

Editorial

Introducing *Alloys*: A Journal for Fundamental and Applied Research

Nikki Stanford 

Future Industries Institute, University of South Australia, Building MM, Mawson Lakes Campus,
Mawson Lakes, SA 5095, Australia; Nikki.Stanford@unisa.edu.au

Humans have made alloys for thousands of years. Throughout this time, we have amassed a huge body of knowledge about the microstructure, properties and processing behaviour of these important engineering materials. However, research interest in systems such as steel has dropped sharply. In parallel with this decrease in interest, we find that many undergraduate degrees are filled with new “hot topics” such as nanotechnology in place of more traditional discipline areas, such as metallurgy. One might therefore ask:

Is metallurgy still relevant in the modern era?

Although it might appear that interest in metallurgical research has declined, we argue that this knowledge is now more valuable than ever. Take, for example, the rapid uptake of metal additive manufacturing. The development of this revolutionary technology relied on fundamental metallurgical concepts such as phase transformations and solidification behaviour. This is reflected in a huge rise in alloy-based research publications in the past ten years, all focused on additive manufacturing of metals and alloys. If we look more broadly to the challenges facing us today, research areas such as thermal energy storage, hydrogen storage and transmission, battery design, energy conversion and green propulsion technologies all require the use of alloys. The development of new or bespoke alloy manufacturing methods may also be required for some applications. The growth of these research areas shows that there is a clear and important future for investigation into metals and alloys.

Alloys (ISSN: 2674-063X) [1] will provide a new platform for researchers and industry experts to publish their work. It is a rapid publication, open-access journal that will allow your peers to access your research without delay, which aims to provide our community with high-quality contributions in a broad range of topics. The scope of *Alloys* is based on the classical materials science pillars of microstructure, properties and processing, and includes topics such as—but not limited to—characterisation of microstructures using techniques such as electron microscopy and neutron diffraction; mechanical properties such as strength, ductility and fatigue; electrical and magnetic properties; traditional alloy classes such as ferrous alloys and light metals; new alloy classes such as bulk metallic glass and high entropy alloys; corrosion behaviour; traditional manufacturing methods such as casting, extrusion and powder processing and new manufacturing technologies such as additive manufacturing. Contributions to specialist topics such as high-performance alloys, green alloy manufacturing technologies and materials for energy storage applications are also welcome.

Although, traditionally, most research into alloys has been experimental, there is a growing interest in computational research in our field, adding to the richness of our knowledge base in alloy research. *Alloys* welcomes contributions that are computational or theoretical in nature, including—but not limited to—topics such as thermodynamic modelling; atomic-scale modelling with methods such as molecular dynamics and density functional theory; microstructural modelling; analytical models such as those that predict work hardening and fatigue lifetimes and new viewpoints on traditional topics.



Citation: Stanford, N. Introducing *Alloys*: A Journal for Fundamental and Applied Research. *Alloys* **2022**, *1*, 1–2. <https://doi.org/10.3390/alloys1010001>

Received: 8 November 2021

Accepted: 9 November 2021

Published: 12 November 2021

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2021 by the author. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

We invite submissions in various forms including original research articles, review papers, viewpoint sets and short communications, and hope that you will join us in helping to make the journal a success.

Conflicts of Interest: The author declares no conflict of interest.

Reference

1. *Alloys* Home Page. Available online: <https://www.mdpi.com/journal/Alloys> (accessed on 9 November 2021).

Short Biography of Author



Nikki Stanford is a Professor and Research Leader at the Future Industries Institute of the University of South Australia. Her research interests include: advanced characterization techniques; magnesium alloy design; steel strip casting; 3D printing; and materials for energy storage.