

2020-8-17

## Introduction of IJMTM

IJMTM is a peer-reviewed scientific journal devoted to advances in scientific understanding of essential mechanics of processes and machines applied to the manufacture of engineering components, mainly in metals, but also in composites, ceramics and other structural/functional materials.

### Topics include, but are not limited to:

- Essential mechanics of processes involving material removal, accretion and deformation, in solid, semi-solid or particulate form;
- Significant scientific development of existing or new processes and machines;
- In-depth characterisation of workpiece materials (structure/surfaces) by advanced techniques (e.g. SEM, TEM, EBSD) to reveal new phenomena that govern manufacturing processes;
- Tool design, utilisation and in-depth studies of failure mechanisms;
- Novel concepts of machine tools/fixtures/tool holders supported by modelling and demonstrations that are relevant to manufacturing processes within the journal's remit;
- Novel scientific contributions dealing with interactions between the machine tool, control system, software design and processes;
- Studies of specific mechanisms governing niche processes (e.g. ultra-high precision, nano /atomic level manufacturing with either mechanical or non-mechanical "tools");
- Novel approaches, supported by adequate in-depth scientific analysis, addressing emerging processes (e.g. bio-inspired manufacturing) and/or applications (e.g. ultra-high precision optics).

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## Introduction of IJMTM

### History

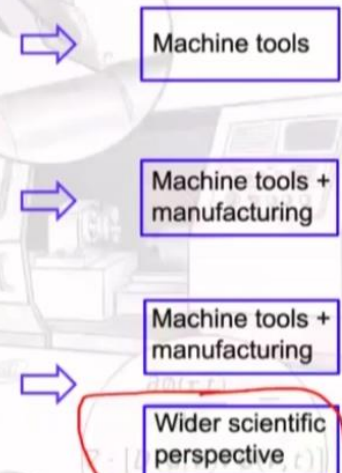
- 1960 - Founded in 1960 by Professor S.A. Tobias from University of Birmingham. Named as International Journal of Machine Tool Design and Research;
- 1986 - Professor T.A. Dean at the University of Birmingham, took over this Journal in 1986, when Professor Tobias died. Named as International Journal of Machine Tools and Manufacture;
- 2018 - Professor D. Axinte at University of Nottingham took over the Journal following Professor Dean's retirement, Honorary Editor;

Refer to: Journal home page, Wikipedia, Editorial (from Editor-in-Chief)

<https://www.journals.elsevier.com/international-journal-of-machine-tools-and-manufacture>

[https://en.wikipedia.org/wiki/International\\_Journal\\_of\\_Machine\\_Tools\\_and\\_Manufacture](https://en.wikipedia.org/wiki/International_Journal_of_Machine_Tools_and_Manufacture)

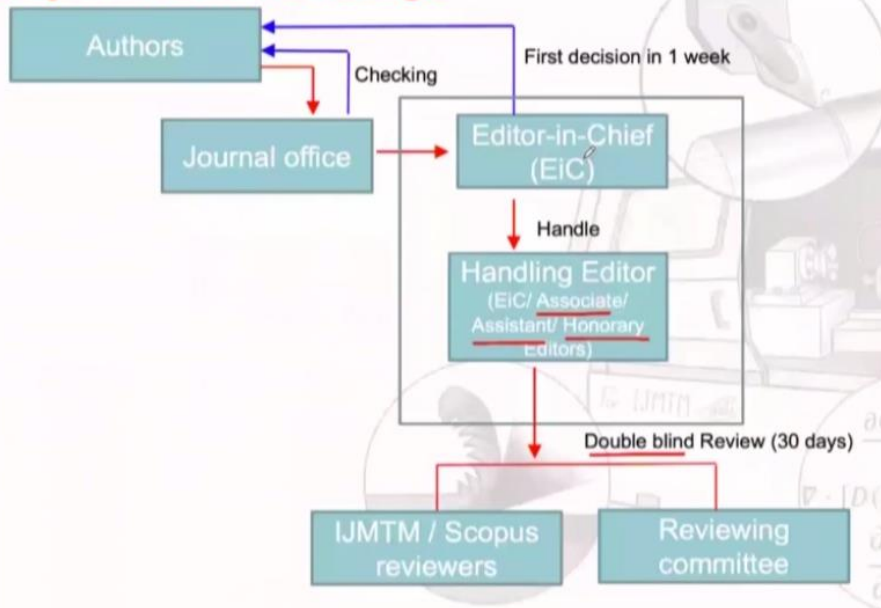
<https://www.sciencedirect.com/science/article/pii/S0890695518300798>



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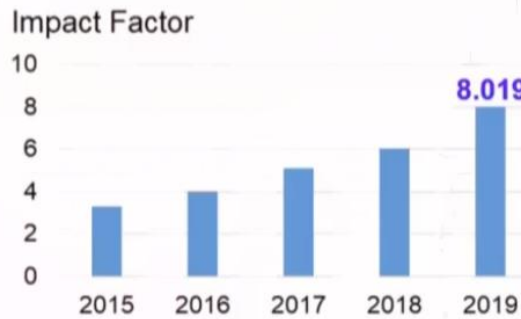
# Introduction of IJMTM

## Submission system: Editorial manager



# Introduction of IJMTM

## Impact factor & ranking



| YEAR | I.F.  | ENGINEERING, MANUFACTURING | ENGINEERING, MECHANICAL |
|------|-------|----------------------------|-------------------------|
| 2019 | 8.019 | 1/50                       | 3/130                   |
| 2018 | 6.039 | 4/49                       | 3/129                   |
| 2017 | 5.106 | 1/46                       | 4/128                   |
| 2016 | 3.995 | 3/44                       | 5/130                   |
| 2015 | 3.315 | 3/42                       | 6/131                   |

## Type of Papers in IJMTM

- **Research papers:** In accordance with the journal's aims and scope;
- **Short communications:** Focused on new technologies and concepts that are the pre-requisites for larger research programs;
- **Review papers:** High scholarly articles written by internationally leading researchers;
- **Perspectives:** Visionary and scholarly contributions aimed to identify future research directions (by invitation only).

| Number                  | Words | Figures | Table | References |
|-------------------------|-------|---------|-------|------------|
| — <u>Research paper</u> | 10000 | 20      | 4     | 40         |
| — <u>Short comm.</u>    | 5000  | 5       | 1     | 15         |
| — <u>Review paper</u>   | 20000 | -       | -     | 300        |

Guide for authors: <https://www.elsevier.com/journals/international-journal-of-machine-tools-and-manufacture/0890-6955/guide-for-authors>

Editorial from Editor-in-Chief: <https://www.sciencedirect.com/science/article/pii/S0890695518300798>

## Types of contributions

- Research papers
- Review papers
- Short communications



## What IJMTM is looking for in a Research Paper

- Essentials
- Paper framework
- Response to reviewers

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## Essentials

### 1. Must advance significantly the state of the knowledge and fundamentals of manufacturing processes

- ◆ Detail on in-depth phenomena governing the manufacturing processes and machines;
- ◆ New manufacturing processes supported by comprehensive explanations of their fundamental mechanics;
- ◆ Propose new (analytical) models for manufacturing processes to enable deeper understanding of the physical principles that are at the basis of manufacturing processes and allow their improvement.

#### Note:

- IJMTM welcomes original submissions, i.e. that have not been (partially) explored in other publications;
- Do not publish in conference proceedings if you want to submit to IJMTM;
- IJMTM Board follows up the published work with other journals and flag-ups to appropriate publishing bodies/home institutions any (partial) duplications.

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## Essentials

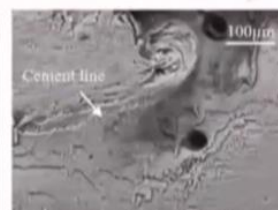
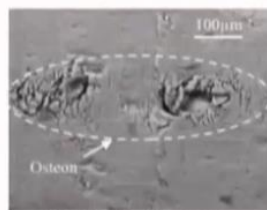
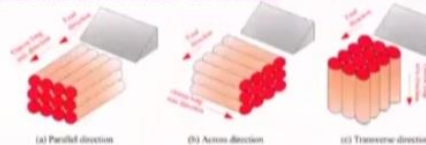
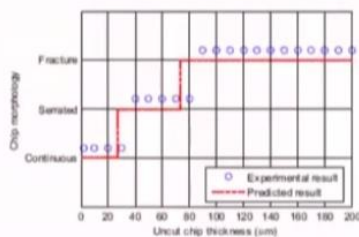
2. Normally papers should contain both experimental and theoretical work, one or both of which should be novel

- ◆ Either the experimental approach and/or the results should be novel and advance the fundamental understanding;
- ◆ Theoretical aspects are novel in their approach and reveal new insights of the fundamentals of the process.

Example: On chip formation mechanism in orthogonal cutting of bone

Compressive validation is needed

#### 4. Model validation and discussion



(b) SCC mode with UCT:60µm

(c) FC mode with UCT:140µm

## Essentials

3. Papers containing only theory or experiment may be acceptable if:

- ◆ The theory is novel and an in-depth analysis of the implications on process outcomes is given;
- ◆ Validations of the proposed models are made using well-recognized and robust experimental results already published in the literature;
- ◆ New insights of the fundamentals of the manufacturing processes are revealed.

#### Note:

- Models constructed from parts of other modes already available in the literature are not acceptable; there is a need for a clear contribution in modelling concept and approach;
- Manuscripts focused on numerical modelling (even with experimental work) are not acceptable unless they are used to reveal and discuss new phenomena governing the processes. Proving that a numerical model fits the experiments does not fall within the remit of IJMTM;
- No empirical modelling is accepted by IJMTM.



## 4. Papers not considered:

- ◆ Reports on observational findings without new scientific understanding of processes and/or generic academic knowledge being created;
- ◆ Models without extensive and appropriate validation/demonstration;
- ◆ Incremental advances compared with the existing published literature;
- ◆ Papers with exploratory methods based only on empirical (e.g. design of experiments, Taguchi method, response surface, etc.) or numerical modelling. *However, if numerical models are used to support explanations of the occurring phenomena in manufacturing processes, and they are not employed as the main investigatory methods, then these kind of contributions can be considered;*
- ◆ Use of well-established theories/models and methods on new setups/scenarios;
- ◆ Proposals for "another way" to obtain similar/slightly improved process outcomes;
- ◆ Submissions dealing with parts/constitutive elements of machine tools without referring to the performance of the entire machine tool system.

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## Paper Framework

### 1. Cover letter (Reviewers will not see)

- ◆ The cover letter should explain why your manuscript fits the aims & scope of IJMTM and why it will be of interest to the journal's readers;
- ◆ Include your contact information and of the co-authors. Use of work email addresses is preferable;
- ◆ Clearly state that the content of the manuscript has not been (in-parts) submitted or published to other journals or conferences.

### 2. Title

- ◆ The title should describe the subject of the investigation of the work, as short as possible;
- ◆ As science focused manufacturing journal, IJMTM suggests that the titles convey the claimed generic academic breakthrough. Titles containing very specific details (e.g. grade of material, tools) are discouraged;

#### Example:

~~Evaluation of surface integrity of SiC-SiC composite in drilling operation using diamond cutting edges~~  
Towards understanding the cutting and fracture mechanism in Ceramic Matrix Composites

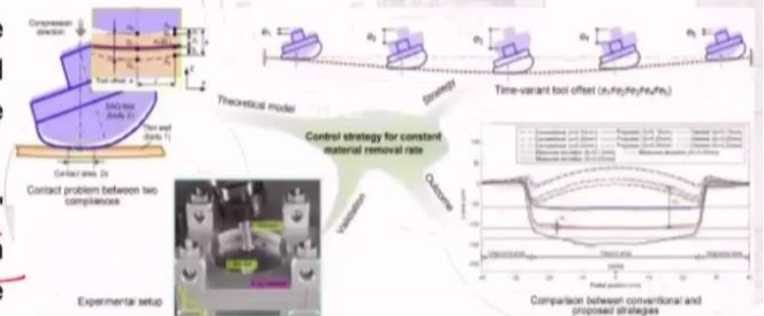
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## 3. Abstract

- ◆ Should be brief but should contain the key parts of the paper: background and research gaps identification; research approach/method, results and conclusions;
- ◆ Must underline the scientific novelty/claim of the paper;
- ◆ Should not be a re-statement of the conclusions;
- ◆ A person reading only the 'Abstract' should be able to know if the paper is relevant to his/her interest.

### Graphical Abstract

- ◆ It should summarise the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership online;
- ◆ The graphical abstract is the "first window" of your paper and needs to be treated with care. You can generate a special figure that conveys the "story" of your paper.



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## 4. Introduction

- ◆ Should demonstrate that the author(s) have a sound knowledge of their subject and are aware of the state-of-the-art, on an international scale;
- ◆ Should have a "wrap-up" of the general topic followed by the discussion of detailed aspects of the previous work;
- ◆ The published literature should be critically analysed/commented so that the research gaps which the paper intends to address can be identified;
- ◆ Should lead up to and end with, a statement of the research problem and the research gaps which are addressed in the manuscript. Give a hint on the scientific novelty.

### Note:

- Do not use mass citations;
- Do not only comment on what the cited paper has reported but also include what has not been covered.

### Example:

Diamond turning has been studied extensively [1, 3-5, 10-15]. Popescu [1,3] and Ionescu [4,7] has studied influence of cutting edge on surface roughness. Also Avramescu has reported on cutting edge material on material damage revealing that the YY material less surface damage

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# Paper Framework

## 5. Novel idea or Problem definition (optional)

- ◆ If your paper introduces an overall new concept, it might be advanceable to present it using schematics and comment how the research open questions that need to be addressed and how they are addressed;
- ◆ Models could also be presented here and comments on how particular parameters can influence the phenomena governing the process.

Example:

Controlling of compliant grinding for low-rigidity component

<https://doi.org/10.1016/j.ijmachtools.2020.103543>

such as thin walls which are widely used in the engineering profession for aerospace and other scenarios where weight and cost are main considerations. To the authors' best knowledge, there are very few attempts about two compliant elements being in contact, i.e. both the tool and workpiece, in relation to a mechanical material removal process. Similar studies (e.g. left grinding of aero-engine blades) are normally based on scanning systems, calibration strategies and force sensors [29,30]. This paper takes advantage and interests on the complexity of SAG tools to grind the thin wall surfaces where both are compliant.

### 1.1. Problem identification

This paper reports on an attempt to deterministically obtain a desired constant material removal rate by the control of tool offsets in grinding processes where two soft bodies are involved, i.e. low-rigidity workpiece and shape adaptive grinding tool. In compliant grinding, the interaction area between the two bodies is dependent on the geometrical tool offset. The tool offset is given as the rigid motion distance along the normal direction of ground surfaces, starting from the initial contact point as the tool is compressed into the workpiece. The nominal tool offset is the key control parameter to obtain a

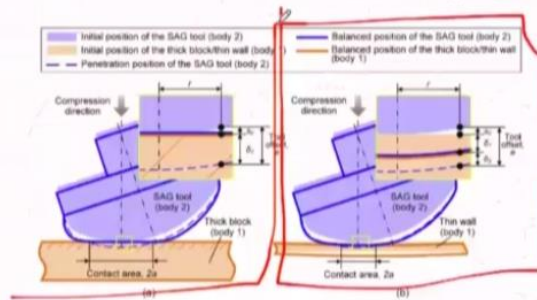
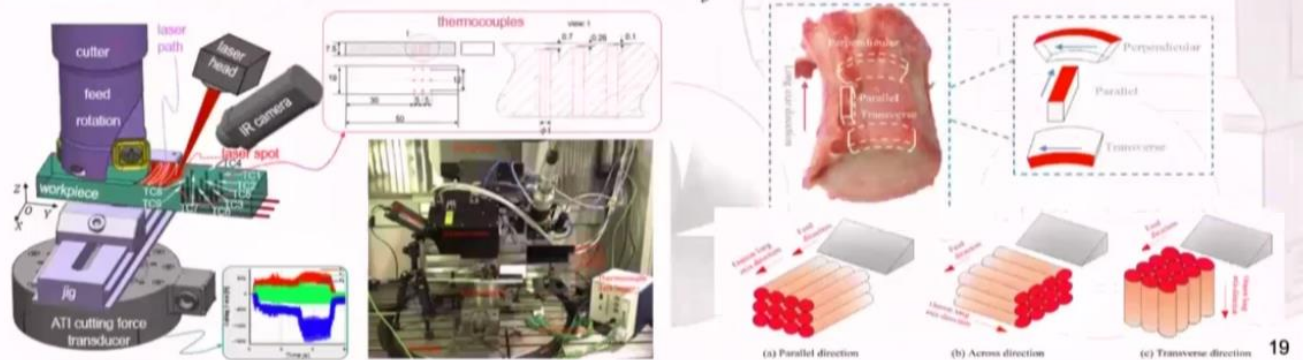


Fig. 1. Schematics of compliant grinding on thick blocks (a) and thin walls (b) explaining key differences between phenomena occurring at the tool-workpiece contact area.

# Paper Framework

## 6. Experimentation

- ◆ In general the simplest and clearest way is to use the following format:
  - If the experimental approach is new, then, emphasise its contribution to understand the science behind the process. New experimentations/methods arriving to known science of a process is not IJMTM focus.
  - Experimental Method/Equipment: if this is new make necessary schematics/images to explain;
  - Specimens: test-piece (with specifications of relevant properties);
  - Please describe in detail the experiments so that they can be replicated by other researchers.





## 7. Theory/Models

- ◆ This section is needed if a new theory or a development of an existing theory (that needs to be well referenced) is presented. Comment on how particular parameters can influence the phenomena governing the process;
- ◆ The fundamental hypothesis should be stated, then the assumptions which are made;
- ◆ Only the key points of the mathematical treatment should be given here;
- ◆ The outcome of the mathematics should be clearly stated and the nature of the final expressions derived should be commented on;

The fracture cutting occurs when the energy released rate exceeds the critical criterion of the fracture. Thus, the critical uncut chip thickness ( $h_f$ ) for transition from SCC mode to FC mode can be calculated as

$$G = G_{II+III} \sin \varphi_1 = \left( \frac{G_{II+III} \sin \varphi_1 \cos (\varphi_1 + \beta_1 - \gamma)}{\cos (\beta_1 - \gamma) + \sin (\beta_1 - \gamma) \tan \varphi_1} + G_{III} \sin \varphi_1 \right) / \epsilon_{s,1} \quad (15)$$

$$\frac{\partial \phi(r,t)}{\partial t} = \nabla \cdot [D(\phi, r) \nabla \phi(r, t)]$$
$$\frac{\partial u}{\partial t} = \Delta u$$

## 8. Results and Discussions

- ◆ Discuss in detail new phenomenological aspects the paper has discovered;
- ◆ While commenting on particular values of outputs, try to emphasize the generic academic findings;
- ◆ As a manufacturing science journal, IJMTM aims to stimulate academic research that can have generic value. What is the generic scientific finding that this particular study case is bringing to the community? This is a kind of open comments that IJMTM encourages the papers to put forward; **Note:** IJMTM is very different from production engineering journals, where papers are usually case-study focused, with an underlying theory of secondary importance. This is not the case for IJMTM
- ◆ IJMTM looks for scientific interpretations of results and less on the engineering aspects (e.g. parameters X increased output Y without emphasizing new scientific finding);
- ◆ Novelty for IJMTM is not limited to a particular setup/experimental conditions but those which can have academic value and can be translated to other conditions, processes, etc.;
- ◆ Results may be compared critically with those previously published to illustrate how they advance knowledge or understanding of the subject;
- ◆ Be inclined to academically challenge the established theories. IJMTM encourages open and collegial academic debate.

## 9. Conclusions

- ◆ They are not re-statements of the results and discussion not of the abstract;
- ◆ Emphasize the key scientific findings and their novelty;
- ◆ Feel free to point out the academic controversy your work has put forward;
- ◆ A fair assessment of the limitations of findings could be included;
- ◆ Comment how your scientific findings can be translated to other academic problems/scenarios;
- ◆ Comment on future challenges and research opportunities your paper opens for the academic community;
- ◆ A conclusion as to the relevance of the work to industry is welcome.

The chip formation mechanism of bone orthogonal cutting is studied in this paper. A fracture mechanism based chip formation model was developed and combined with the anisotropic property of bone structure; this gives a good interpretation of the chip formation mechanism in bone cutting and predicts the transition of uncut chip thickness between different cutting modes. To validate the proposed model, the chip features and surface morphologies were analysed and further linked with cutting forces from both static and dynamics components point of view. The model predicted results agrees well with the experimental results with a maximum error of 10%. However, while this approach might not be able to capture all the intricacies of the phenomena in bone cutting such as thermal damages and histologic problems, it is hoped to give an initial explanations of the chip formation mechanism to assist the understanding bone cutting process.

The main finding of the paper can be summarised as follows:

- (a) The cutting mechanism in orthogonal bone cutting could be divided into three modes when referring to the uncut chip thickness: shear cutting (SC) mode, shear crack cutting (SCC) mode and fracture cutting (FC) mode. These chip formation modes showed no obvious sensitivity to the bone anisotropy. However, the variation intervals of the uncut chip thickness corresponding to these three modes vary when considering different cutting directions (i.e. parallel, across and transverse cutting directions) related to the osteon fibre orientation. 22

## 10. Appendix

- ◆ Used to deal with information which underlies the main flow of the text.
- **For instance** a full mathematical treatment which would allow a reader to understand the derivation and conscious use of the presented work, but which is not essential in the main body of the paper, could be put into an appendix;
- **Another example** of material for an appendix is results of commonplace tests, such as stress-strain data, which might be used in FE simulation to give results described in the main body of the text.

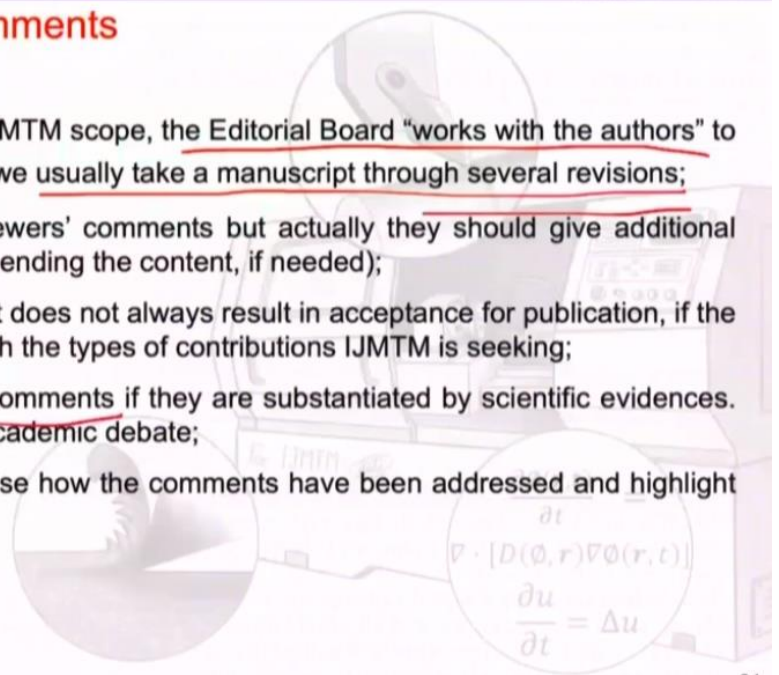
## 11. Credit author statement

- ◆ Author 1: Conceptualization; Methodology; Experiment; Investigation; Writing- Original draft preparation, editing;
- ◆ Author 2: Conceptualization; Methodology; Experiment; Investigation; Review and Editing; Project management;
- ◆ Author 3: Conceptualization; Supervision; Funding acquisition, Review and Editing;
- ◆ Author 4: Experiment; Review & Editing;
- ◆ Author 5: Resources; Review & Editing;



## 13. Review Process – Some comments

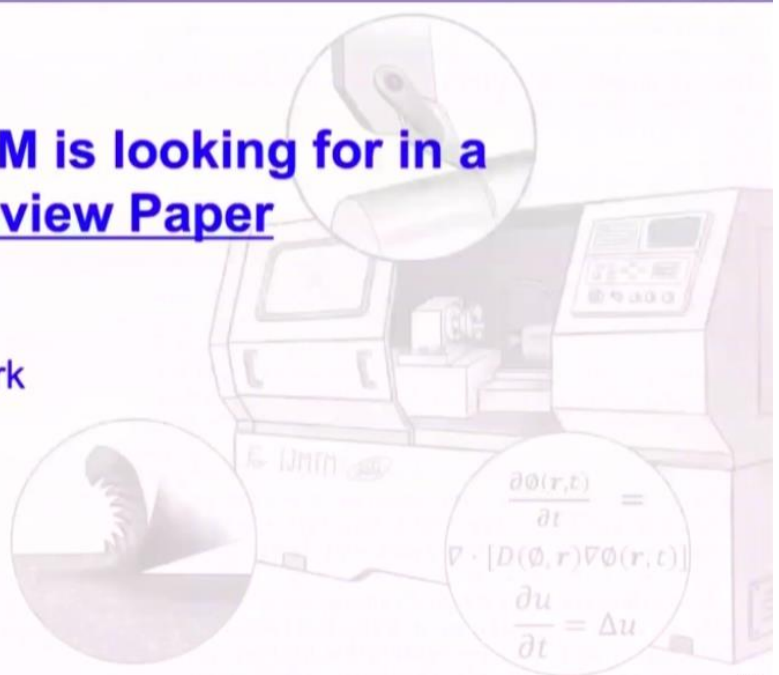
- ◆ For those papers of potential match with IJMTM scope, the Editorial Board “works with the authors” to improve the quality of the manuscript. So, we usually take a manuscript through several revisions;
- ◆ The authors do not respond only to reviewers’ comments but actually they should give additional explanations to the potential reader (by amending the content, if needed);
- ◆ However, making revisions to a manuscript does not always result in acceptance for publication, if the manuscript has not been improved to match the types of contributions IJMTM is seeking;
- ◆ We accept rebuttals of some reviewers’ comments if they are substantiated by scientific evidences. This is in the spirit of IJMTM to stimulate academic debate;
- ◆ Just be short in your answer and summarise how the comments have been addressed and highlight amendments of the manuscript.



## 14. Review

### What IJMTM is looking for in a Review Paper

- Essentials
- Paper Framework



## Review paper

### Definition:

- ◆ High scholarly contributions articles written by experts who not only know very well the research and technical developments in the field but also are able to critically examine the state-of-the-art and express informed views and provide guidance/ideas of future developments of the research topic.

### New policy on review papers:

- ◆ Before submission, potential authors should contact the Editor-in-Chief (Dragos.Axinte@Nottingham.ac.uk):
  - The title of the review paper;
  - A detailed reason why, in the light of the state of the art, the review is needed;
  - A brief description of the contents of the paper including, chapter titles.

#### Guidance:

[https://www.elsevier.com/\\_data/promis\\_misc/Guidance%20for%20Review%20papers.docx](https://www.elsevier.com/_data/promis_misc/Guidance%20for%20Review%20papers.docx)

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## Essentials

1. Although this type of paper deals with a research area it is scholarly. It is based on the author(s)' knowledge and learning not necessarily from the author(s)' research. It demonstrates the great depth of knowledge and understanding of the author(s), in a particular subject area;
2. The subject dealt with should be one which, through research, has reached an identifiable state of maturity;
3. A significant body of knowledge should be available about the subject;
4. The subject should not be too broad. If it is then a text book probably would be the most suitable means of presenting it;
5. Although the review relies of published work the authors need to be highly original in taking different point of views and make a critical analysis of the literature so that research gaps can be identified with possibilities to guide the academic community towards next scientific challenge

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## Essentials

6. The paper should include references to all relevant published work world-wide. Typically, papers contain at least 100 to 200 references, depending on the subject area;
  7. As a rule of thumb, the review should consider the recent published literature;
  8. Figures and tables, taken from past papers, should be used to illustrate points being made in the text but it is recommended that also original ones are put in place to present concepts, ideas and summarise outcomes;
  9. The paper should not contain detailed standard bookwork. Standard bookwork should be used only to demonstrate advances from it.
- ◆ IJMTM puts great emphasis that the review papers have a large section on Future Research Trends where the authors can summaries the analysis of the review and draw lines of research that can be followed by the community in the future.

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## Examining

## What IJMTM is looking for in a Short Communication

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## Essentials

1. Submitted in the same way as research papers but should describe, in concisely manner, on new techniques, concepts and instruments:
  - ◆ It should not exceed 5000 words
  - ◆ Maximum 5 figures
  - ◆ The new idea/approach/concept needs to be verified (and modelled if appropriate)
  - ◆ The content needs to have a kind of "wow" factor (although the content might not be fully developed)
2. This type of paper has to have the same quality standards and novelty as a full research paper.
3. Do not consider Short Communication as an "easy route" to publish

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## Essentials

4. It has to be "crisp", "sharp" and "witty" so that it gains interest of the community although the extent it shorter.

**Note:** Avoid planning to continue at a later date with a full research paper; if the novelty of the "continuing paper" is not there, rejection is likely to occur.

5. Similar as a full research paper but expressed in more compressed way.
  - ◆ New ideas (at the stage of proof-of-concept) that cannot be developed in a full research paper.
  - ◆ Concepts and findings intended to be disseminated faster.
  - ◆ Theoretical approaches that can develop in a new way of thinking.

**Note:** this could be ideas such "what about doing in this way?" or "have you thought about this way?"

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## Final Comments

- Before you decide upon submitting a paper to IJMTM, read the Guide for Authors to ensure your work is within its scope.

<https://www.elsevier.com/journals/international-journal-of-machine-tools-and-manufacture/0890-6955/guide-for-authors>

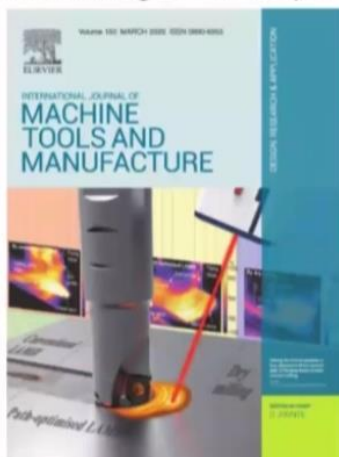
- It is not bad to liaise with Editors if you have any enquiry about the journal/your submission/review.

**IMPORTANT:** It is strongly suggested to follow-up the published papers in IJMTM to understand the types of contributions we are looking for.

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## IJMTM new initiatives

- IJMTM award: Most cited research/review paper, Top Reviewer
- Cover image: Cover photos from the recently published articles

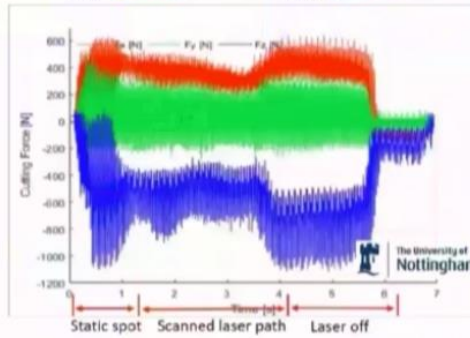
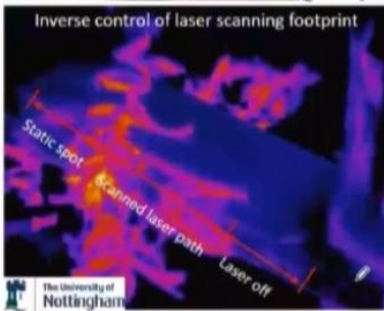
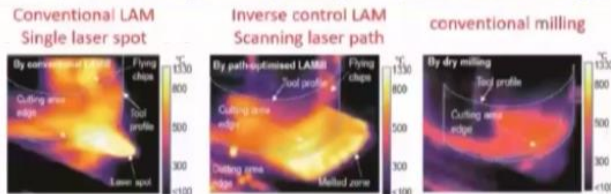


- Submit relevant research videos to enhance the quality and visibility of accepted articles.

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Comparison between LAMill performed using static (conventional) and dynamically controlled (via inverse heat placement problem) laser spot ahead of the milling cutter



Explanation: The proposed laser assisted milling (LAMill) can homogenously heat up a large area with a small laser spot by controlling the beam scanning footprint through solving the inverse heat conduction problem [doi.org/10.1016/j.ijmactools.2018.12.001](https://doi.org/10.1016/j.ijmactools.2018.12.001)

# Thank You !

**Prof. Dragos Axinte**

University of Nottingham, UK

Editor-in-Chief: International Journal of Machine Tools and Manufacture

[Dragos.Axinte@nottingham.ac.uk](mailto:Dragos.Axinte@nottingham.ac.uk)

$$\frac{\partial \theta(r, t)}{\partial t} = \nabla \cdot [D(\theta, r) \nabla \theta(r, t)]$$

$$\frac{\partial u}{\partial t} = \Delta u$$