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Editorial

Knowledge in materials processing technology

The number of papers submitted to the *Journal of Materials Processing Technology* (JMPT) has more than doubled in 2 years, and the number of articles downloaded each year is now around 1.5 million. Clearly the journal is filling an important need, and as editors we have a responsibility to ensure that future readers of JMPT articles will recognise value in each article they find. Our first year as editors has been characterised by the challenge of balancing the need to support authors in developing their work to the highest possible standard, while coping with the huge growth in submissions.

To try to support the growth in JMPT quality, we have implemented several policy decisions since we took over the journal:

- although the roots of the journal are in the area of metal-forming, and that remains its core strength, we have expanded the aims and scope to include all materials and processes used in manufacturing components;
- however, to avoid unlimited breadth, we are insisting that journal papers make a significant new contribution to knowledge about the influence of processes on materials;
- we are now insisting that authors give more details of the papers they cite, with specific explanation of each referenced paper;
- while recognising that simulation, statistical methods and design of experiments approaches may be useful, we will no longer accept papers in which these methods are developed or used, unless they lead to new insights into the influence of processes on materials;
- we have decided not to publish any conference proceedings.

In many countries, authors are under great pressure to publish as many papers as possible, and may gain financial incentives or career acceleration based on publication volume. Unfortunately this motivation acts against the interests of readers who would place more value on a smaller number of more highly developed papers. While sympathetic to the pressure on authors, our primary concern is to promote higher quality publication, and we are therefore being increasingly severe in filtering papers prior to sending them out for review. We read every submission and unless a paper is clearly within the journals' aims and scope, has a clear and appropriately comprehensive literature review, and makes a significant contribution to knowledge, we are now rejecting it prior to review. We are deeply appreciative of the commitment of our excellent and dedicated reviewers, and do not want to abuse their efforts by asking them to comment on papers that fail to meet these basic criteria.

What constitutes a "significant contribution to knowledge" in materials processing technology? Broadly we recognise two areas of contribution. Firstly, the development of a new processing technique or the application of an established method to a new class of materials. Secondly, the identification of a new level of understanding for an existing process.

The first of these contributions is easier to identify: if the authors demonstrate awareness of all related processing techniques and can specifically identify the innovation they have made, and if the reviewers are unaware of any other related developments, it is clear that a new contribution to knowledge has been made. The application of existing processes to new classes of materials is however less clear: we have had several submissions where authors who have previously analysed the application of a process to one material, now submit a paper that is identical but applied to a slightly different material. Such "salami slicing" research is not in the interests of future readers, who would value a broad analysis of the influence of a process on a class of materials more highly than a paper about a single material.

The second type of contribution requires either a new and fundamental level of understanding about a process, often expressed as an equation, or some other new insight that helps to characterise process behaviour across a useful range of process conditions. In both cases, for the knowledge to be a "significant contribution", authors must demonstrate a new level of insight and must validate their claims with appropriate experiments. The habit of many finite element modellers in claiming "good agreement with experiments" based on a small number of similar experiments, is of negligible use to future researchers.

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Accordingly, after 1 year of editing the journal, in which we have read approximately 3000 submissions, we have identified several characteristics of papers that we will not accept. These include:

- Papers that properly belong in the literature of materials science—particularly those which deal with fabrication and synthesis of composites and polymers, studies of the influence of alloy composition on properties, and studies based on a single laboratory scale experiment.
- Papers in which standard statistical methods, artificial intelligence techniques (such as neural networks), finite element methods or other established analytical techniques are used to match some experimental results—but without giving any new insight into materials processing.
- Papers in which analytical methods are developed but not validated or which give no new insight into the behaviour of the process.
- Papers in which experiments are reported, but no attempt is made to give a physical or analytical explanation of their implications.

The papers that have most attracted our admiration are those where the authors describe a step change innovation or insight and care deeply that future researchers will be able to trust their claims to novelty and their evaluation of their own work. We urge authors to resist the urge to increase their publication count and instead aim to build up a reputation such that the "stamp" of their name on a paper can be seen as a guarantee of excellence.

During the year, and we hope not as a result of our work(!) all three of our key Elsevier contacts have changed. So, we would like to thank Deborah Logan, Mireille Yarrow, and most especially Mary O'Brien who have all supported the journal with great commitment. In their stead, we are delighted to be working with Christopher Greenwell, Rebecca Wilson and Deirdre Quigley. We would like to express warm thanks to the very many colleagues who have acted as reviewers for the journal, and most particularly to the members of the excellent editorial board who have contributed many reviews and also many strategic suggestions about the future of the journal. Finally, we have decided that having regional editors no longer makes sense in an international journal, so are switching to a new structure with initially four subject editors to help us ensure the highest possible reviewing standards across the range of the journal's scope. As part of that restructuring, Professor W.B. Lee has changed from his role as a regional editor to being a valued member of our editorial board, and we would like to express our thanks to him, particularly for handling a high volume of papers immediately prior to our appointment. We are very pleased to welcome Professors Tom Childs, Jing-Feng Li, Ernesto Indacochea and Carlos Cáceres as our new subject editors.

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