Diran Apelian

Distinguished Professor of Materials Science and Engineering
University of California, Irvine 92697 USA

Revised March 2023

Table of Contents

Contact & Personal Information

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Citizenship: USA

Education

- **Sc.D. Massachusetts Institute of Technology (MIT)** 1972

Department of Metallurgy and Materials Science
Thesis: Filtration and Related Processes for Aluminum Alloys (Prof. M.C. Flemings)

- **B.S. Drexel University** 1968

Department of Metallurgical Engineering
Thesis: Characterization of Al-$CuAl_2$ Fibrous Composites (Prof. A. Lawley)

Professional Experience

- **University of California, Irvine (UCI)**

Distinguished Professor of Materials Science and Engineering	2019-present
Director of Strategic Initiatives, Samueli School of Engineering	2019-2021
Director, Advanced Casting Research Center (ACRC)	2020-present

- **Worcester Polytechnic Institute (WPI)**

Provost Emeritus	2019-present
Alcoa-Howmet Professor of Engineering & Founding Director of Metal Processing Institute (MPI)	1996 - 2019
Provost and Vice President of Academic Affairs	1990 - 1996

- **Drexel University**

Vice-Provost	1989 - 1990
Associate Dean, College of Engineering	1987 - 1989
Head, Department of Materials Engineering	1983 - 1987
Professor, Department of Materials Engineering	1983 - 1987
Foundry Education Foundation (FEF) Professor	1979 - 1990
Associate Professor, Department of Materials Engineering	1979 - 1983
Assistant Professor, Department of Materials Engineering	1976 - 1979
Visiting Professor, Department of Materials Engineering	1975 - 1976

- **Bethlehem Steel Corporation** 1972 - 1975

Product Research Department

- **Massachusetts Institute of Technology** 1969 – 1972

Teaching Assistant, Materials Science & Engineering

- **Lincoln Laboratories** 1968

Measurements to determine the Zn-Cd-Te ternary diagram

Visiting Academic Appointments

- **University of California, Irvine,** Irvine CA 2016 - 2019

Distinguished Visiting Professor (Winter Term)

- **Wuhan University of Technology (WUT),** Wuhan, China 2016 - 2020

Honorary Guest Professor

- **Tsinghua University,** Beijing, China 2011 - 2012

Distinguished Visiting Professor / Global Scholar Fellow

- **University of California, Davis,** Davis CA 2011 - 2013

Davis, CA Distinguished Visiting Professor (Winter Term)

- **Northwestern Polytechnic University**, Xian, China 1997

Honorary Professor

- **Swedish Metals Research Institute,** Stockholm, Sweden 1984

Visiting Professor, Department of Metallurgy

- **Katholieke University**, Leuven, Belgium 1981

Visiting Professor, Metallurgy Department

Honors and Awards

National and International Academies

- **Chinese Academy of Sciences**- Foreign Member 2021
- **National Academy of Inventors** - NAI 2018
- **National Academy of Engineering** – NAE (USA) 2009

  For contributions to solidification processing and for outstanding leadership in engineering
- **National Academy of Sciences** of the Republic of Armenia -Foreign Member 2008
- **European Academy of Sciences** 2007

National and Local Awards

- **Gordon Prize** for Innovation in Engineering and Technology Education 2016

  (with R. Vaz, A. Heinricher, K. Wobbe - $500,000 Prize)
- **John Hodges Queneau Palladium Medal** 2015

  For articulating an inspiring vision of sustainable stewardship of our earth's resources
- **The National Materials Advancement Award** 2010

  For outstanding capabilities in advancing the multi-disciplinary field of materials science and engineering
- Inducted to **"Wall of Fame"** 2001

  Department of Energy's Office of Industrial Technologies
- **Dow Outstanding Young Faculty Award** 1979
- Nationally Recognized for the Innovative Aspects of Work on Melt Purification via Filtration (OTA). 1979

- **Union League of Philadelphia Citizenship Award** 1960

Fellowships

- **Fellow of TMS** (The Minerals, Metals & Materials Society) 2006
- **Fellow of APMI** 2004
- **Fellow of ASM** International 1987

Professional Society Awards

- **ASM Albert Easton White Distinguished Teacher Award** 2021
- **AFS Scientific Merit Award** 2021
- **MPIF Distinguished Service to Powder Metallurgy** 2017
- **ASM Gold Medal** 2016
- **John Campbell Medal** 2015
  Institute of Cast Metals, Birmingham, UK
- **International Journal of Cast Metals Research** 2012
  Award for Best Paper published during 2010-2011
- **Honorary and Lifetime Member of TMS** 2012
- **British Foundry Medal** 2010
  For a series of seminal papers published on high integrity Al castings
- **Nyselius Award** 2010
  In recognition of exceptional contributions to the die casting industry
- **Robert Earll McConnell Award (AIME)** 2010
  For advancing the science & technology of Material Sci. and Eng.
- **J. Herbert Hollomon Award in Materials & Society** 2007
  For a crucial role in increasing the awareness in society of the role materials play in our daily life. Presented by Acta Materialia
- **Honorary and Lifetime Member of American Foundry Society** 2007
- **Brimacombe Prize** 2006
  For sustained contribution to materials process engineering and for being a world ambassador, and an innovator and a visionary for a better global society
- **Bruce Chalmers Award (TMS)** 2006
  Award for established record of research and publications in the field of solidification processing
- **Best Paper Award - AFS/NADCA Congress** 2005
  With B. Dewhirst and J. L. Jorstad
- **Light Metals Technology Award (TMS)** 2005
  For outstanding long-term service to the light metals industry
- Selected to Present the **Distinguished Lecture on Materials and Society** at TMS-ASM Congress 2004
- Inducted as **Honorary Member of Société Française de Metallurgie et des Materiaux,** Paris, France 2000
- Distinguished and **Honorary Member of NADCA** 1996 - present
  North American Die Casting Association, Life Membership.
- **AFS - Al Division's Best Paper Award** 1994
  Presented at the 1994 AFS meeting, Hamilton, Canada.

- **Albert Sauveur Award** 1994
  Awarded by the Philadelphia Chapter of ASM
- **Alpha Sigma Mu Annual Lecture** 1993
  "Re-engineering of Engineering Education- Paradigms and Paradoxes"
- **Champion H. Mathewson Gold Medal** 1992
  Presented by TMS-AIME to an author of a series of papers published in Metallurgical Transactions for most notable contribution
- **Kabakjian Award** 1990
  For outstanding contributions in the field of science
- **Scientific Merit Award** 1990
  presented at AFS CASTEXPO '90, Detroit, MI.
- **Howe Medal** 1989
  For the Best Paper in the Metallurgical Transactions.
  Awarded by ASM/AIME/TMS, AIME
- **Honorable Citation for Best Paper at Electric Furnace Conf.** 1989
  "Metal Filtration - A Critical Review and Update"
  46th Electric Furnace Conference, Pittsburgh, PA.
- **Howard Taylor Gold Medal** 1987
  For the Best Paper in the Transactions of AFS
- **Zay Jeffries Memorial Lecture** 1985
  Cleveland Chapter of ASM
- **ASMs' Bradley-Stoughton Award** 1980
  "For Distinguished Teaching of Metallurgy and Materials and for Inspiring and Motivating Students to Achieve Excellence"

University Awards

- **UCI Innovator of the Year** 2020
- **WPI Innovator of the Year** 2018
- **The Chairman's Exemplary Faculty Prize** (WPI) 2009
- **WPI Board of Trustees' Award for Outstanding Research and Creative Scholarship** 2006
- **Russell M. Searle Teaching Award** 2002
  Award recognizing excellence in teaching in the Department of Mechanical Engineering - WPI
- **Distinguished Alumni of the Department of Materials Engineering** 2000
  25th Anniversary of the Department, Drexel University
- **Merton C. Flemings Award** 1999
  For outstanding achievements to the application of Solidification Processing Fundamentals to metal casting
- **Devivo Lecture** – Northeastern University 1998
  "Net Shape Manufacturing: Materials Processing Challenges"
- **Distinguished Alumni Award** 1998
  Drexel University's College of Engineering
- **Drexel 100** 1992
  Drexel University celebrated its 100th Anniversary in 1992.
  At this occasion the alumni, trustees and faculty of the University

recognized 100 of its 70,000 living alumni with a medal.
D. Apelian was selected as a member of the Drexel 100.

- **Howmet Chair Professorship** 1987
  Drexel University, Philadelphia, PA.
- **University Research Scholar Award,** Drexel University 1987
- **Lindback Teaching Award,** Drexel University 1985
- **Drexel University's Undergraduate Teaching Award** 1975

Honorary Degree

- **Honorary Doctorate and Honorary Professor** 1997
  Presented by Northwestern Polytechnical University, Xi'an, China.

Editorial Leadership

- **Journal of Sustainable Metallurgy** 2014
  Founding Editor - Springer
- **Journal of Light Metals** 2001 - 2004
  Chief Editor - Elsevier, Oxford, UK.

Professional Society Memberships

- Alpha Sigma Mu (National President, 1990-1991)
- American Powder Metallurgy Institute (APMI)
- American Foundry Society (AFS)
- The Minerals, Metals & Materials Society (TMS) – *honorary member*
- North American Die Casting Association (NADCA) – *honorary member*
- Aluminum Association – *honorary member (2015-2018)*
- American Society of Metals (ASM) – *honorary member*
- Société Française de Métallurgie (Paris, France) – *honorary member*

Professional Activities

Editorial Boards

- Journal of Sustainable Metallurgy (TMS), Founding Editor 2014 - Present
- Metallurgical and Materials Transactions (ASM - TMS)
  - *Joint Commission - Editorial Board of Met Trans* 1988 - 1992
  - *Chairman, Met. Trans. B, Review Committee* 1983 - 1984
  - *Vice-Chair, Met. Trans. B, Review Committee* 1982 - 1983
  - *Key reader for Metallurgical Transactions* 1982 - 1992
- Journal of Materials Processing Technology 1998 - 2000
  - *Regional Editor*
- Journal of Light Metals (Elsevier), Chief Editor, 2000 - 2003
- International Journal of Metal Casting 2007 - Present
  - *Advisory Board of Review*
- Cast Metals Journal, Editorial Board 1988 - 1994
- International Journal Cast Metals Research 1999 - Present
  - *Editorial Board*
- Aluminum Transactions, Editorial Board 1998 - 2002
- Encyclopedia of Materials Science and Engineering 1998 - 2002

Professional Society Appointments

- **Acta Materialia**
  Materials & Society Awards Committee 2008 - 2011

- **AFS (American Foundry Society)**
  National level, Aluminum Committee 1987 - 2005
  National level, Research Committee 1988 - 2004
  Molten Metal (2G) Committee 1990 - 2002
  Philadelphia Chapter, Member of the Board of Directors 1978 - 1984

- **AIME/Iron and Steel Society (ISS)**
  Fifth Intl. ISS Congress, Organizing Committee 1986
  Director at Large (national level) 1983 - 1985
  Philadelphia Chapter, Director 1983 - 1985

- **Alpha Sigma Mu** (Materials Engineering, National Honor Society)
  President 1990 - 1991

- **ASM** (American Society of Materials Intl.)
  Awards Policy Committee 2014 - 2017
  Bradley Stoughton Selection Committee 2009 - 2011
  Journal of Heat-Treating Committee 1989 - 1991
  Howe-Grossman Award Committee 1980 - 1983; 1987 - 1990
  Chairman of Casting Activity (Metalworking and Forming Div.) 1980 - 1982
  Philadelphia Chapter - Program Committee 1978
  International Metals Review Committee 1986 - 1990
  Awards and Honors Committee 1995 - 2000
  Chairman of Osprey Committee, Thermal Spray Division 1990 - 1993
  HTS R&D Committee, Member at Large 2002 - 2008

- **ASM Foundation**
  Member of Board of Directors, Chair 2016 - 2018

- **ASME (American Society of Mechanical Engineers)** 1986
  Chairman of Metal Casting Committee; Study on Research Needs and Opportunities in Manufacturing Processes

- **ASTM**
  MiCON ‘86 Symposium; member of the Organizing Committee 1986

- **Council on Competitiveness** 2014 - 2018
  Energy & Manufacturing Competitiveness Partnership

- **Electron Beam Melting and Refining Conferences** 1985 - 1987
  Organizing Committee; Reno, Nevada 1991, 1993

- **Foundry Institute of the Chinese Mechanical Engineering Society** 1986
  Program Organizer for the Beijing Intl. Foundry Conf. & Exhibition

- **ISA (Industry Studies Association)** 2008 - 2011
  Founding Member, Secretary & Treasurer of the Board of Directors

- **MPIF (Metal Powder Industries Federation)** 2008
  PM2008 World Congress International Liaison

- **MRS (Materials Research Society)**
  Co-Organizer with J. Szekely The Symposium on Plasma Processing and Synthesis of Materials 1983
  Co-Organizer with J. Szekely The Symposium on Plasma Processing and Synthesis of Materials 1987
  Co-Organizer with J. Szekely The Symposium on Plasma Processing and Synthesis of Materials 1990
  Von Hippel Awards Committee 1996 - 2004

- **NAE**
  Membership Council 2014 - 2017
  Chair, Materials Engineering Peer Committee for 2015 Election Cycle 2014 - 2015
  Chair, Materials Engineering Section 2014 -2015

- **Sigma-Xi** 1987
  President of Drexel University Chapter

- **TMS (The Minerals, Metals & Materials Society)**
  TMS Past President 2009
  TMS President 2008
  TMS Vice-President 2007
  Vice-Chair of Public and Government Affairs 2003 - 2008
  Director and Chair of Public and Government Affairs 1998 - 2002
  Member of the Board, TMS Foundation 1997 - 2010
  Julian Szekely Memorial Symposium on Material Processing
  Co-organizer with J. Evans (UC Berkely) Oct.1997
  Cast Shop 1998
  Light Metals 1998
  Organizer and General Chair Cast Shop Conference San Antonio, TX Feb. 1998
  Continuing Education Committee 1988 - 1990
  Organizing Committee Modeling of Casting & Welding Processes April 1988
  Education and Professional Affairs Committee 1984 - 1988
  Aluminum Committee 1986 - 1990
  Solidification Committee, Vice Chair 1982

Solidification Committee, Chairman 1983
Continuing Education Committee, Chairman 1983

- **TMS Foundation**
  Member of Board of Directors 2013 - 2015

Academic Appointments/Activities

- **UC Irvine,** Director for Strategic Initiatives, SSoE 2019 - Present
- **UC Irvine**, Distinguished Visiting Professor (Winter Term) 2016 - 2019
- **UC Irvine,** Chair, Strategic Planning Committee 2016 - 2018
- **UC Riverside** Winston Chung Global Energy Center 2018 - Present
  Member of Advisory Board
- Wuhan University of Technology **(WUT),** Wuhan, China 2016 - 2020
  Honorary Guest Professor
- **Tsinghua University**, Beijing, China, Distinguished Visiting 2011 - 2012
  Professor and Global Scholar Fellow
- **UC Davis**, Distinguished Visiting Professor 2011 - 2013
- **Northwestern Polytechnical University**, Xian, China 1997
  Honorary Professor
- **Northwestern Polytechnical University**, Xian China 2011 - 2015
  Member of Advisory Committee of State Key Laboratory for
  Solidification Processing
- **McMaster University**, Mechanical Engineering, Hamilton 2005 - 2007
  Ontario, Canada; Advisory Board
- **Norwich University** Applied Research Institute, Board of Directors 2008 - 2011
- **Norwich University,** Northfield, VT
  Trustee 1992 - 2008
  Executive Committee 2005 - 2008
  Academic Affairs Committee, Chair 2000 - 2006
- **University of Connecticut,** Materials Science & Engineering 2004 - 2009
  External Advisory Board
- **Drexel University,** College of Engineering, Advisory Board 2002 - 2005
- **Northwestern Polytechnical University**, Xian, China 2002 - 2006
  International Advisory Council
- **MIT**, Department of Materials Science and Engineering 1990 - 1999
  Visiting Committee, Advisory Board
- **Drexel University**, College of Information Science 1990 - 1997
  Visiting Committee, Advisory Board
- **University Materials Council**, Chair of the Awards Committee 1987 - 1990

Industrial Activities

Active

- **Solvus Global LLC,** Worcester, MA 2017 - Present
  Co-founder, Board Chair
- **Kinetic Batteries, LLC,** Worcester, MA 2015 - Present
  Co-founder

- **Ascend Elements.**, Worcester, MA 2015 - 2022
  Co-founder and past Board Chair (2015-2020)
- **QuesTek Innovations**, Evanston, IL 2015 - Present
  Member of Board of Directors
- **VJ Technologies,** Bohemia, NY 2017 - Present
  Member of Board of Directors
- **H.C. Starck LLC**, Chair, Strategic Technical Advisory Board 2008 - 2021
- **Melt Cognition Systems LLC**, Member of Executive Committee 2003 - Present
- **Materials Strategies LLC**, President and Founder 1983 – Present
- Nanoscale Powders LLC, Boston, MA Member of Board of Directors 2016 - Present

Past

- Aluminium Rheinfelden, Chairman of Management Board 2011 - 2018
- Metallurgical Products and Technologies, Exton, PA, Director 1986 - 2018
- Heraeus Electro-Nite, Philadelphia, PA, Advisor to Corporation 1999 - 2008
- Contech, Kalamazoo, MI– Technology Council 2000 - 2008
- Hoeganaes Corp, Riverton, NJ, Member of Technical Advisory Board 1987 - 2007
- Universal Chemical Technologies, Stuart, Florida, Chairman of Science Council for Corporation 2003 - 2007
- CMI, Ferndale, MI, Member of the Technology Advisory Council 1997 - 2000
- Charles River Associates, Boston, MA, Corporate Advisor 1996 - 2001
- Phillips Plastics, Prescott, WI, Advisor to the CEO 1996 - 2010
- Air Liquide, Versailles, France, Advisor to Technology Center 2000 - 2006
- Hitchcock Industries, Minneapolis, Minnesota, Board of Directors 1991 - 2005
- Pechiney Corporation, Paris, France, member of the Scientific Council of Pechiney 1989 - 2003
- Howmet Corporation, Greenwich, CT, Chair and Member of the Strategic Advisory Board 1987 - 1995
- Norton Corporation, Technical Advisory Board 1992 - 1995
- Franklin Institute, Committee on Science and the Arts 1988 - 1991
- IRI (Industrial Research Institute); University Relations Committee/Academic Advisory Council 1985 - 1988

Government Appointments/Activities

- Member of Joint Defense Manufacturing Technology Panel (JDMTP) 2022 - Present
- NREL Advisory Board member, Golden CO 2020 - Present
- Lawrence Livermore National Laboratory (LLNL) Additive Manufacturing Review Panel, Chair 2014 - 2018
- Los Alamos National Laboratory (LANL), Member of Institute of Materials Science Review Board 2014 - 2018
- Chair, Blue Ribbon Panel for DOE, “Linking Transformational Materials & Processing for an Energy Efficient and Low-Carbon Economy” 2011 - 2013

- Lawrence Livermore National Laboratory (LLNL) — 2010 - 2012
  Strategic ST&E Advisory Board – *with Q clearance*
- Lawrence Livermore National Laboratories (LLNL), — 2008 - 2009
  Member of Advisory Council to the Chemistry & Materials Science Directorate (RED TEAM)
- NSF, Member of Advisory Committee for GPRA Performance Assessment (AC/GPA) — 2008 - 2011
- NSF, Chair, Discovery Committee — 2008
- Chair of NRC Committee and Workshop on "Accelerating Technology Transition for the Pentagon" — 2003 - 2004
- Governor's Task Force on Electronic Government — 2000 - 2002
  Co-Chairs: Governor Cellucci and Robert Davis (Lycos), Boston, MA
- Ben Franklin Partnership, Materials Advisory Board — 1987 - 1990
  Philadelphia, PA
- DARPA - Materials Research Council, La Jolla, CA — 1980 - 1981
- DOE - Council on Materials Science, Denver, Colorado — Summer 1984
- DOE - INEL/EG&G Thermal Plasma Processing Advisory Committee — 1989 - 1993
- Man-Tech Program of Air Force - Clean Metal Processing Task Force — 1989 - 1990
- National Research Council - Committee on Recommendations for U.S. Army Basic Scientific Research — 1986 - 1989
- National Research Council - Committee on Materials Science and Engineering (COMSE); Member, Panel on Education in MSE — 1986 - 1992
- New Jersey Commission on Science and Technology, Member of the Peer Group for Surface Modification — 1986 - 1990
- NMAB (National Materials Advisory Board); Committee Member Plasma Processing of Materials; National Research Council — 1985 - 1987
- NMAB (National Materials Advisory Board); Chairman of On-Line Control of Metal Processing Committee; National Research Council — 1986 - 1987
- NSF - Workshop on Thermal Plasma Systems and Engineering — August 1986
- ONR - Board of Visitors, — 1987 - 1993
  1998

Civic Appointments/Activities

- Confrérie des Chevaliers du Tastevin, LA Chapter — 2022 - Present
  Officier Commandeur
- Confrérie des Chevaliers du Tastevin, — 2016 - 2020
  Grand Ecuyer, Commanderie D'Amerique
- Confrérie des Chevaliers du Tastevin, Boston Chapter — 1998 - 2022
  Officier Commandeur and Grand Sénéchal
- International Wine & Food Society — 2006 - 2019
  President — 2014 - 2016
  Co-President — 2017 - 2019
- Chaines des Rotisseurs — 2007 - 2013
- St. Botolph's Club, Boston, MA — 2008 - Present
- Cosmos Club, Washington, DC — 2011 - 2019

- Sloan Foundation Advisory Industry Studies Council 2005 – 2009
- Higgins Armory Museum, Worcester, MA
  Member of the Board of Directors 1998 - 2006
  Member of Executive Committee 2000 - 2006
- Worcester Center for Crafts, Corporator 2002 - 2008
- Central Mass. Manufacturing Partnership, Worcester, MA 1998 - 2001
  Member of the Board of Directors
- Trustee, Bancroft School, Worcester, MA 1994 - 1997
- Medical Center of Central Mass (MCCM) 1993 - 1997
  Member of the Foundation Board
- National Conference, Member of the Board of Directors 1992 - 1996
- Armenian Sisters Academy, Radnor, PA
  Chairman, Board of Directors 1984 - 1987
  Chairman, Development Committee 1983 - 1984

Foundations

- Alfred P. Sloan Foundation Industry Studies 2005 - 2009

Research Interests

Professor Apelian's research activities fall within the following fields of study:
Metals Processing - casting and near net shape manufacturing; thermal processing; powder metallurgy; coating technologies, WAAM and cold spray; additive manufacturing; resource recovery and recycling; sustainable development; policy for sustainability; innovation and entrepreneurship in materials engineering.

Assistant Researcher

- Dr. Carl Söderhjelm 2019 – Present

Project Scientist

- Dr. Ben MacDonald 2021- Present

Post-Doctoral Scholars

- Dr. Ben MacDonald 2020 - 2021
- Dr. Shiguang Deng 2019 - Present
- Dr. Shadi Darvish 2018 - 2020
- Dr. Haiyan Gao 2017 - 2018
- Dr. Carl Soderhjelm 2017 - 2019
- Dr. Ning Sun 2016 - 2019
- Dr. Yangyang Fan 2016 - 2018
- Dr. Danielle Belsito Cote 2014 - 2016
- Dr. Eric Gratz 2013 - 2016
- Dr. Mei Yang 2013 - 2014
- Dr. Yuandong Li, Lanhzou University of Technology 2007 - 2008
- Dr. Qingyan Xu, Tsinghua University 2008 - 2009
- Dr. Diana Lados 2004 - 2005
- Dr. Narongsak Tonmukayadul 2003 - 2005

- Dr. Sujoy Chaudhury 2002 - 2007
- Dr. Anacletto de Figueredo 2001 - 2003
- Dr. Qingyue Pan 1998 - 2007
- Dr. Sergey Makarov 1998 - 2001
- Dr. Qigui Wang 1997 - 2000
- Dr. Libo Wang 1999 - Present
- Dr. Satya Shivkumar 1986 - 1991
- Dr. Suresh Annavarapu 1988 - 1991
- Dr. Pravin Mathur 1988 - 1990
- Prof. Luo Xue Jun, Beijing Polytechnic 1987 - 1988
- Dr. Gerry Gillen 1986 - 1989
- Dr. Dan Wei 1987 - 1990
- Prof. Libo Wang, Northwestern Polytechnic Institute 1985 - 1986
- Dr. Allen Cheng 1985 - 1986
- Dr. Sabit Ali 1984 - 1986
- Dr. Cristopher Romanowski 1982 - 1986
- Dr. Chaman Lall 1978 - 1981

Doctoral Students

- **Adam Kopper** 2020
  Knowledge Creation via Data Analytics in a High Pressure Die Casting Operation
- **Audrey Jean-Philippe** 2020
  Numerical Modeling of Segregation and Shrinkage Porosity Formation in Multicomponent Al-alloys
- **Joel K. Kearns** 2019
  Origin of Growth Twins During Czochralski Growth of Heavily Doped, Dislocation-Free Single Crystal Silicon
- **Sean M. Kelly** 2018
  Recycling of Passenger Vehicles: A framework for upcycling and required enabling technologies
- **Aaron M. Birt** 2017
  Materials & Machines: Simplifying the Mosaic of Modern Manufacturing
- **Carl Soderhjelm** 2017
  Multi-Material Metal Casting: Metallurgically Bonding Aluminum to Ferrous Inserts
- **Shaymus Hudson** 2016
  Inclusion Detection in Liquid Al via Laser Induced Breakdown Spectroscopy
- **Chen Dai** 2015
  Oxide Dispersion Strengthened (ODS) Stainless Steels
- **WenDi Liu** 2015
  Optimization of Molybdenum Electrodes for Glass Melting
- **Qina Sa** 2015
  Synthesis and Impurity Study of High Performance LiNixMnyCozO2 Cathode Materials from Lithium Ion Battery (LIB) Recovery Stream

- **Hao Yu** 2014
  Metal Recovery via Automated Sortation
- **Ning Sun** 2011
  Friction Stir Processing in Aluminum Alloys
- **Shimin Li** 2010
  Hot Tearing in Cast Aluminum Alloys: Measures & Effects of Process Variables
- **Kimon Symeonidis** 2009
  The Controlled Diffusion Solidification Process: Fundamentals & Principles
- **Brian Dewhirst** 2008
  Castability Control in Metal Casting via Fluidity Measures: Application of Error Analysis to Variations in Fluidity Testing
- **Deepak Saha** 2005
  Semi-Solid Processing of Al-Si 390 Alloy
- **Diana A. Lados** 2004
  Fatigue Crack Growth Mechanisms in Al-Si-Mg Alloys
- **Sumanth Shankar** 2000
  The Metallurgy of Die Soldering During Aluminum Die Casting
- **Karin Tynelius** 1992
  A Parametric Study of the Evolution of Microporosity in Al-Si Foundry Alloys
- **Raman Sankaranarayanan** 1992
  Crystallization and Related Phenomena in Continuous Casting Mold Powders
- **Libo Wang** 1991
  Influence of Process Parameters on Microstructure and Mechanical Properties of Lost Foam Aluminum Castings
- **Charles Entrekin** 1990
  Evolution of Solidification Microstructure in Electron Beam Processed Nickel-Based Superalloys
- **Suresh Annavarapu** 1989
  Fundamentals of Spray Casting for the Production of Steel Strip
- **Marilyn J. Dombroski** 1989
  Evolution & Control of Sintered Microstructure in P/M Processed Copper Compacts
- **Charles E. Eckert** 1989
  The Effects of Hydrophobicity on Poiseuille Flow in Capillaries: Theory and Experience
- **Edward J. Garrity** 1989
  A Phenomenological Analysis of Droplet Impact During Spray Deposition
- **Yoon-Gi Kim** 1989
  Coupled Heat Transfer and Fluid Flow Analysis in the Hazelett Twin-Belt Caster
- **Pravin Chandra Mathur** 1988

Analysis of the Spray Deposition Process

- **Dan Wei** 1987
  Particle Melting and Particle Plasma Interactions in DC and RF Plasmas: A Modeling Study
- **William L. McCauley** 1986
  Dependence of the Viscosity of Newtonian Liquids on Temperature and on the Composition of Oxide Melts
- **Jung-Jen Allen Cheng** 1985
  Structure Property Characterization of Rheocast and VADER Processed IN-100 Superalloy
- **Ronald W. Smith** 1985
  Melting Alloy Powders in a Plasma Operating in a Low-Pressure Inert Environment
- **Sabit Ali** 1984
  Removal of Solid Inclusions from Steel Melts
- **Harold Arthur Sreshta** 1982
  Diffusion Solidification Kinetics and Casting Machine Design
- **Muktesh Paliwal** 1981
  The Diffusion Solidification Process: Particle Valve; Microsegregation: Structure and Properties

Masters Students

- Calvin Belcher 2021
- Sakshi Bajpai 2021
- Sean Roorda 2020
- Qingyu Pan 2018
- Richard Eberheim 2018
- Joshua Curto 2017
- Chiara Bertuccioli 2017
- Sean Kelly 2015
- Aaron Birt 2014
- Paul Gasper 2014
- Luke Bassett 2014
- Chen Dai 2011
- Laura Clark 2009
- Cecilia Borgonovo 2009
- Hao Yu 2009
- Ning Sun 2009
- Patrick Hogan 2008
- Leigh Duren 2007
- Arnaud Gateaud 2006
- Pierre Alexander Legait 2006
- Brian Dewhirst 2005
- B. J. Bernard 2005
- Mo Aziz 2003
- Matt Findon 2003

- Joseph Ziolkowski 2002
- Olivier Prevot 2002
- Deepak Saha 2001
- Nasim Alem 2001
- Stan Frul 2001
- Ted Panos 2001
- Jason Astle 2001
- Jay Keist 2000
- Adam Kopper 2000
- Jeffrey Webster 2000
- Sumantra Dasgupta 1999
- Timothy Doyle 1999
- Sumanth Shankar 1998
- Lori Jensen Parmenter 1997
- Samuel Ricci 1992
- Michael Joseph MacKinnon 1989
- Yasukazu Unigame 1989
- Raman Sankaranarayanan 1988
- Christopher Thomas Schade 1988
- Suresh Annavarapu 1987
- Steven Curtis Jones 1987
- Xin-Rong Song 1987
- Pravin Chandra Mathur 1986
- Young Ki Chung 1985
- Edward Richard Garrity 1985
- Patrick Joseph McGeehan 1985
- Michael William Nichols 1985
- Charles Henry Entrekin 1984
- Vikram Handa 1984
- Jung-Jen Cheng 1981
- Ismail Er 1981
- William Lawrence McCauley 1979
- John Murray Robertson 1979
- Ronald Joseph O'Malley 1978
- Muktesh Paliwal 1977
- Harold Arthur Sreshta 1977

Diran Apelian Publications

(Revised March 2023)

Journal Publications

Js4 Shiqi Zheng, Jin Huang, Shu Huang, Narayanan Murali, Yu Huang, Jaime Marian, Morris Wang, Enrique Lavernia, Diran Apelian, and Xiaochun Li, "Oxide Dispersion-Strengthened Steels by Liquid Metallurgy", *in review Nature Communications*, April 2022.

Js6 Mahsa Amiri, Kliah N. Soto Leytan, Diran Apelian, Daniel R. Mumm and Lorenzo Valdevit, "The Role of Powder Characteristics on the Strength and Ductility of Cold Sprayed Refractory Metal Deposits", *submitted to Additive Manufacturing*

Js7 Brandon Fields, Benjamin E. MacDonald, Chen Dac, Xiaochun Li, Diran Apelian, Lorenzo Valdevit, " Investigation of an Additively Manufactured Modified Aluminum 7068 Nanostructured Alloy: Processing, Microstructure, and Mechanical Properties", *in review, Additive Manufacturing*, November 2022.

Js8 Brandon Fields, Jungyun Lim, Diran Apelian, Lorenzo Valdevit "Microstructural Control of a Multi-Phase PH Steel Printed with Laser Powder Bed Fusion"

Js9 Mahsa Amiri, Kliah N. Soto Leytan, Diran Apelian, Daniel R. Mumm, and Lorenzo Valdevit, "Influence of particle size distribution on microstructural and mechanical features of cold sprayed refractory metals", *submitted to DOD journal.*

Js10 Calvin H. Belcher, Benjamin E. MacDonald, Diran Apelian, and Enrique J. Lavernia, "The role of interstitial gas impurities in refractory complex concentrated alloys", *submitted to Progress in Material Science*

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P57 INV Xiaochun Li, Enrique Lavernia, Diran Apelian and Julie Schoenung, **"Nanostructured Metals with Dispersed Nanoparticles",** TMS Annual Conference, San Diego, CA, March 21, 2023.

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P50INV **"Casting Industry Megatrends",** keynote at Investment Casting Institute Congress, Anaheim, CA, August 24, 2022.

P49 INV **"Rapid Creation of Tooling with Conformal Cooling",** Innovative Casting Technologies Workshop, August 17, Chicago, IL

P48 INV **"Artificial Intelligence and Manufacturing –** *Lead or Follow?"*, Foundry Industry 4.0 Conference, Itasca, IL, June 26, 2022

P47 INV **"Thermal Management for Solidification",** Specialty Al conference, AFS, St. Louis, June 16, 2022. (With C. Ahn and C. Söderhjelm)

P46 INV "**Conformal Cooling of Permanent Molds:** *Opportunities and Challenges* **",** Specialty Al conference, AFS, St. Louis, June 16, 2022. (With C. Söderhjelm)

P45 INV **"Industry 4.2 ™ -** *The Future of Work and the Worker",* Specialty Al conference, AFS, St. Louis, June 14, 2022.

P44 INV **"Al-Ce-Ni Hypoeutectic Non-Heat Treat Casting Alloys",** AFS Congress, Columbus, Ohio, April 25, 2022 (With B. MacDonald, D. Weiss).

P43 INV **"Role of Materials for Sustainable Development in the 21st Century** – *Criticality, Life Cycles, and Solution Pathways",* Solutions to Scale lecture, UCI, April 21, 2022.

P42 INV **"Life Cycle of Materials** – *A personal Journey"*
Opening Keynote at D. Apelian Honorary Symposium
TMS Annual Meeting, Anaheim, CA, February 28, 2022.

P41 **"A modified 7068 aluminum alloy designed for laser powder bed fusion",** with B. Fields, B. Macdonald, X. Li, and L. Valdevit, TMS Annual Meeting, Anaheim, CA, February 28, 2022.

P40 **"Reduced-Order Multiscale Modeling of Elasto-Plastic Cast Alloys with Process-Induced Porosity",** with S. Deng and R. Bostanabad, TMS Annual Meeting, Anaheim, CA, February 28, 2022.

P39 **"The role of microstructural evolution during spark plasma sintering on the soft magnetic and electronic properties of a CoFe – Al_2O_3 soft magnetic composite",** with C. Belcher et al., TMS Annual Meeting, Anaheim, CA, February 28, 2022.

2021

P38 INV **"Recent progress in the CoCrNi alloy system",** with B. E. MacDonald, T. J. Rupert, H. Hahn, E. J. Lavernia, TMS HEA conference, Charlotte, NC, December 7, 2021.

P37 **"Advanced Casting Research at UCI",** Global Light Metal Alliance, July 14, 2021 (zoom).

P36 INV **"Materials Recovery and Reuse for the 21st Century:** *A Call for Action and the Need for a Paradigm Change"*, 20th Intl. Metallurgy and Materials Congress, Keynote, June 10, Istanbul, Turkey.

P35 INV **"Megatrends for Materials Science and Engineering for the 21st Century –** *Education, Policy, and Innovation",* European Union Conference on Materials, Salzburg, Austria, June 28, 2021.

P34 INV **"A Conversation with NREL Post-Docs",** Golden CO, June 17, 2021.

P33 INV **"The Nexus of Data Science and Materials Processing –** *A new vista for MSE"*, Keynote at Erich Bloch Symposium, U. of Buffalo, NY, June 7, 2021.

P32 INV **"The Future of Work and the Worker:** *Challenges and Opportunities for Manufacturing and Foundry Industries"*, at Digital Manufacturing and Metal casting Industry Conference, June 7, 2021 (zoom).

P31 **"From Waste Steel to Matériel:** Additive Manufacturing Enabled Agile Manufacturing", SERDP, Washington, DC., April 23, 2021.

P30 INV **"21st Century Societal Megatrends –** *AI centric perspective,* AI Association Annual Meeting, April 2021 (zoom)

P29 INV **"Current Perspectives in High Entropy Alloys",** AIME-TMS Anniversary Keynote lecture, TMS, March 2021 (via zoom).

2020

P28 INV **"Educational Megatrends for the 21st Century - 20/20-year 2020",** University of Padova, Italy, November 12, 2020

P27 INV **"Megatrends for Materials Science and Engineering for the 21st Century -** *20/20-year 2020".* University of Maryland, November 6, 2020.

P26 INV **"The Future of Work and the Worker",** IMAT 2020, October 27, 2020.

P25 **"Control of Thermomechanical Stresses via Conformal Cooling Line Design",** NADCA Congress, October 21, 2020 (with Carl Söderhjelm).

P24 **"Predicting Quality of Cylinder Block Castings via Supervised Learning Method**", NADCA Congress, October 21, 2020 (with Adam Kopper).

P23 INV **"CIRCULAR ECONOMY**: *Pathway for Recovering Earth's Resources for All Species and for All Time",* Great Problem Seminars, WPI, Worcester, MA, September 17, 2020.

P22 INV **"Raj Mutharasan**: An Impactful Professional Life *Perspectives from a colleague"*, Keynote on retirement of Prof. Mutharasan, Drexel University, Philadelphia, PA, September 11, 2020.

P21 INV **"Power of Materials for the Grand Challenges of the 21st Century", ASM Teachers Camp,** September 1, 2020, via zoom.

P20 **"Enhancing Heat Removal Rate During Solidification via the H-Process™",** KYOWA, Detroit, MI, March 16, 2020

P19 **"ACRC** - Updates on Research and Education", ALMEX corp., Buena Park, CA, March 5, 2020

P18 **"Compositional and structural evolution of passivation layers in heat- and humidity-treated Aluminum powder for cold spray applications",** TMS Annual meeting, San Diego, CA, February 24, 2020.

P17 INV **"Enrique J. Lavernia –** *A Retrospective View of his accomplishments and contributions",* TMS Annual meeting, San Diego, CA, February 24, 2020.

P16 INV **"Aluminum Alloy Design and Processing Strategies for Enhanced Performance",** MSE seminar series, UCI, February 13, 2020

P15 INV **"Heat Treatment of Wind Turbine Steels",** Moventas, Finland, February 8, 2020.

2019

P14 INV **"Circular Economy Opportunities for Africa –** *Upcycling of Waste for Downstream Value Creation",* MRS Africa Keynote and opening of conference, December 2019.

P13 INV **"The Future of Work and The Worker –** *The role of materials science and engineering"*, WPI, Worcester, MA, November 20, 2019

P12 INV **"Shaping our Future Preserving Our Culture",** St. Stephen's Armenian School Annual Banquet Dinner Speaker, November 16, 2019.

P11 **"From Waste Steel to Matériel: *Additive Manufacturing Enabled Agile Manufacturing,*** SERDP DoD, Washington, DC, November 5, 2019.

P10 INV **"Aluminum alloy design strategies for enhanced performance",** UCLA, Materials Science and Engineering seminar, October 26, 2019.

P9 INV **"Designing High-Entropy Aluminum Alloy (HEA-Al)",** Shanghai Jiao Tong University, October 15, 2019.

P8 INV **"The Future of Work and the Worker are in Flux: *How to Educate Students for Such a Future?",*** Wuhan University of Technology, World Forum for Materials Science and Engineering Education, October 2019.

P7 INV **"Aluminum alloy design strategies for enhanced performance",** Bob Pehlke Distinguished Lecture, Univ. of Michigan, September 13, 2019.

P6 INV **"A Sustainable Future: Development of Technologies to Recover and Recycle Materials",** Harvard Club, Boston, MA, September 10, 2019.

P5 "**Heat Transfer Coefficient Variation in Permanent Mold Casting",** ATEK Corp., New Hampton, Iowa, August 27, 2019.

P4 INV **"Future of Work and the Worker™: *Opportunities and Challenges for Engineering Education*",** US-Korea Summit, Chicago, ILL, 8, 16, 2019.

P3 INV **"Wind Turbines and Material Advances",** Moventas, Finland, August 6, 2019.

P2 INV **"Light Metal and Alloys"**, PRICM, Xian, China, August 12, 2019.

P1 INV **"Principles for Professional Life",** Wuhan University of Technology students, Worcester, MA, July 2019.