

**Prof. Leijun Li, P.Eng.**

Department of Chemical & Materials Engineering, University of Alberta  
 12<sup>th</sup> Floor, ICE Building, 9211 – 116 Street, Edmonton, AB, Canada T6G 2V4  
 Phone: (780)492-3472; e-mail: leijun@ualberta.ca

**Professional Preparation**

Huazhong University of Sci. & Tech.	Mechanical/Welding Engineering	B.S. 1982
Xi'an Jiao-Tong University	Mechanical/Welding Engineering	M.S. 1987
Rensselaer Polytechnic Institute	Materials Engineering	Ph.D. 2000

**Appointments**

Professor, Chemical & Materials Eng. University of Alberta	2013 - present
Associate Professor, Mechanical & Aerospace Eng. Utah State University	2008 - 2013
Visiting Professor, sabbatical at VTT – Technical Research Centre of Finland	2009 - 2010
Assistant Professor, Mechanical & Aerospace Eng. Utah State University	2002 - 2008
Assistant Professor, Manufacturing Eng. University of Northern Iowa	2000 - 2002
Research Assistant, Materials Eng. Rensselaer Polytechnic Institute	1994 - 2000
Associate Professor, Mechanical Eng. Wuhan University	1990 - 1994

**Five Publications Related to Proposed Project**

1. R. Kannan, Y. Wang, M. Nouri, D-Y. Li, and L. Li, 2018, "Instrumented Indentation Study of Bainite/Martensite Duplex Microstructure", *Materials Science & Engineering A*, DOI: 10.1016/j.msea.2017.12.052.
2. R. Kannan, Y. Wang, L. Li, 2018, "A Dilatometric Analysis of Inverse Bainite Transformation", *J. Materials Science*, 53(5), 3692-3708.
3. Wang, Y., Li, L., 2016, "Fine-Grained Heat-Affected Zone in Type IV Failure of Grade 91 Steel Welds", *Welding Journal*, 95(1), 27-36s.
4. Wang, Y., Kannan, R., and Li, L., 2016, "Identification and Characterization of Intercritical Heat-Affected Zone in As-welded Grade 91 Weldment", *Metallurgical & Materials Transactions A*, 47(12), 5680-5684.
5. Wang, Y., Kannan, R., and Li, L., 2016, "Characterization of As-Welded Microstructure of Heat-affected Zone in Modified 9Cr-1Mo-V-Nb Steel Weldment", *Materials Characterization*, 118 (2016) 225-234.

**Five Other Significant Publications**

1. Chen, H., Li, L., Kemps, R., Michielsen, B., Jacobs, M., Snijkers, F., and Middelkoop, V., 2015, "Reactive Air Brazing for Sealing Mixed Ionic Electronic Conducting Hollow Fibre Membranes", *Acta Materialia*, 88 (2015) 74-82.
2. Zhang, C., and Li, L., 2009, "A Coupled Thermal-Mechanical Analysis of Ultrasonic Bonding Mechanism", *Metallurgical and Materials Transactions B*, 40B (2), 196-207.
3. Zaveri, N., Mahapatra, M., Deceuster, A., Peng, Y., Li, L., and Zhou, A., 2008, "Corrosion Resistance of Pulsed Laser-treated Ti-6Al-4V Implant in Simulated Biofluids", *Electrochimica Acta*, 53 (2008) 5022-5032.
4. Li, L., and Messler, R.W., Jr., 2002, "Dissolution Kinetics of NbC Particles in Type 347 Stainless Steel", *Metallurgical & Materials Transactions A*, 33A(7), 2031-2043.

5. Zhang, C., Deceuster, A., and Li, L., 2009, "A Method for Bond Strength Evaluation for Laminated Structures with Application to Ultrasonic Consolidation", *Journal of Materials Engineering and Performance*, 18(8), 1124-1132.

### ***Synergistic Activities***

1. Dr. Li received the "Hobart Memorial Award on Pipeline Welding" for two times, "Adams Memorial Award", and "Navy Joining Center Fellowship Award" from the American Welding Society, and the "Founders Award of Excellence" from Rensselaer for his research and teaching in materials science and engineering. He is a Fellow of American Society for Materials (ASM), Fellow of Canadian Welding Association, and Fellow of American Welding Society.

2. Dr. Li has developed a combined experimental and numerical research method to study the non-equilibrium physical metallurgy of various alloys and their mechanical properties. The experimental method is mostly based on the Gleeble thermomechanical system; the numeric method is mostly based on thermal-mechanical coupled-fields finite-element analysis.

3. Dr. Li has more than 150 journal and referred publications in welding and materials testing. In 2013, he joined University of Alberta as a physical metallurgist and welding professor. He is currently funded by NSERC to study metallurgy and weldability of steels used in the energy and natural resources sectors. The following are scholarly activities related to the proposed effort:

- A novel "push-pin" test method for evaluating the strength along the through-thickness direction of multi-layered materials and a stress-relaxation based accelerated creep test for long-term properties were developed. The new tests are efficient, yet give repeatable results compared with conventional tests.
- Phase transformations in ferrous alloys (stainless, ferritic, and martensitic Cr-Mo steels) during non-equilibrium processing and heat treatment were characterized. He studied the effect of post-weld heat-treatment on microstructure evolution and mechanical performance of heavy-section (5 inches) Grade 91 nuclear pressure vessel steel. Results contributed to the preparation of a code case to include the alloy in the nuclear code.
- Recognized as a leading physical metallurgist to organize the Joining of Advanced & Specialty Materials (JASM) international symposium for the MS&T for seven years. MS&T is the biggest technical conference on materials in the world. The JASM symposium is the biggest and one of the most important forums on materials joining.

### ***Advisees and Postgraduate-Scholar Sponsorship***

PhD - 12

MS - 14

Postdoctorate - 9