crack growth of additive-manufactured Alloy 800H in high-temperature water", *Corrosion Science*, 191, 109739, 2021 (Tier 1, impact factor 8.5)
29. H. Yin[G], M. Song, P. Deng[G], L. Li, B.C. Prorok, **X. Lou***, "Thermal stability and microstructural evolution of additively manufactured 316L stainless steel by laser powder bed fusion at 500-800C", *Additive Manufacturing*, 41, 101981, 2021 (Tier 1, impact factor 11.1)
30. L. Jiang, M. Song, L. Yang, J. Yang[G], D. Du, **X. Lou**, Y. Chen, "A comparison study of void swelling in additively manufactured and cold-worked 316L stainless steels under ion irradiation", *Journal of Nuclear Materials*, 551, 152946, 2021 (Tier 1, impact factor 3.2)
31. C. Kim, H. Yin[G], A. Shmatok, B.C. Prorok, **X. Lou**, K.H. Matlack, "Ultrasonic nondestructive evaluation of laser powder bed fusion 316L stainless steel", *Additive Manufacturing*, 38, 101800, 2021 (Tier 1, impact factor 11.1)
32. **X. Lou***, P.L. Andresen, J. Yang[G], R. Pathania, T. Lian, R.G. Carter, "Mechanical and metallurgical considerations on the effects of ppb-level chloride on stress corrosion cracking of low alloy steels in high-temperature water", *Corrosion Science*, 179, 109136, 2021 (Tier 1, impact factor 8.5)
33. P. Deng[G], H. Yin[G], M. Song, D. Li, Y. Zheng, B.C. Prorok, **X. Lou***, "On the Thermal Stability of Dislocation Cellular Structures in Additively Manufactured Austenitic Stainless Steels: Roles of Heavy Element Segregation and Stacking Fault Energy", *JOM*, 72(12), 4232-4243, 2020 (Tier 2, impact factor 2.1)
34. P. Deng[G], M. Karadge, R.B. Rebak, V.K. Gupta, B.C. Prorok, **X. Lou***, "The origin and formation of oxygen inclusions in austenitic stainless steels manufactured by laser powder bed fusion", *Additive Manufacturing*, 35, 101334, 2020 (Tier 1, impact factor 11.1)
35. **X. Lou*** and D. Gandy, "Advanced Manufacturing for Nuclear Energy", *JOM*, 71 (8), 2834-2836, 2019 (Tier 2, impact factor 2.1)
36. M. Song, M. Wang, **X. Lou**, R.B. Rebak, G.S. Was*, "Radiation damage and irradiation-assisted stress corrosion cracking of additively manufactured 316L stainless steels", *Journal of Nuclear Materials*, 513, pp 33-44, 2019 (Tier 1, impact factor 3.2)
37. **X. Lou***, P.L. Andresen, R.B. Rebak, "Oxide inclusion in the laser additive manufactured stainless steel and its effects on impact toughness and stress corrosion cracking behavior", *Journal of Nuclear Materials*, 499, pp 182-190, 2018 (Tier 1, impact factor 3.2)

38. **X. Lou***, M. Song, P.W. Emigh, M.A. Othon, P.L. Andresen, "On the stress corrosion crack growth behaviour in high temperature water of 316L stainless steel made by laser powder bed fusion additive manufacturing", *Corrosion Science*, 128, pp 140-153, 2017 (Tier 1, impact factor 8.5)

39. **X. Lou***, M.A. Othon, R.B. Rebak, "Corrosion fatigue crack growth of laser additively-manufactured 316L stainless steel in high temperature water", *Corrosion Science*, 127, pp 120-130, 2017 (Tier 1, impact factor 8.5)

40. **X. Lou***, R. Pathania, P.L. Andresen, "Effects of chloride transients on stress corrosion crack in pressure vessel low alloy steels in high temperature water", *Corrosion Science*, 126, pp 305-316, 2017 (Tier 1, impact factor 8.5)

41. **X. Lou*** and R.B. Rebak, "Exposure test evaluates coatings for seawater-cooled heat exchangers", *Materials Performance*, 2, pp 12-19, 2015 (Tier 3)

42. L. Yang, S. Wang, **X. Lou** and M. Liu, "Electrical conductivity and electrochemical performance of cobalt-doped BaZr0.1Ce0.7Y0.2O3-delta cathode", *International Journal of Hydrogen Energy*, 36 (3), pp 2266-2270, 2011 (Tier 1, impact factor 8.3)

43. **X. Lou***, P.M. Singh*, "Cathodic activities of oxygen and hydrogen on carbon steel in simulated fuel-grade ethanol", *Electrochimica Acta*, 56 (5), pp 2312-2320, 2011 (Tier 1, impact factor 5.6)

44. **X. Lou***, P.M. Singh*, "Phase angle analysis for stress corrosion cracking of carbon steel in fuel-grade ethanol: experiments and simulation", *Electrochimica Acta*, 56 (4), pp 1835-1847, 2011 (Tier 1, impact factor 5.6)

45. M. Li, **X.Y. Lou**, J.H. Kim, R.H. Wagoner*, "An efficient constitutive model for room-temperature, low-rate plasticity of annealed Mg AZ31B sheet", *International Journal of Plasticity*, 26 (6), pp. 820-858, 2010 (Tier 1, impact factor 12.8)

46. **X. Lou***, P.M. Singh*, "Role of water, acetic acid and chloride on corrosion and pitting behaviour of carbon steel in fuel-grade ethanol", *Corrosion Science*, 52 (7), pp 2303-2315, 2010 (Tier 1, impact factor 8.5)

47. **X. Lou***, D. Yang, P.M. Singh, "Film breakdown and dissolution during stress corrosion cracking of carbon steel in bioethanol", *Journal of The Electrochemical Society*, 157 (2), pp. C86-C94, 2010 (Tier 1, impact factor 3.3)

48. **X. Lou***, D. Yang, P.M. Singh, "Effect of ethanol chemistry on stress corrosion cracking of carbon steel in fuel-grade ethanol", *Corrosion*, 65 (12), pp. 785-797, 2009 (Tier 3, impact factor 1.1)

49. **X. Lou**, Z. Liu, S. Wang, Y. Xiu, C.P. Wong, M. Liu*, "Controlling the morphology and uniformity of a catalyst-infiltrated cathode for SOFCs by tuning wetting property", *Journal of Power Sources*, 195 (2), pp. 419-424, 2010 (Tier 1, impact factor 7.9)

50. **X. Lou**, S. Wang, Z. Liu, L. Yang, M. Liu*, "Improving La0.6Sr0.4Co0.2Fe0.8O3-delta cathode performance by infiltration of a Sm0.5Sr0.5CoO3-delta coating", *Solid State Ionics*, 180 (23-25), pp. 1285-1289, 2009 (Tier 2, impact factor 3.3)

51. **X.Y. Lou**, M. Li, R.K. Boger, S.R. Agnew, R.H. Wagoner*, "Hardening evolution of AZ31B Mg Sheet", *International Journal of Plasticity*, 23 (1): 44-86, 2007 (Tier 1, impact factor 12.8)

52. R.H. Wagoner*, **X.Y. Lou**, M. Li, S.R. Agnew, "Forming behavior of magnesium sheet", *Journal of Materials Processing Technology*, 177: 483-485, 2006 (Tier 1, impact factor 7.5)

53. X.J. Zhang, X.Z. Fan, J. Yan, F. Xu, **X.Y. Lou**, J.L. He, Z.L. Wang, H.T. Wang*, N.B. Ming, "Properties of leaky and degenerate modes in a prism-film coupler with waveguide structure", *Journal of Applied Physics*, 94 (11): 7025-7030, 2003 (Tier 2, impact factor 2.7)

Conference Proceeding Papers:

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2. A. Maseang, Q. Pan, M. Kapoor, J. Carsley, X. Lou, Al-Mg-Si Alloy Development using Combinatorial Laser Directed Energy Deposition, Light Metals, 113-119, 2025
3. J. Snitzer, B. Wei, J. Wang, X. Lou, Influence of solution annealing on creep behavior of additively manufactured 316H SS using microstructurally graded specimen, Advances in Materials Technology for Power Plants, 84871, 994-1007, 2024

4. Q Pan, M Kapoor, J Carsley, X Lou, High-Throughput Compositional Study of 3xxx Al Alloy Using Laser Synthesis and Small-Scale Rolling: A Case Study, Light Metals, 206-214, 2024
5. J. Snitzer, X. Lou, High-throughput creep testing for AM 316H SS by using microstructurally-graded specimen, Transactions of the American Nuclear Society, 128, 332-334, 2023
6. J. Yang, L. Hawkins, L. He, Z. Shang, M. Song, Y. Lu, X. Lou, Mechanism for the superior IASCC resistance in HIP AM 316L, Transactions of the American Nuclear Society, 128, 329-331, 2023
7. Q. Pan, M. Kapoor, S. Mileski, J. Carsley, X. Lou, The role of Ti and B additions in grain refinement of Al-Mn alloy during laser additive manufacturing, Light Metals, 493-499, 2023
8. A.J. Summers, H. Yin, R.D. Fischer, B.C. Prorok, X. Lou, Q.P. He, Improving Linear Separability of Pulse Wave Laser Additive Manufacturing Classifiers with Rational Feature Engineering and Selection, 2022 American Control Conference (ACC), 2592-2597, 2022
9. Q. Pan, M. Kapoor, S. Mileski, J. Carsley, X. Lou, Phase transformation and microstructure evolution of AA3104 alloy made by laser additive manufacturing, Light Metals, 179-185, 2022
10. X. Lou, R. Pathania, R. Carter, "SCC Growth Behavior of Stainless Steels and Nickel-Base Alloys during Chemical Transients in BWR NWC Environments", Proceedings of NACE Corrosion 2021 Conference (NACE 2021)
11. P. Deng, M. Karadge, R.B. Rebak, V.K. Gupta, B.C. Prorok, X. Lou, Evolution and Impact of Oxygen Inclusions in 316L Stainless Steel Manufactured by Laser Powder Bed Fusion, Proceedings of the 2020 Annual Conference on Experimental and Applied Mechanics, 75-80, 2021
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15. Xiaoyuan Lou, Teresa E. Perez, Raul B. Rebak, "Corrosion evaluation of nuclear reactor internal component made by additive manufacturing ", Proceeding of LatinCorr 2018
16. Xiaoyuan Lou and Raj Pathania, “Effect of chloride transients on crack growth rates in low alloy steels in BWR environments”, Proceedings of 18th International Conference on Environmental Degradation of Materials in Nuclear Power Systems
17. Xiaoyuan Lou, Peter L. Andresen, Tiangan Lian, Raj Pathania, "Effect of ppb levels of chloride on the stress corrosion cracking of pressure vessel steel", Proceedings of NACE Corrosion 2016 Conference (NACE 2016)
18. Xiaoyuan Lou, Peter L. Andresen, Tiangan Lian, Raj Pathania, "Effect of ppb levels of chloride on the stress corrosion cracking of pressure vessel steel", Proceedings of 17th International Conference on Environmental Degradation of Materials in Nuclear Power Systems
19. Xiaoyuan Lou, Evan Dolley, Martin Morra, Fran Bolger, Myles Connor, Ron Horn, "Stress corrosion cracking of the 316L stainless steel by additive manufacturing in high temperature water", Proceedings of 17th International Conference on Environmental Degradation of Materials in Nuclear Power Systems
20. Xiaoyuan Lou and Raul Rebak, "Corrosion and flow accelerated corrosion of candidate coatings for seawater cooled heat exchanger", Proceedings of NACE Corrosion 2014 Conference (NACE 2014)
21. Xiaoyuan Lou, Peter L. Andresen, and Tiangan Lian, "Rapid fracture phenomenon of metals in high temperature water", Proceedings of NACE Corrosion 2014 Conference (NACE 2014)
22. Evan J. Dolley, Peter L. Andresen, Martin M. Morra, Xiaoyuan Lou, and Raul B. Rebak, "Cracking resistance of chromium rich alloys in high temperature water", Proceedings of NACE Corrosion 2014 Conference (NACE 2014)
23. Xiaoyuan Lou, Peter L. Andresen, and Tiangan Lian, "Understanding rapid fracture phenomenon in high temperature water", Proceedings of 16th International Conference on Environmental Degradation of Materials in Nuclear Power Systems

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25. Xiaoyuan Lou and Preet M. Singh, "Corrosion and pitting behavior of carbon steel in fuel-grade ethanol under variations in ethanol chemistry", Proceedings of NACE Corrosion 2011 Conference (NACE 2011)
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27. Xiaoyuan Lou, Di Yang, Lindsey R. Goodman, Preet M. Singh, "Understanding the stress corrosion cracking of X-65 pipeline steel in fuel-grade ethanol", Proceedings of NACE Corrosion 2010 Conference (NACE 2010)
28. Lindsey R. Goodman, Xiaoyuan Lou, Preet M. Singh, "Investigation of the stress corrosion cracking of carbon steel in fuel grade ethanol environments", Proceedings of the 2010 TMS Annual Meeting
29. Xiaoyuan Lou, Lindsey R. Goodman, and Preet M. Singh, "Pitting corrosion of carbon steel in ethanol environment", Proceedings of NACE Corrosion 2009 Conference (NACE 2009)
30. Harry Abernathy, Zhe Cheng, Xiaoyuan Lou, Meilin Liu, "Probing and mapping SOFC anode reactions using in situ Raman spectroscopy", Proceedings of the American Chemical Society 233rd National Meeting (ACS Spring 2007)
31. Min Li, Xiaoyuan Lou, Sean R. Agnew, Robert H. Wagoner, "Constitutive modeling of slip, twinning, and untwinning in HCP Alloys", Proceedings of the 14th International Symposium on Plasticity (Plasticity 2008)
32. Robert H. Wagoner, Xiaoyuan Lou, Min Li, Sean R. Agnew, "Cyclic and monotonic plasticity of magnesium sheet", Proceedings of the 12th International Symposium on Plasticity (Plasticity 2006)
33. Xiaoyuan Lou, Min Li, Richard K. Boger, Sean R. Agnew, Robert H. Wagoner, "Deformation of O-temper AZ31B Mg sheet under monotonic and cyclic loading", Magnesium Technology 2006, Proceedings of Magnesium Technology Symposium at the 2006 TMS Annual Meeting

Published Technical Reports:

1. Xiaoyuan Lou, "BWRVIP-324, Effect of Chemical Transients on Stainless Steels and Nickel Based Alloys in BWR Environments: Progress Report for 2019", Electric Power Research Institute Technical Report, 2019
2. Raul Rebak, Xiaoyuan Lou, "Environmental cracking and irradiation resistant stainless steels by additive manufacturing", Final Project Report for NE0008428, US Department of Energy, 2018
3. Xiaoyuan Lou, "Stress corrosion cracking of NitroMaxx alloy in BWR and PWR environments", Electric Power Research Institute Technical Report, 2017
4. Xiaoyuan Lou, "Stress corrosion crack growth rate and chloride memory effect of pressure vessel steel during and after chloride transient in boiling water reactor environments", Electric Power Research Institute BWRVIP Technical Report, 2017
5. Xiaoyuan Lou and Peter L. Andresen, "Effects of low level chloride on stress corrosion cracking of low alloy pressure vessel steels in BWR environments", Electric Power Research Institute BWRVIP Technical Report, 2015
6. Xiaoyuan Lou and Peter L. Andresen, "Role of creep and creep crack growth in stress corrosion cracking (SCC) of austenitic stainless steel materials", Electric Power Research Institute PSCR Technical Report, 2014
7. Xiaoyuan Lou and Peter L. Andresen, "Rapid fracture phenomenon in high temperature water", Electric Power Research Institute PSCR Technical Report, 2013

TALKS AND SEMINARS

Plenary Talk, Keynote Lecture, and Invited Talks in Major Conferences:

1. **(Invited Talk)** X. Lou, E. Mcdermott , V. Samarov, “Effects of vacuum annealing powder de-oxygen process on nickel-based alloy and transition joint made by hot isostatic pressing”, IMAT 2025, Oct. 20-23, Detroit, MI, USA

2. **(Invited Talk)** X. Lou, J. Yang, E. McDermott, " On the Irradiation-assisted Stress Corrosion Cracking of 316L Stainless Steel Made by Laser Additive Manufacturing", TMS 2025 Annual Meeting, March 23-27, 2025, Las Vegas, NV, USA

3. **(Plenary Talk)** X. Lou, E. Mcdermott, J. Yang, “Irradiation-assisted stress corrosion cracking of 316L stainless steel made by laser additive manufacturing”, NuMat 2025 – The Nuclear Materials Conference, Oct. 17, 2024, Singapore

4. **(Invited Talk)** X. Lou, “Updates towards qualifying DED AM 316H stainless steel for high-temperature service”, 2024 ASME Boiler Code Week Meeting, May 13, 2024, Scottsdale, AZ, USA

5. **(Invited Talk)** X. Lou and J. Yang, “Recent Learning on Improving IASCC/SCC Resistance of Austenitic Stainless Steel in High Temperature Water”, TMS 2024 Annual Meeting, March 3-7, 2024, Orlando, FL, USA

6. **(Invited Talk)** X. Lou, J. Yang, L. Hawkins, L. He, D. Schwen "A nanomechanical approach to reveal the origins of superior intergranular cracking resistance in irradiated additively-manufactured stainless steel", TMS 2022 Annual Meeting, Feb. 27–Mar. 3, 2022, Anaheim, CA, USA

7. **(Invited Talk)** X. Lou "Sensitization of Alloy 800H produced by laser powder bed fusion", The ASTM International Conference on Additive Manufacturing (ASTM ICAM 2021), Nov. 1-5, 2021, Virtual

8. **(Keynote Talk)** J. Yang (student), X. Lou, Compositionally graded specimen as a high-throughput alloy screening method for evaluating irradiation-assisted stress corrosion cracking, 2021 Annual Meeting of International Cooperative Group on Environmentally-Assisted Cracking, May 17-20, 2021, Virtual

9. **(Invited Talk)** X. Lou, J. Yang, X. Liu, M. Song, L. He, "Sensitization/Desensitization And Carbide Evolution Of Alloy 800H Made By Laser Powder Bed Fusion", NACE Corrosion 2021 Conference and EXPO, April 19-30, 2021, Virtual

10. **(Invited JNM Best Paper Talk)** Miao Song, Mi Wang, Xiaoyuan Lou, Raul Rebak, Gary Was, "Radiation damage and irradiation-assisted stress corrosion cracking of additively manufactured 316L stainless steels", NuMat 2020, October 26-29 2020, virtual

11. **(Invited Talk)** V. Gupta, A. Hoffman, X. Lou, R. Rebak, "From Flight to Fission: Additive Manufacturing Advances at GE in Nuclear Energy", TMS 2021 Annual Meeting, March 15-18 2021, virtual

12. **(Invited Talk)** Michael Mcmurtrey, Xiaoyuan Lou, Gary Was, "SCC and IASCC of printed 316L for use in the Nuclear Industry", TMS 2020 Annual Meeting, San Diego, CA, USA, February 23-17, 2020

13. **(Invited Talk)** Miao Song, Xiaoyuan Lou, "Heavy ion irradiation of 3D Printed 316L Stainless Steels", MS&T 2019, Portland, OR, USA, September 29-October 3, 2019

14. **(Invited Talk)** Xiaoyuan Lou, Mi Wang, Miao Song, Gary Was, Rebak Raul, "Environmental Cracking of Laser-fused Alloys under Nonirradiated and Irradiated Conditions", TMS 2019 Annual Meeting, San Antonio, TX, USA, March 10-14, 2019

15. **(Invited Talk)** Xiaoyuan Lou, Jingfan Yang, Miao Song, Mi Wang, Gary Was, Raul Rebak, "Alloy 800/800H by Laser Powder Bed Fusion", TMS 2019 Annual Meeting, San Antonio, TX, USA, March 10-14, 2019

16. **(Invited Talk)** Xiaoyuan Lou, Paul Emigh, Michelle Othon, “Environmental assisted cracking of the additively manufactured austenitic stainless steel in high temperature water”, TMS 2017 Annual Meeting, San Diego, CA, USA, Feb, 2017

17. **(Invited Talk)** Preet M. Singh, Xiaoyuan Lou, Lindsey R. Goodman, "Corrosion and stress corrosion cracking of carbon steel in fuel-grade ethanol", 218th The Electrochemical Society Meeting (Fall), Las Vegas, Nevada, USA, October 10-15, 2010

18. **(Invited Talk)** Harry Abernathy, Zhe Cheng, Xiaoyuan Lou, Meilin Liu, "Probing and mapping SOFC anode reactions using in situ Raman spectroscopy", The American Chemical Society 233rd National Meeting & Exposition (ACS Spring 2007), Chicago, IL USA, March 25-29, 2007

19. **(Invited Keynote Lecture)** Robert H. Wagoner, Xiaoyuan Lou, Min Li, Sean R. Agnew, "Cyclic and monotonic plasticity of magnesium sheet", The 12th International Symposium on Plasticity (Plasticity 2006), Helifax, Nova Scotia, Canada, July 17-22, 2006

Other Conference Talks:

20. R. Song, J. Wharry, X. Lou, J. King, “Impact of Irradiation on Microstructure and Mechanical Properties of Materials Produced by Advanced Manufacturing”, Seventh International Workshop on Structural Materials for Innovative Nuclear Systems (SMINS-7), March 31-April 3, 2025, Madrid, Spain
21. A. Maseang, Q. Pan, M. Kapoor, X. Lou, "AA 6xxx (Al-Mg-Si) Development using Combinatorial Laser Directed Energy Deposition ", TMS 2025 Annual Meeting, March 23-27, 2025, Las Vegas, NV, USA
22. Q. Pan, M. Kapoor, J. Carsley, X. Lou, "Effect of Fe on Al-Mn-Fe-Si Alloys Made by Laser Additive Manufacturing ", TMS 2025 Annual Meeting, March 23-27, 2025, Las Vegas, NV, USA
23. J. Snitzer, W. Y. Chen, X. Lou, " Microstructural evolution of additively-manufactured 316H stainless steel during high-temperature creep and its effects on irradiation resistance", TMS 2025 Annual Meeting, March 23-27, 2025, Las Vegas, NV, USA
24. J. Snitzer, B. Sutton, J. Shingledecker, X. Lou, " The effects of process parameters and heat treatment on the high-temperature creep properties of additively manufactured 316H stainless steel", TMS 2025 Annual Meeting, March 23-27, 2025, Las Vegas, NV, USA
25. E. McDermott, C. Tang, V. Samarovb, X. Lou, " Dissimilar metal joint by hot isostatic pressing (HIP) – design, optimization, and properties", TMS 2025 Annual Meeting, March 23-27, 2025, Las Vegas, NV, USA
26. E. McDermott, J. Yang, J. Snitzer, X. Lou, "Establishing IASCC-microstructure relationship for 316L stainless steel made by laser direct energy deposition additive manufacturing", TMS 2025 Annual Meeting, March 23-27, 2025, Las Vegas, NV, USA
27. J. Snitzer, X. Lou," High-Throughput Creep Testing for Additively Manufactured 316H SS by Using Microstructurally-Graded Specimen", International Conference on Advances in Materials, Manufacturing & Repair for Power Plants, February 25-28, 2025, Indian Wells, CA, USA
28. X. Lou, L. Shao, B. Prorok, “Irradiation-assisted stress corrosion cracking (IASCC) resistance of 316L stainless steel made by laser additive manufacturing”, 2024 Nuclear Regulatory Commission University Presentation, Sep. 17, 2024, online
29. J. Snitzer, X. Lou, "High-throughput Creep Testing for Additively Manufactured 316H SS by Using Microstructurally-graded Specimen", TMS 2024 Annual Meeting, March 3-7, 2024, Orlando, FL, USA
30. L. Hawkins, J. Yang, Z. Hu, M. Woods, R. Gakhar, L. Shao, X. Lou, D. Murray, L. He, "Molten Salt Corrosion of Proton Irradiated Additively Manufactured 316L Stainless Steel Doped with Hafnium", TMS 2024 Annual Meeting, March 3-7, 2024, Orlando, FL, USA
31. Q. Pan, M. Kapoor, P. McGannon, J. Carsley, X. Lou, “Recent Learning on Improving IASCC/SCC Resistance of Austenitic Stainless Steel in High Temperature Water”, TMS 2024 Annual Meeting, March 3-7, 2024, Orlando, FL, USA
32. A. Lin; Y. Zhang; X. Lou, "Temperature-dynamic Phase-field Modeling of Hot Isostatic Pressing for Joining Dissimilar Metals", TMS 2024 Annual Meeting, March 3-7, 2024, Orlando, FL, USA
33. L. Hawkins, J. Yang, M. Woods, R. Gakhar, L. Shao, X. Lou, D. Murray, L. He " Corrosion behavior of compositionally gradient additively manufactured 316L stainless steel doped with hafnium in eutectic NaCl-MgCl2 molten salt at 700 °C", MS&T 2023, October 1-4, 2023, Columbus, OH, USA
34. L. Hawkins, J. Yang, M. Woods, T. Copeland-Johnson, R. Gakhar, L. Shao, X. Lou, D. Murray, L. He " Corrosion behavior of compositionally gradient additively manufactured 316L stainless steel doped with hafnium in eutectic NaCl-MgCl2 molten salt at 700 °C", TMS 2023 Annual Meeting, March 19-23, 2023, San Diego, CA, USA
35. Q. Pan, M. Kapoor, S. Mileski, J. Carsley, X. Lou "The roles of Ti and B additions to the grain refinement of Al-Mn alloy during laser additive manufacturing", TMS 2023 Annual Meeting, March 19-23, 2023, San Diego, CA, USA
36. J. Yang, L. Hawkins, L. He, M. Song, Y. Lu, X. Lou " The origin of superior IASCC resistance of additively manufactured 316L stainless steel after hot isostatic pressing in oxygenated BWR water", TMS 2023 Annual Meeting, March 19-23, 2023, San Diego, CA, USA
37. J. Yang, L. Hawkins, L. He, Z. Shang, M. Song, Y. Lu, X. Lou "Superior IASCC resistance of HIP AM 316L in BWR water", 2023 American Nuclear Society Annual Meeting, June 11-14, 2023, Indianapolis, IN, USA

38. J. Snitzer, X. Lou "High-Throughput Creep Testing for AM 316H SS by Using Microstructurally-Graded Specimen", 2023 American Nuclear Society Annual Meeting, June 11-14, 2023, Indianapolis, IN, USA

39. X. Lou, J. Yang, L. Hawkins, L. He, M. Song, Z. Shang, Y. Lu, "The origin of superior IASCC resistance of additively manufactured 316L stainless steel after hot isostatic pressing", 2023 Annual Meeting of International Cooperative Group on Environmentally-Assisted Cracking, May 7-12, 2023, Kingston, Ontario, Canada

40. J. Le, V. Samarov, D. Gandy, R. Rebak, X. Lou, " Ferritic SA508 Low Alloy Steel to Austenitic 316L Stainless Steel by Powder Metallurgy Hot Isostatic Pressing", HIP 2022, September 11-14, 2022. Columbus, OH, USA

41. X. Lou, H. Yin, J. Le "Compositionally graded joint of 316L stainless steel to A508 low alloy steel by additive manufacturing", TMS 2022 Annual Meeting, Feb. 27–Mar. 3, 2022, Anaheim, CA, USA

42. J. Yang, L. Hawkins, M. Song, L. He, Z. Jiao, Y. Zhang, D. Schwen, X. Lou "Compositionally graded specimen: a high-throughput approach for nuclear material development", TMS 2022 Annual Meeting, Feb. 27–Mar. 3, 2022, Anaheim, CA, USA

43. H. Yin, J. Yang, B. Wei, M. Bachhav, J. Wang, X. Lou "Oxide dispersion strengthened stainless steel by reactive additive manufacturing", TMS 2022 Annual Meeting, Feb. 27–Mar. 3, 2022, Anaheim, CA, USA

44. Q. Pan, M. Kapoor, S. Mileski, J. Carsley, X. Lou "Phase transformation and microstructure evolution of Al-Mn alloy made by laser additive manufacturing", TMS 2022 Annual Meeting, Feb. 27–Mar. 3, 2022, Anaheim, CA, USA

45. J. Yang, L. Boring, L. He, M. Song, Z. Jiao, Y. Zhang, D. Schwen, L. Shao, X. Lou, Mitigating irradiated assisted stress corrosion cracking with minor refractory element modification – a high-throughput approach using compositionally-graded specimen, Materials in Nuclear Energy Systems (MiNES), Nov. 8-11, 2021, Pittsburgh, PA

46. L. He, L. Hawkins, J. Yang, X. Liu, M. Song, X. Lou, Y. Zhang, L. Shao, D. Schwen, Advanced Characterization of Additively Manufactured 316L Stainless Steel for Nuclear Applications, M&M 2021, August 4, 2021, Virtual

47. X. Lou, R. Pathania, R. Carter, P.L. Andresen, "Effect of Chemical Transients on SCC of Stainless Steels and Nickel Base Alloys in BWR Normal Water Chemistry", NACE Corrosion 2021 Conference and EXPO, April 19-30, 2021, Virtual

48. J. Yang, X. Liu, M. Song, L. He, X. Lou, "Sensitization and Stress Corrosion Cracking of Alloy 800H by Laser Powder Bed Fusion", TMS 2021 Annual Meeting, March 15-18 2021, virtual

49. X. Liu, J. Yang, M. Song, X. Lou, Y. Zhang, L. He, D. Schwen, "Proton Irradiation Induced Microstructural Evolution in Compositionally Graded Type 316L Stainless Steel", TMS 2021 Annual Meeting, March 15-18 2021, virtual

50. Y. Zhang, M. Song, X. Liu, L. He, D. Schwen, X. Lou, "Improving Irradiation Resistance of Alloys by Controlling Defect Diffusion: A Modeling Perspective", TMS 2021 Annual Meeting, March 15-18 2021, virtual

51. M. Song, J. Yang, X. Liu, X. Lou, Y. Zhang, L. He, D. Schwen, "A Superb Void Swelling Resistant Type 316L Stainless Steel Developed by Additive Manufacturing Enabled High Throughput Microalloying", TMS 2021 Annual Meeting, March 15-18 2021, virtual

52. X. Lou, J. Yang, X. Liu, M. Song, L. He, Y. Zhang, D. Schwen, "Compositionally Graded Bulk Specimen: A High-throughput Approach for Nuclear Alloy Development and Qualification", TMS 2021 Annual Meeting, March 15-18 2021, virtual

53. J. Yang, X. Liu, M. Song, L. He, Y. Zhang, X. Lou, "Irradiation-assisted Stress Corrosion Cracking (IASCC) of Austenitic Stainless Steels with Oversized Solutes in High temperature Water", TMS 2021 Annual Meeting, March 15-18 2021, virtual

54. Q. Pan, M. Kapoor, S. Mileski, J. Carsley, X. Lou, "High-throughput Aluminum Alloy Discovery Using Laser Additive Manufacturing", TMS 2021 Annual Meeting, March 15-18 2021, virtual

55. Yongfeng Zhang**,** Anus Manzoor , Dilpuneet Aidhy, Miao Song , Xiaoyuan Lou, lingfeng He, "The Effect of Minor Additives on Radiation Induced Segregation in Austenitic Steel Alloys", TMS 2020 Annual Meeting, San Diego, CA, USA, February 23-17, 2020

56. Jingfan Yang, Miao Song, Raul Rebak, Xiaoyuan Lou, "Stress Corrosion Cracking Growth Behavior of Additively Manufactured Alloy 800H in High Temperature Water", TMS 2020 Annual Meeting, San Diego, CA, USA, February 23-17, 2020

57. Jingfan Yang, Xiang Liu, Miao Song, Lingfeng He, Xiaoyuan Lou, "Sensitization of Alloy 800H made by Laser Powder Bed fusion", TMS 2020 Annual Meeting, San Diego, CA, USA, February 23-17, 2020

58. Miao Song, Jiang Li, Youxing Chen, Xiaoyuan Lou, "Comparison of Voids Swelling in Additively Manufactured and Cold-worked 316L SSs After Self-ion Irradiations at Elevated Temperatures", TMS 2020 Annual Meeting, San Diego, CA, USA, February 23-17, 2020

59. Xiaoyuan Lou, Raj Pathania, Paul Emigh, Martin Morra, Effect of Chemical Transients on SCC of Stainless Steels and Nickel Base Alloys in BWR Environment, EPRI BWRVIP Mitigation Committee Meeting, June 4-7, 2019

60. Xiaoyuan Lou, Teresa E. Perez, Raul B. Rebak, "Corrosion evaluation of nuclear reactor internal component made by additive manufacturing ", LatinCorr 2018, Buenos Aaires, Argentina, Oct. 23-25, 2018

61. Raul B. Rebak, Xiaoyuan Lou, "Additive manufacturing components for light water reactors ", EUROCORR 2018, ICE Krakow, Poland, Sep. 9-13 2018

62. Xiaoyuan Lou, Peter Andresen, Raul Rebak, "On the stress corrosion crack growth of laser additive manufactured 316L stainless steel", NACE Corrosion 2018 Conference and EXPO, Phoenix, Arizona, USA, April 15-19, 2018

63. Xiaoyuan Lou, Raul Rebak, Myles Connor, Francis Bolger, David Webber, Gary Was, Miao Song, Mi Wang, Frederick List, "Additive stainless steel for nuclear: from material aspects to quality part", TMS 2018 Annual Meeting, Phoenix, AZ, USA, March 11-15, 2018

64. Xiaoyuan Lou and Raul Rebak, "Microstructural effects on environmental assisted crack growth behaviors of austenitic stainless steel by laser powder bed fusion", TMS 2018 Annual Meeting, Phoenix, AZ, USA, March 11-15, 2018

65. Miao Song, Mi Wang, Gary Was, Xiaoyuan Lou, Raul Rebak, "Effects of proton irradiation on microstructure in additively manufactured 316L stainless steel made by laser powder bed fusion", TMS 2018 Annual Meeting, Phoenix, AZ, USA, March 11-15, 2018

66. Mi Wang, Miao Song, Xiaoyuan Lou, Raul Rebak, Gary Was, "IASCC behavior of additively manufactured 316L stainless steel in light water reactor environments", TMS 2018 Annual Meeting, Phoenix, AZ, USA, March 11-15, 2018

67. Xiaoyuan Lou and Raj Pathania, "Effect of chloride transients on crack growth rates in low alloy steels in BWR environments", 18th International Conference on Environmental Degradation of Materials in Nuclear Power Systems, Portland, OR, USA, August 13-17, 2017

68. Xiaoyuan Lou, Fred List, Gary Was, Myles Connor, “Environmental cracking and irradiation resistant stainless steel by additive manufacturing”, 2016 DOE Advanced Manufacturing Method Workshop, Germantown, MD, USA, Oct. 17-18, 2016

69. Xiaoyuan Lou, Paul Emigh, Peter Andresen, "SCC memory effect on pressure vessel steel after chloride transient in high temperature water”, 2016 BWRVIP Mitigation Committee Meeting, San Antonio, USA, June, 2016

70. Xiaoyuan Lou, Paul Emigh, Michelle Othon, Martin Morra, Peter Andresen, "Stress corrosion cracking of the additively manufactured stainless steel by laser powder bed process”, 2016 Meeting of International Cooperative Group on Environmental Assisted Cracking of Water Reactor Materials, Qindao, China, May 15-20, 2016

71. Xiaoyuan Lou, Peter L. Andresen, Tiangan Lian, Raj Pathania, "Effect of ppb levels of chloride on the stress corrosion cracking of pressure vessel steel", NACE Corrosion 2016 Conference and EXPO, Vancouver, BC, Canada, March 6-10, 2016

72. Xiaoyuan Lou, Evan Dolley, Martin Morra, Fran Bolger, Myles Connor, Ronald Horn, David Webber, "Stress corrosion cracking of the additively manufactured 316L stainless Steel in high temperature water", Materials Science & Technology 2015, Columbus, OH, USA, October 4-8, 2015

73. Xiaoyuan Lou, Yiteng Jin, Erica Sampson, Shizhong Wang, Martin Morra, "Measurement of high temperature pitting corrosion under mineral dust using electrochemical impedance spectroscopy", Materials Science & Technology 2015, Columbus, OH, USA, October 4-8, 2015

74. Xiaoyuan Lou, Peter L. Andresen, Tiangan Lian, Raj Pathania, "Effect of ppb levels of chloride on the stress corrosion cracking of pressure vessel steel", 17th International Conference on Environmental Degradation of Materials in Nuclear Power Systems, Ottawa, Ontario, Canada, August 9-13, 2015

75. Xiaoyuan Lou, Evan Dolley, Martin Morra, Fran Bolger, Myles Connor, Ron Horn, "Stress corrosion cracking of the 316L stainless steel by additive manufacturing in high temperature water", 17th International Conference on Environmental Degradation of Materials in Nuclear Power Systems, Ottawa, Ontario, Canada, August 9-13, 2015

76. Xiaoyuan Lou, Peter L. Andresen, Tiangan Lian, Raj Pathenia, " Stress Corrosion Cracking Pressure Vessel Steel in ppb Levels of Chloride: Heat-to-Heat Comparison", The 2015 Annual Meeting of the International Cooperative Group on Environmentally-Assisted Cracking of Water Reactor Materials (ICG-EAC), Ann Arbor, MI, USA, May 17-22, 2015

77. Xiaoyuan Lou, Peter L. Andresen and Peter Chou, "Creep and creep crack growth of austenitic stainless steel in high temperature air", The 2014 Annual Meeting of the International Cooperative Group on Environmentally-Assisted Cracking of Water Reactor Materials (ICG-EAC), Prague, Czech Republic, April 6-11, 2014

78. Xiaoyuan Lou, Peter L. Andresen, Tiangan Lian, Raj Pathenia, "Updates on the effect of ppb levels of chloride on the stress corrosion cracking of pressure vessel steel", The 2014 Annual Meeting of the International Cooperative Group on Environmentally-Assisted Cracking of Water Reactor Materials (ICG-EAC), Prague, Czech Republic, April 6-11, 2014

79. Xiaoyuan Lou and Raul Rebak, "Corrosion and flow accelerated corrosion of candidate coatings for seawater cooled heat exchanger", NACE Corrosion 2014 Conference and EXPO, San Antonio, Texas, USA, March 9-13, 2014

80. Xiaoyuan Lou, Peter L. Andresen, and Tiangan Lian, "Rapid fracture phenomenon of metals in high temperature water", NACE Corrosion 2014 Conference and EXPO, San Antonio, Texas, USA, March 9-13, 2014

81. Evan J. Dolley, Peter L. Andresen, Martin M. Morra, Xiaoyuan Lou, and Raul B. Rebak, "Cracking resistance of chromium rich alloys in high temperature water", NACE Corrosion 2014 Conference and EXPO, San Antonio, Texas, USA, March 9-13, 2014

82. Xiaoyuan Lou, Peter L. Andresen, and Tiangan Lian, "Understanding rapid fracture phenomenon in high temperature water", 16th International Conference on Environmental Degradation of Materials in Nuclear Power Systems, Asheville, NC, USA, August 11-15, 2013

83. Xiaoyuan Lou, Peter L. Andresen and Tiangan Lian, "Recent studies on the effect of ppb levels of chloride on the stress corrosion cracking of pressure vessel steel", The 2013 Annual Meeting of the International Cooperative Group on Environmentally-Assisted Cracking of Water Reactor Materials (ICG-EAC), Karuizawa, Nagano, Japan, May 9-24, 2013

84. Xiaoyuan Lou, Peter L. Andresen and Tiangan Lian, "Effect of low concentration chloride on SCC of low alloy steel pressure vessel", The 2012 Annual Meeting of the International Cooperative Group on Environmentally-Assisted Cracking of Water Reactor Materials (ICG-EAC), Quebec City, QC, Canada, May 13-18, 2012

85. Xiaoyuan Lou, Peter L. Andresen and Tiangan Lian, "Investigation of rapid fracture phenomenon in high temperature water", The 2012 Annual Meeting of the International Cooperative Group on Environmentally-Assisted Cracking of Water Reactor Materials (ICG-EAC), Quebec City, QC, Canada, May 13-18, 2012

86. Xiaoyuan Lou and Peter L. Andresen, "Investigation of rapid fracture phenomenon in BWR water condition", NACE Corrosion 2012 Conference and EXPO, Salt Lake City, Utah, USA, March 11-15, 2012

87. Xiaoyuan Lou and Preet M. Singh, "Corrosion and pitting behavior of carbon steel in fuel-grade ethanol under variations in ethanol chemistry", NACE Corrosion 2011 Conference and EXPO, Houston, Texas, USA, March 13-17, 2011

88. Xiaoyuan Lou and Preet M. Singh, "Cathodic activity of carbon steel in simulated fuel-grade ethanol and its impact on hydrogen embrittlement", 218th The Electrochemical Society Meeting (Fall), Las Vegas, Nevada, USA, October 10-15, 2010

89. Xiaoyuan Lou and Preet M. Singh, "Local passivation breakdown of carbon steel in bio-ethanol during stress corrosion cracking" (Invited for the special issue of Electrochimica Acta), 8th Spring Meeting of the International Society of Electrochemistry, Columbus, Ohio, USA, May 2-5, 2010

90. Xiaxi Li, Matthew Lynch, Mingfei Liu, Xiaoyuan Lou, Meilin Liu, "Study of the morphological influence on SOFC cathode kinetics", 217th The Electrochemical Society Meeting (Spring), Vancouver, Canada, April 25-30, 2010
91. Di Yang, Xiaoyuan Lou, Preet M. Singh, Richard W. Neu, "Threshold strain and cyclic stress effects on stress corrosion cracking of duplex stainless steel 2205 in chloride environment and white liquor", NACE Corrosion 2010 Conference and EXPO, San Antonio, Texas, USA, March 14-18, 2010
92. Xiaoyuan Lou, Preet Singh, "Film breakdown in bio-ethanol during stress corrosion cracking", NACE Corrosion 2010 Conference and EXPO, San Antonio, Texas, USA, March 14-18, 2010
93. Xiaoyuan Lou, Di Yang, Lindsey Goodman, Preet Singh, "Understand the stress corrosion cracking of X-65 pipeline steel in fuel-grade ethanol", NACE Corrosion 2010 Conference and EXPO, San Antonio, Texas, USA, March 14-18, 2010
94. Xiaoyuan Lou and Preet M. Singh, "Passivation kinetics of carbon steel in simulated fuel-Grade ethanol", 215th The Electrochemical Society Meeting (Spring), San Francisco, California, USA, May 24-29, 2009
95. Xiaoyuan Lou, Lindsey R. Goodman, and Preet M. Singh, "Pitting corrosion of carbon steel in ethanol environment", NACE Corrosion 2009 Conference and Expo, Atlanta, GA, USA, March 22-26, 2009
96. Min Li, Xiaoyuan Lou, Robert H. Wagoner, "Constitutive modeling of plasticity incorporating slip, twinning, and untwinning", The 14th International Symposium on Plasticity (Plasticity 2008), Kailua/Kona, Hawaii, USA, January 3-8, 2008
97. Robert H. Wagoner, Xiaoyuan Lou, Min Li, Sean R. Agnew, "Forming behavior of magnesium sheet", The 11th International Conference on Metal Forming, University of Birmingham, UK, September 11-13, 2006
98. Xiaoyuan Lou, Min Li, Richard K. Boger, Sean R. Agnew, Robert H. Wagoner, "Hardening evolution of AZ31B-O Mg sheet", 2006 TMS Annual Meeting, San Antonio, Texas, USA, March 12-16, 2006
99. Min Li, Xiaoyuan Lou, Frederic Barlat, Robert H. Wagoner, "Constitutive behavior of AZ31B Mg sheet: development and implementation of constitutive model", 2005 TMS Annual Meeting, San Francisco, California, USA, February 13-17, 2005
100. Xiaoyuan Lou, Richard K. Boger, Frederic Barlat, Robert H. Wagoner, "Constitutive behavior of AZ31B Mg sheet: measurement and analysis of mechanical properties", 2005 TMS Annual Meeting, San Francisco, California, USA, February 13-17, 2005

Invited Seminars and Short Courses by Universities, National Labs, and Industries:

1. Xiaoyuan Lou, Qualifying Laser Additive Manufacturing for Nuclear Use, Invited Seminar at UIUC, Invited Lecture at MIDAS seminar series organized by University of Manchester, 3/6/2025.

   (MIDAS is a multi-institutional program with core support from the Engineering and Physical Sciences Research Council (EPSRC) in the United Kingdom, led by the University of Manchester, Imperial College London, the University of Oxford, and Culham Centre for Fusion Energy)
2. Xiaoyuan Lou, Qualifying Laser Additive Manufacturing for Nuclear Use, Invited Lecture at Rothrock Lecture Series, Texas A&M University, 2/12/2025.
3. Xiaoyuan Lou, Qualifying Laser Additive Manufacturing for Nuclear Use, Nuclear Engineering Seminar, Purdue University, 2/5/2025.
4. Xiaoyuan Lou, Environmental Cracking of 316L Stainless Steel by Laser Additive Manufacturing, Invited Seminar at UIUC, 11/19/2024
5. Xiaoyuan Lou, “Qualifying Laser Additive Manufacturing for Nuclear Use”, Advanced Manufacturing for Extreme Environments Workshop, The Center for Advanced Energy Studies (CAES) consortium, March 26-27, 2024, Idaho Falls, ID, USA
6. Xiaoyuan Lou, Environmentally Assisted Cracking of Structural Alloys Under Harsh Environments, Invited Seminar at SpaceX, 2/21/2024
7. Xiaoyuan Lou, Unusual IASCC Behavior of Additively Manufactured Stainless Steel, Invited Seminar at Argonne National Laboratory, 12/5/2022
8. Xiaoyuan Lou, Degradation of Additively Manufactured Alloys in Nuclear Environments, Graduate Seminar at University of Wisconsin at Madison, 4/21/2022

9. Xiaoyuan Lou, Metal Additive Manufacturing for Nuclear, Graduate Seminar at University of Michigan, 2/11/2022
10. Xiaoyuan Lou, Metal Additive Manufacturing for Nuclear - Qualification, Materials, and Beyond, Graduate Seminar at Purdue University, 1//26/2022
11. Xiaoyuan Lou, Metal Additive Manufacturing for Nuclear - Qualification, Materials, and Beyond, Graduate Seminar at University of Pittsburgh, 1/7/2022
12. Xiaoyuan Lou, Recent progress to understand the irradiation-assisted stress corrosion cracking of stainless steels made by laser powder bed fusion, Graduate Seminar at The University of Alabama, 10/22/2021
13. Xiaoyuan Lou, Perspectives on qualifying laser additively manufactured stainless steel for nuclear structural use, Graduate Seminar at The University of Alabama at Birmingham, 11/4/2020
14. Xiaoyuan Lou, Laser additive manufacturing as a high-throughput tool for alloy development, Invited talk in Novelis Global R&D Center, August 11, 2019
15. Xiaoyuan Lou, Metal Additive Manufacturing at Auburn University, Invited talk in Northrop Grumman, May 16, 2018
16. Xiaoyuan Lou, Environmental Cracking Resistant Stainless Steel by Additive Manufacturing, Invited talk in Carpenter Technology R&D Center, May 15, 2018
17. Xiaoyuan Lou, "Environmental Cracking and Irradiation Resistant Stainless Steel by Laser Additive Manufacturing", Auburn University Graduate Seminar, Auburn, AL, USA, October 30, 2017
18. Xiaoyuan Lou, "Environmental Cracking and Irradiation Resistant Stainless Steel by Laser Additive Manufacturing", Auburn University Graduate Seminar, Auburn, AL, USA, October 30, 2017
19. Xiaoyuan Lou, Fran Bolger, Myles Connor, “3D Metal Printing for Nuclear”, 2016 DOE Workshop: Pathway to SMR Commercialization, North Bethesda, MD, USA, 2016
20. Xiaoyuan Lou, "Stress corrosion cracking of structural materials in modern light water reactor", Florida International University Graduate Seminar, Miami, FL, USA, October 10, 2014
21. Xiaoyuan Lou, "R&D activity on nuclear material degradation at GE Global Research”, Invited Talk in Suzhou Nuclear Power Research Institute, Suzhou, China, December 12, 2012