

# Curriculum Vitae

## I. Personal Information

**Name:** Hani Henein  
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**Professional Engineering Status:** APEGGA (Alberta) Member since 2003

## Ia. Education

PhD, Metallurgical Engineering, 1981  
University: University of British Columbia  
Thesis title: Bed behaviour in rotary cylinders with applications to rotary kilns  
Advisor name: A. P. Watkinson (1976-1980), J. K. Brimacombe (1976-1980)

MSc, Metallurgical Engineering, 1975  
University: McGill University  
Thesis title: Hydrodynamics of solid additions to liquid steel  
Advisor name: R. I. L. Guthrie (1972-1975)

BSc, Metallurgical Engineering 1972  
University: McGill University

## Ib. Appointments

### Director, July 1991 – present.

*Advanced Materials and Processing Laboratory, University of Alberta*

### Professor, June 1989 – present.

*Department of Mining, Metallurgical and Petroleum Engineering,  
Department of Chemical and Materials Engineering, University of Alberta*

### Visiting Professor,

<i>Nov. 2012 – Dec. 2012,</i>	<i>Université de Rouen, Rouen, France</i>
<i>Mar. 2011 – Apr. 2011,</i>	<i>Université de Rouen, Rouen, France</i>
<i>Jan. 2011 - Feb. 2011,</i>	<i>Grande Ecole Supérieure des Mines de Paris, Sophia-Antipolis, France</i>
<i>May 1999 - Aug. 1999,</i>	<i>Grande Ecole Supérieure des Mines à Nancy, France</i>
<i>Jul. 1996 - Aug. 1996,</i>	<i>Department of Materials Science and Engineering, McMaster University</i>
<i>Nov. 1995 - Dec. 1995,</i>	<i>Department of Metallurgical and Materials Engineering, University of Alabama, Tuscaloosa, AL, USA</i>

## II: Awards and Distinctions

### IIa: International recognition

#### 2025 2025 TMS Research to Industrial Practice Award

This award is presented to an individual who has demonstrated outstanding achievement in transferring research results or findings in some aspect of the fields of metallurgy and

materials into commercial production and practical use as a representative of an industrial, academic, governmental, or technical organization.

2021 **Fellow of the Institute of Materials, Minerals and Mining, London, United Kingdom.**

2021 **Fellow of The Minerals, Metals and Materials Society, USA**

For pioneering developments in pipe-line steels, spray forming and determination of liquid metal properties; and an outstanding record of publications, international awards and participation in professional society affairs. A maximum of 100 members may hold this honour out of 12,000 members.

2014 **Fellow of ASM International, USA**

For scientific and engineering achievements in developing the understanding between structure and processing for a wide range of metallic alloys and processing methods, targeting industrially relevant materials in the energy and aerospace fields while mentoring students and creating innovative materials science teaching methodologies.

### **Iib: National Fellowships**

2006 **Fellow of Canadian Institute of Mining, Metallurgy and Petroleum**

For outstanding contributions to the Canadian Minerals Industry and to CIM.

2003 **Fellow of the Canadian Academy of Engineers**

For distinction in the art and science of engineering in Canada.

### **Iic: Prestigious lectures and research awards**

2023 **Airey Award, MetSoc of CIM**

The Airey Award is **the most prestigious award** for a MetSoc member in Canadian metallurgy and materials. Recognition of a career contribution or an outstanding individual contribution based on at least 15 years of input. The contributions and impact must be to the benefit of Canada.

2019-2020 **ASM Canada Council M. Brian Ives Lecturer, ASM International**

For distinguished and significant contributions to the Canadian materials community

2019 **MetSoc Award for Research Excellence, MetSoc of CIM**

For his dedication to teaching and exceptional research innovations in materials development and processing.

2016 **CIM Distinguished Lecturer, CIM**

In recognition of excellence in teaching and innovative generation of knowledge through multi-disciplinary collaborations.

2011 **Metal Chemistry Award, MetSoc of CIM**

To recognize outstanding contributions to metallurgical chemistry.

2002-2004 **Killam Research Fellowship, The Canada Council for the Arts**

To recognize and support distinguished Canadian scholars who have established an outstanding reputation in their area of research. Awarded after national Canadian competition across all disciplines.

1985 **Outstanding Young Member, Pittsburgh Chapter, ASM International**

For the Outstanding Young Member in the Chapter.

1983 **George Tallman Ladd Award, Carnegie-Mellon University,**

For excellent promise in research.

### **IId: Best paper awards**

2013 **Charles Hatchett Award, IOM<sup>3</sup>, London, UK.**

For the best paper on the science and technology of niobium and its alloys.

- J. Lu, O. Omotoso, J.B. Wiskel, D.G. Ivey, H. Henein, "Strengthening mechanisms and their relative contributions to the yield strength of microalloyed steels", *Met Trans A*, 43(9), 3043-3061, doi: 10.1007/s11661-012-1135, 2012.
- 2011 **MetSoc-CIM Best Paper Award**  
For the best paper published in the Canadian Metallurgical Quarterly Volume 49.  
H. Henein, V. Buchoud, R.-R. Schmidt, C. Watt, D. Malahof, C.-A. Gandin, G. Lesoult, V. Uhlenwinkel: "Droplet solidification of Impulse Atomised Al-0.61 and 1.9 wt% Fe", *CMQ*, v49(3), 2010, pp 275-292.
- 2008 **Best Research Paper at International Pipeline Conference**  
For the best paper published and presented at the 2008 International Pipeline Conference.  
J. Lu, D.G. Ivey, H. Henein, J.B. Wiskel, O. Omotoso, "Extraction and Characterization of Nano-precipitates in Microalloyed Steels", *Proceedings of IPC 2008, 7th International Pipeline Conference*, IPC2008-64135, 2008.
- 2004 **MetSoc-CIM Best Paper Award.**  
For the best paper published in the Canadian Metallurgical Quarterly Volume 42.  
S.J. Roach and H. Henein "A Dynamic Approach to Determining the Surface Tension of a Fluid", *CMQ*, Vol. 42(2), 175-186.
- 1976 **Henry Marion Howe Medal, ASM,**  
For Best Paper Published in *Metallurgical Transactions*, volume 6B.  
R. I. L. Guthrie, R. Clift and H. Henein: "Contacting Problems Associated with Aluminum and Ferro-Alloy Additions in Steelmaking-Hydrodynamic Aspects", *Metall. Trans. B*, Vol. 6B, pp.321-329, June 1975.
- 1975 **John Chipman Award, Process Technology Division of the ISS-AIME (presently AIST),**  
For excellence and originality in contributing to the process technology relating to the processing and technology of iron and steel.  
H. Henein, R. I. L. Guthrie, and R. Clift: "Contacting Problems Associated with Aluminum and Ferro-Alloy Additions in Steelmaking-Hydrodynamic Aspects", *Physical Chemistry of Production or Use of Alloy Additives*, J. Farrell, Editor, *Proceedings of Sessions from the 103rd AIME Annual Meeting*, 1974, pp.29-44.
- Iic: Recognition for distinguished service to the profession**
- 2022 **CIM and AIST: 50 year Membership.**
- 2019 **President** of the American Institute of Mining and Metallurgical and Petroleum Engineers, USA.
- 2014 **President** of the Minerals, Metals and Materials Society, USA.  
**Minerals and Metals Sector Gold Award, Natural Resources Canada**  
For dedication and exceptional achievements in Policy and Program Excellence.
- 2004 **Silver Medal, The Metallurgical and Materials Society (MetSoc of CIM)**  
For his leadership and contribution to the development and maintenance of the Metallurgical Society of CIM.
- 2001 **Presidential Citation, The Iron and Steel Society (presently AIST).**  
For leadership and vision in promoting young members and students in ISS.
- 1999 **President Plaque, The Metallurgy and Materials Society (MetSoc of CIM)**  
In recognition of distinguished service to MetSoc.
- 1994 **John W. Farrell Award, Process Technology Division, ISS (presently AIST)**  
For dedicated leadership to the Process Technology Division of ISS.
- 1989 **President** of MetSoc of CIM: Metallurgy and materials Society.
- 1986 **President's Award, Pittsburgh Chapter, American Society for Metals**

For Outstanding Service to the Chapter.

### III: Publications

Category of Publications	Career Total
Refereed Journal Papers	203
Invited and Keynote Papers	30
Papers Published in Conference Proceedings	219
Books	9
Chapters in Books,	10
Patents and Disclosures	6
Total Number of Publications	477

### IV: Supervision of Students and other Researchers (total and *current*)

Bachelor Thesis Students	76
Master's Students	56 (4)
Ph.D. Students	24 (7)
PDF/Other Researchers	12 (1)
Total	168 (13)

### V. Examples of Patents and Disclosures

- S. Katarzyna, P. Paszke, D.A. Dorota and H. Henein, “Method of obtaining eutectic material in the form of microspheres and the material obtained by this method,” European Patent Application EP24200668, 16 September 2024.
- H. Henein and B. Bharadia, “Methods and System for Atomizing of Liquids,” US Patent Application, #63/661126, June 18, 2024.
- T. Lehmann, A. Qureshi, T. Wolfe, C. Milburn, V.B. De Souza, “*A software toolchain and algorithms for the fabrication of closed-loop robotic metal additive manufacturing*,” INV-2020-013, University of Alberta, February 2, 2021.
- R. Samson, A. Qureshi, H. Henein, T. Lehmann and T. Wolfe, “*In-situ automated scan-assisted repair by additive manufacturing*,” INV-2020-004 University of Alberta, November 30, 2020.
- H. Henein, A-A Bogno, J. Valloton, and M. Rappaz, “*Eutectic structures for applications in additive manufacturing (AM) using lattice structures*,” TEC-ID 2020037, University of Alberta, July 14, 2020.

### VI. Books and Book Chapters (2017 to present listed)

- Q. Champdoizeau and H. Henein, “The measurement of density, surface tension, and viscosity of metallic liquids by the Discharge Crucible method,” Metallurgy in Space: Recent results from ISS, H.J. Fecht and M. Mohr, Editors, Springer-Nature, 2021, in press.
- H. Henein, U. Fritsching, V. Uhlenwinkel, *Metal Spray and Spray Deposition Processes*, Springer International Publishing, 2017, 570, ISBN: 978-3-319-52687-4.
- G. Zepon, N. Ellendt, V. Uhlenwinkel, H. Henein, “*Processing aspects in spray forming*”, Chapter 8, H. Henein, U. Fritsching and V. Uhlenwinkel, Metal Spray and Spray Deposition

Processes, Springer-Nature, 2017, pages 297-348.

- P. Delshad Khatibi, H. Henein, U. Fritsching, “*In-situ, real time diagnostics in the spray forming process*”, Chapter 6, H. Henein, U. Fritsching and V. Uhlenwinkel, Metal Spray and Spray Deposition Processes, Springer-Nature, 2017, pages 221-263.
- A-A. Bogno, H. Henein, V. Uhlenwinkel, E. Gartner, “*Single fluid atomization fundamentals*”, Chapter 2, H. Henein, U. Fritsching and V. Uhlenwinkel, Metal Spray and Spray Deposition Processes, Springer-Nature, 2017, pages 9-48.
- D. Apelian, H. Henein, U. Fritsching, “*Introduction*”, H. Henein, U. Fritsching and V. Uhlenwinkel, Metal Spray and Spray Deposition Processes, Springer-Nature, 2017, pages 1-7.

## **VII. University and industrial Workshops and Short Courses (17 total, 2017 to present listed)**

- 12 out of 13 years (due to COVID) holding the Annual Pipeline Materials Workshop: Steels

## **VIII. Research Funding**

Over \$20 million of funding has been awarded from the following organizations from 1989 to 2024:

Government agencies: Natural Science and Engineering Research Council of Canada; Alberta Innovates; European Space Agency; Canadian Space Agency, Canadian Foundation for Innovation

Industry: Acuren, Alcoa, CRC Evans, Cytemp Specialty Steel Div., DuPont, Eckart Werke, Enbridge, EVRAZ NA Canada Inc, Equispheres Inc, Firebird, Genics, Ontario Hydro, Inco, Manitoba Rolling Mills-Gerdau, Noranda, Novelis, Stelco, SGS Canada, Trans Canada Pipelines, Rhone-Poulenc, Syncrude, Timinco, Westaim – Sherritt.

## **V: Service to the Profession: Professional Societies and Foundations (most notable and recent)**

### **American Institute of Mining, Metallurgical and Petroleum Engineers (AIME):**

President, 2019-2020

*Founded in 1871, AIME is one of the first national engineering societies in the USA, also known as an Engineering Founding Society. AIME represents over 200,000 professionals worldwide.*

### **The Minerals, Metals and Materials Society (TMS)**

President, 2014

*TMS is a professional society that connects minerals, metals, and materials scientists and engineers who work in industry, academia, and government positions around the world. TMS currently supports nearly 14,000 professional and student members on six continents. TMS separately incorporated from AIME in 1984.*

### **AIST formerly The Iron and Steel Society (ISS):**

ISS Board of Directors, Member, 93-95

Process Technology Division (PTD), Chairman, 93-94, Officer, 91-95

### **ASM Int'l:**

Historical Landmark Award Selection Committee, Member, 21-24

### **CIM-The Metallurgical Society (MetSoc):**

President, 1998

### **The J. Keith Brimacombe Foundation:**

The J Keith Brimacombe Prize Committee, Chairman, 99-12

Board of Trustees, Member, 98-12

## **VI. Publications (recent)**

- Eunji Song, Abdoul-Aziz Bogno, Jonas Valloton, Hani Henein, Jian Wang, Amit Misra, Nanomechanical Behavior of Impulse Atomized Al-Ce Eutectic Particles, to be submitted, 32 pages, August 15, 2024
- M.Z. Yang, J.B. Wiskel, D.G. Ivey, M. Gaudet, A. Hamilton, J. Liu, & H. Henein, “The effect of tempering conditions and chromium content on carbide morphology of tempered P110 casing steels,” Materials Science and Technology, 2023, <https://doi.org/10.1080/02670836.2022.2159455>, 15 pages.
- T. Ren, M. Mohammadjoo, J B. Wiskel, R. Lazor, E. Willett, D. G Ivey, H. Henein, “*Parametric study of cold wire tandem submerged arc welding of heavy gauge X70 linepipe steel*,” The International Journal of Advanced Manufacturing Technology, v121, 2022, 7607-7625. <https://doi.org/10.1007/s00170-022-09698-9>
- T. Lehmann, D. Rose, E. Ranijbar, M. Ghasri-Khouzani, H. Henein, T. Wolfe and A.J. Qureshi, “Large scale metal additive manufacturing: a holistic review of the state of the art and challenges,” International Materials Reviews, v67 (4), 2022, 410-459, 10.1080/09506608.2021.1971427, Invited
- D. Rose, J. Forth, H. Henein, T. Wolfe, and A.J. Qureshi, “Automated semantic segmentation of NiCrBSi-WC optical microscopy images using convolutional neural networks,” Computational Materials Science, accepted, Feb, 2021, 33 pages.
- S. Yin, A-A. Bogno, H. Henein, M. Gallerneault, “On the role of Sc in powders and spray deposits of hypoeutectic Al-Mg alloys,” Journal of Phase Equilibria and Diffusion, <https://doi.org/10.1007/s11669-021-00934-5>, 12 pages.
- J. Valloton, A-A Bogno, M. Rappaz and H. Henein,” Numerical model of rapidly solidified Al-33wt%Cu eutectic growth during Impulse Atomization,” Met. and Materials Transactions A, v53A (2), 2022, 460-469.
- RSP Flood and H. Henein, “On the role of orificie wetting for Al and Al22.5wt%Cu with Al2O3 in the Discharge Crucible Method,” Journal of Molecular Liquids, v345, 2022, 117843, 16 pages.
- M. Mohammadjoo, L. Collins, R. Lazor, H. Henein, D.G. Ivey, “Influence of cold-wire submerged arc welding on the toughness of microalloyed steel”, Welding Journal: Welding Research, 97, 338-s – 352-s, Dec. 2018.