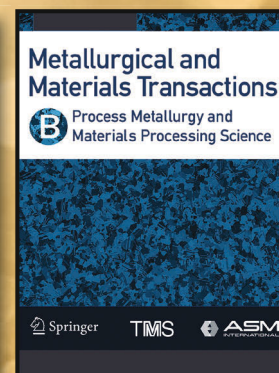
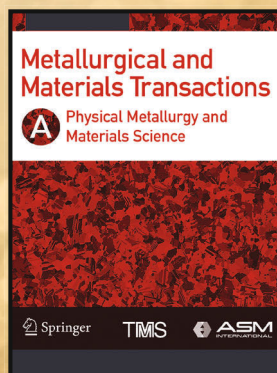


Celebrating 50 Years of Metallurgical and Materials Transactions

Kelly Zappas



Tresa Pollock



The year 2020 marks 50 years of publishing for the *Metallurgical and Materials Transactions (MMT)* journals, a pair of highly respected, peer-reviewed archival journals covering metallurgy and materials science. During the lifespan of these publications, there have been a number of changes in the field, reflected in adjustments to the journal's format and title, but one thing has remained constant: the publication of high-quality, high-impact articles that have helped to move the field and its technologies forward.

The Impact of Metallurgical and Materials Transactions Over Time

Tresa Pollock, who took over as principal editor for the journals in 2016, noted several areas where they have been particularly influential in the decades since the first journal was published in 1970.

“*MMT* has impacted all classes of metallic materials, from emerging materials such as high-entropy alloys

and lightweight magnesium systems to foundational materials such as steel, superalloys, aluminum, titanium, and composites,” said Pollock.

Of particular importance, she noted, “are the contributions of technical leaders in our field to the fundamental understanding of mechanical properties, materials processing, and physical metallurgical phenomena.” The research reported in the *MMT* journals has supported a broad range of industries internationally, she said, through advances in materials processing, including solidification and casting, friction stir processing, continuous casting, deformation processing, and welding.

Pollock is the Alcoa Professor, Materials Department, University of California, Santa Barbara. Along with her graduate students, she has published 49 papers in the journal throughout her career.

“It has served as an important outlet for my research across a number of areas, particularly for nickel-based alloys and

A Brief History of the Metallurgical and Materials Transactions Journals

First published in January 1970 as *Metallurgical Transactions*, the *MMT* journals began as a merger of the *Transactions of The Metallurgical Society of AIME*—published by TMS's parent society the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME)—and the *Transactions Quarterly* of the American Society for Metals, published by ASM International.

In 1975, the journal was split into two sections: *Metallurgical Transactions A* and *Metallurgical Transactions B*. Then in 1994, the journals' titles expanded to encompass “materials” in addition to metallurgy, bringing them to the journals that we know today: *Metallurgical and Materials Transactions A (MMTA)* and *Metallurgical and Materials Transactions B (MMTB)*.

MMTA is published monthly and focuses on the latest research in all aspects of physical metallurgy and materials science, and explores relationships among processing, structure, and properties of materials. *MMTB* is published bimonthly and focuses on the processing science and engineering of metals and materials.

By logging in to the Access Member Benefits website at members.tms.org, TMS members can read both current and archived issues of *MMTA* and *MMTB* (click on “Read Journals”), as well as the archived content of its predecessor, *AIME Transactions*, published from 1871 to 1970 (click on “Access the AIME Digital Library”).

magnesium alloys,” she said. “All of our research on single-crystal solidification of superalloys, relevant to aircraft engine turbine blades, has been published in *MMTA*. This is *the* venue for this area of research.”

Anniversary Collection Planned for 2020

To celebrate the many important technical advances that have occurred over the past five decades, the *MMT* journals will publish a special 50th anniversary collection this year that will highlight recent progress, current status, and future directions in scientific areas important to the field today.

Approximately 30 invited articles are

planned for the collection. Articles will appear in issues throughout the year and will be organized online in one location for each journal. Examples of topics to be covered include additive manufacturing, high throughput materials science, in-situ synchrotron studies of materials, data science and materials imaging, nanocrystalline materials, continuous casting, grain refinement in solidification, and electrochemical materials processing.

When the articles become available, TMS members will be able to read them by logging in to www.tms.org/Journals and clicking on the *MMTA* or *MMTB* journal cover. From there, choose “Browse Volumes & Issues,” select the “Topical Collections” tab, and choose “*Metallurgical and Materials Transactions* 50th Anniversary Collection” from the list.

Publish Your Work in *Metallurgical and Materials Transactions* in 2020

Join in the celebration of *MMT*’s anniversary year by submitting your latest research to one of the journals.

The *MMT* journals aim to advance the basic understanding of the relationships among structure across all length scales, physical and mechanical properties, and processing of materials, examined via theory, experiments, advanced characterization, data-driven and machine learning approaches, and validated modeling.

“We do not prescribe the length or format of papers, instead aiming for depth and quality,” said Pollock. “Our editorial model is based on multiple, rigorous peer reviews.”

To submit your paper, go to www.tms.org/Journals and click on the “Submit an Article” link for *MMTA* or *MMTB*.

Recent improvements in journal processes are speeding up publication times, and the journals’ impact factors continue to rise, making it a better time than ever to publish in the *MMT* journals.

“We are excited about the dynamic range of topics being addressed by the *MMT* community and will continue to pursue high-quality, high-impact research,” said Pollock.



Highly Cited Articles from the Last 20 Years

To demonstrate the diversity of science and technology addressed by the *Metallurgical and Materials Transactions* journals over the years, Principal Editor Tresa Pollock provides the following examples of highly cited articles published in *Metallurgical and Materials Transactions A* (*MMTA*) and *Metallurgical and Materials Transactions B* (*MMTB*) from the last 20 years:

- “Recent Metallic Materials for Biomedical Applications,” M. Niinomi, *MMTA*, March 2002
- “The Effectiveness of Hot Isostatic Pressing for Closing Porosity in Titanium Parts Manufactured by Selective Electron Beam Melting,” Samuel Tammam-Williams et al., *MMTA*, May 2016
- “Precipitation and Hardening in Magnesium Alloys,” Jian-Feng Nie, *MMTA*, November 2012
- “Microstructure Characterization of Al_xCoCrCuFeNi High-Entropy Alloy System with Multiprincipal Elements,” C.J. Tong et al., *MMTA*, April 2005
- “A Review of Very-High-Temperature Nb-Silicide-Based Composites,” B.P. Bewlay et al., *MMTA*, October 2003
- “The Modified Quasichemical Model I - Binary Solutions,” A.D. Pelton et al., *MMTB*, August 2000
- “Derivation and Variation in Composition-Dependent Stacking Fault Energy Maps Based on Subregular Solution Model in High-Manganese Steels,” A. Saeed-Akbari et al., *MMTA*, December 2009
- “The Evolution of Al-Li Base Products for Aerospace and Space Applications,” Roberto J. Rioja and John Liu, *MMTA*, September 2012
- “An Integrated Study on the Evolution of Inclusions in EH36 Shipbuilding Steel with Mg Addition: From Casting to Welding,” Xiaodong Zou et al., *MMTB*, April 2018

TMS members can read any of these articles by logging in to www.tms.org/Journals and clicking “Read This Journal” for *MMTA* or *MMTB*. Members can read online articles published from 1975 to the present.