# Integrating Materials and Manufacturing Innovation

# Instructions for Authors

All submissions should use American English. The Journal publishes four classes of articles: Technical Articles, Brief Communications, Review Articles, and Thematic Articles.

As appropriate, authors are strongly encouraged to separately publish the data and code supporting their articles whenever possible. Data should be published in a publicly-accessible data repository that is committed to archiving data sets indefinitely, assigns a unique and persistent digital identifier, and allows bi-directional linking between the paper and dataset. The dataset(s) are to be cited, where appropriate in the manuscript, and included in the reference list following the guidelines below.

**Technical Articles**

Manuscripts should represent completed, original work embodying the tools, application, and impact of integrated computational materials engineering. Materials must be considered to have significant permanent value. In addition to technical acceptability, material should be presented clearly and concisely and the article should not exceed 8,000 words. There are three sub-classes of Technical Publications: Case studies, Data descriptor articles, and Tools and methods articles.

> *Case studies* should describe and explore the novel application of ICME tools and methodologies to a specific scientific or engineering problem. An analysis of the impact of the case study in terms of time, cost, or technological advance is highly desirable.

> *Data descriptor* articles are standalone records of scientific work that present a detailed account of the methodology used to collect experimental or simulation data, a thorough description of the resulting data, and a brief discussion of the anticipated value of the data if accurately modeled, analyzed, or used in some other fashion. However, they are not intended to assess new hypotheses, provide extensive analyses of physical phenomena, or descriptions of new experimental or computational methods.

> As appropriate, the authors should endeavor to address the following attributes of data quality:
> - Verification – Accuracy of the computation in solving the underlying equations of the model for the quantities of interest (Applies to computational data only)
> - Validation – Agreement between realizations of a model in experimental and computational or analytic results
> - Uncertainty – Quantitative level of confidence in the experimental results or computational predictions
> - Sensitivity – Effect of changes in inputs or assumed boundary conditions on data (Applies primarily to computational data)

> Example activities that may be employed to address data quality include:
> - Presentation of protocols and standards employed to ensure reliable and unbiased data production

- Experiments that support or validate the data-collection procedure
- Statistical analyses of experimental error and variation
- Characterization of the system that can link the measured data to prior studies
- Any other information needed for the peer-reviewers to assess technical rigor

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***Tools and methods*** articles provide a detailed record of a novel tool or method developed to enable the application of ICME to a scientific and/or engineering problem. Examples include simulation software, novel experimental techniques, software platforms for collaboration, and tools for materials data management. For simulation software, essential information to be provided includes required computational environment, steps taken for verification and validation, and protocols for interfacing with the code. Software should have a mature interface and be useable by more than experts in a specific programming language.

As appropriate, the tools and methods presented must be publicly accessible. Additionally, the data used to validate software or experimental tools should be published in a publicly-accessible data repository that is committed to archiving data sets indefinitely, assigns a unique and persistent digital identifier, and allows bi-directional linking between the paper and dataset. The dataset(s) are to be cited, where appropriate in the manuscript, and included in the reference list following the guidelines below.

## Brief Communications
*Brief communications* generally take one of the following forms:

- A brief report of findings or tools that is in line with the journal's scope and of particular interest to the community.
- A substantial re-analysis of a previously published article in *Integrating Materials and Manufacturing Innovation* or in another journal.
- An article that may not cover 'standard research' but that is of general interest to the broad readership of *Integrating Materials and Manufacturing Innovation*.

A brief communication should not exceed 3,000 words, may be edited for clarity or length, and may be subject to peer review at the editors' discretion.

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*Review articles* are summaries of recent insights in specific research areas within the scope of *Integrating Materials and Manufacturing Innovation*. Key aims of *Review articles* are to provide systematic and substantial coverage of mature subjects, evaluations of progress in specified

areas, and/or critical assessments of emerging technologies. Review articles should not be longer than 12,000 words.

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Thematic articles generally fall into the Technical Articles category but are specifically part of a named thematic series commissioned by the editor.

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## Abstract
Please provide an abstract of 150 to 250 words. The abstract should not contain any undefined abbreviations or unspecified references. The abstract should not contain figures.

## Keywords
Please provide 4 to 6 keywords that can be used for indexing purposes.

# Text

## Text Formatting
Manuscripts should be submitted in Word.
- Use a normal, plain font (e.g., 10-point Times Roman) for text.
- Use italics for emphasis.

- Use the automatic page numbering function to number the pages.
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- Use the table function, not spreadsheets, to make tables.
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- Save your file in docx format (Word 2007 or higher) or doc format (older Word versions).

Manuscripts with mathematical content can also be submitted in LaTeX.

[LaTeX macro package (zip, 182 kB)](#)

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Please use no more than three levels of displayed headings.

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Abbreviations should be defined at first mention in both the abstract and the text, and used consistently thereafter.

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Always use footnotes instead of endnotes.

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Acknowledgments of people, grants, funds, etc. should be placed in a separate section on the title page. The names of funding organizations should be written in full.

# References

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Reference citations in the text should be identified by numbers in square brackets. Some examples:
1. Negotiation research spans many disciplines [3].
2. This result was later contradicted by Becker and Seligman [5].
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• Journal article
Boyce DE, Dawson PR, Miller MP (2009) The Design of a Software Environment for Organizing, Sharing, and Archiving Materials Data. Metall Mater Trans A. 40:2301-2318. doi:10.1007/s11661-009-9889-y
Ideally, the names of all authors should be provided but the usage of "et al" in lists with more than five authors will also be accepted:
Klimeck G, McLennan M, Brophy SP et al (2008) nanoHUB.org: Advancing Education and Research in Nanotechnology. Comput. Sci. Eng. 10:17-23. doi:10.1109/MCSE.2008.120

• Article by DOI
Cowles B, Backman D, Dutton R (2012) Verification and validation of ICME methods and models for aerospace applications. Integ Mater Manuf Innov. doi:10.1186/2193-9772-1-2

• Book
Horstemeyer MF (2012) Integrated Computational Materials Engineering (ICME) for Metals: using multiscale modeling to invigorate engineering design with science. John Wiley & Sons, Hoboken.

• Book Chapter
Uchic M (2011) Serial Sectioning Methods for Generating 3D Characterization Data of Grain- and Precipitate-Scale Microstructures. In: Ghosh S, Dimiduk D (eds) Computational Methods for Microstructure-Property Relationships. Springer, New York, pp 31-52.

• Online document
Warren JA, Boisvert RF (2012) Building the Materials Innovation: Data and Standards. National Institute of Standards and Technology, Gaithersburg, MD. Accessed 25 July 2016. http://nvlpubs.nist.gov/nistpubs/ir/2012/NIST.IR.7898.pdf. Accessed 11 February 2015

• Online dataset
Shade PA, Groeber MA, Schuren JC, Uchic MD (2013) 3D microstructure reconstruction of polycrystalline nickel micro-tension test. http://hdl.handle.net/11115/152

• Online database where individual datasets are not citable
American Mineralogist Crystal Structure Database (2014) Mineralogical Society of America, Chantilly, VA and the Mineralogical Association of Canada, Québec. http://rruff.geo.arizona.edu/AMS/amcsd.php. Accessed 14 May 2014

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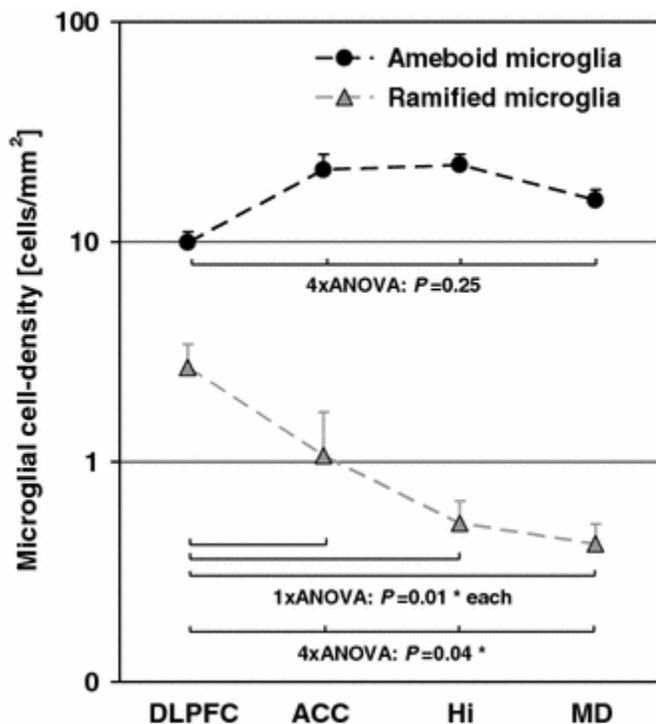ISSN.org

endnote style

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- All tables are to be numbered using Arabic numerals.
- Tables should always be cited in text in consecutive numerical order.
- For each table, please supply a table caption (title) explaining the components of the table.
- Identify any previously published material by giving the original source in the form of a reference at the end of the table caption.
- Footnotes to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data) and included beneath the table body.

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- Supply all figures electronically.
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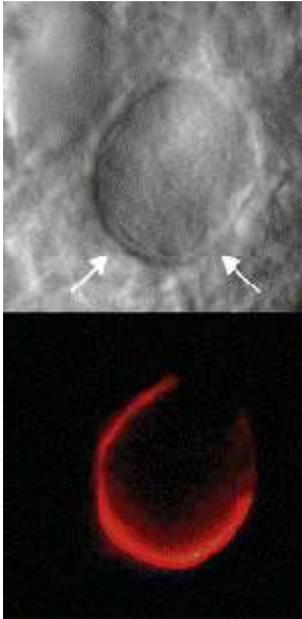- Name your figure files with "Fig" and the figure number, e.g., Fig1.eps.

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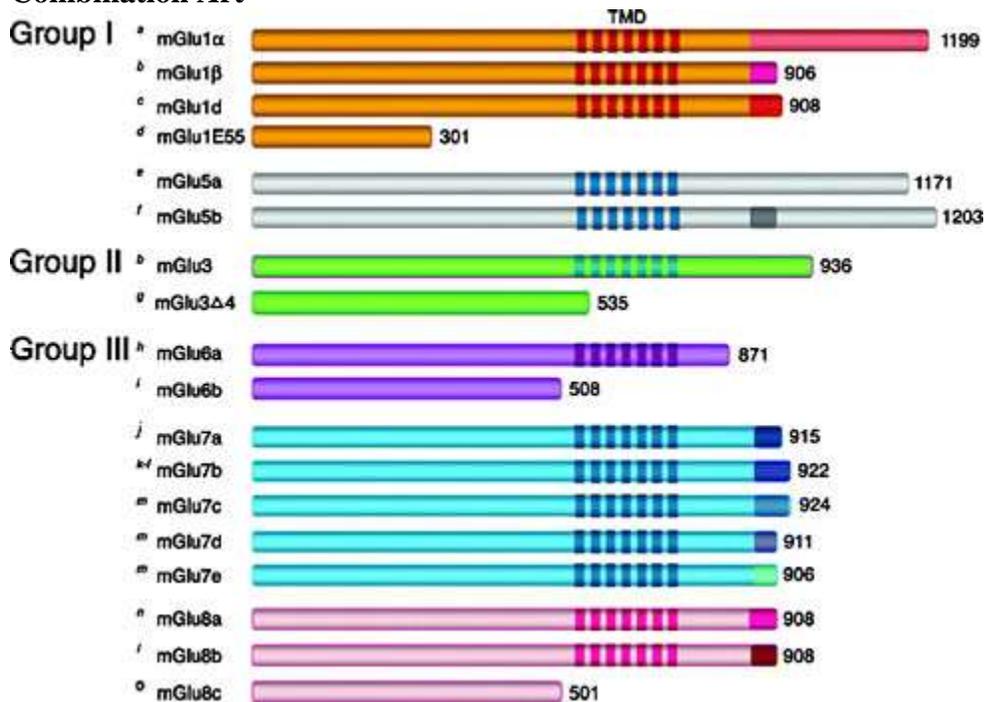- Definition: Black and white graphic with no shading.

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- No punctuation is to be included after the number, nor is any punctuation to be placed at the end of the caption.
- Identify all elements found in the figure in the figure caption; and use boxes, circles, etc., as coordinate points in graphs.
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