



# JOURNAL OF INSTITUTE OF SCIENCE & TECHNOLOGY

## Institute of Science and Technology

Tribhuvan University  
Kirtipur, Kathmandu, Nepal



30 June 2021

### Advisor:

Prof. Dr. Binil Aryal  
Dean  
Institute of Science and Technology,  
T.U., Kirtipur  
Email: dean@iost.tu.edu.np

### Chief Editor:

Prof. Dr. Chhatra Mani Sharma  
Central Department of Environmental  
Science, T.U., Kirtipur  
Email: journal@iost.tu.edu.np,  
chhatra.sharma@cdes.tu.edu.np

### Editors:

Dr. Madhav Prasad Ghimire  
Central Department of Physics, T.U.,  
Kirtipur  
Email: madhav.ghimire@cdp.tu.edu.np

Dr. Urmila Pyakurel  
Central Department of Mathematics,  
T.U., Kirtipur  
Email:  
urmila.pyakurel@cdmath.tu.edu.np

Dr. Kishor Pandey  
Central Department of Zoology, T.U.,  
Kirtipur  
Email: kishor.pandey@cdz.tu.edu.np

Dr. Binod Pokharel  
Central Department of Hydrology and  
Meteorology, T.U., Kirtipur  
Email: binod.pokharel@cdhm.tu.edu.np

Dr. Bhanu Bhakta Neupane  
Central Department of Chemistry, T.U.,  
Kirtipur  
Email: bhanu.neupane@cdc.tu.edu.np

### Official Secretary:

Mr. Upendra Subedi  
Institute of Science and Technology,  
T.U. Kirtipur  
Email: upendra.subedi@iost.tu.edu.np

## Subject: Call for articles

The Editorial Board of JIST would like to request all the interested researchers to send their research/review articles for publication in the Journal of Institute of Science and Technology published by Office of the Dean, Institute of Science and Technology as per the attached guidelines in the email address journal@iost.tu.edu.np or jist@tuiost.edu.np.

.....  
Prof. Dr. Chhatra Mani Sharma  
Chief Editor  
Journal committee





ISSN: 2469-9062 (print)  
eISSN: 2467-9240 (online)

# Call *for* Articles

[https:// www.tuiost.edu.np/committee/journal](https://www.tuiost.edu.np/committee/journal)

## New Features

Article can be sent in **LaTeX<sub>2e</sub>** open format!  
(Latex macro/style files will be available soon)

A separate webpage of JIST will come soon !

No submission deadline, accepted article  
appear online immediately !

Before editing/reviewing plagiarism  
will be checked by



Prof. Dr. Chhatra Mani Sharma (Chief Editor)  
Dr. Madhav Prasad Ghimire (Editor)  
Dr. Urmila Pyakurel (Editor)  
Dr. Kishor Pandey (Editor)  
Dr. Binod Pokharel (Editor)  
Dr. Bhanu B. Neupane (Editor)  
Mr. Upendra Subedi (Office Secretary)

Vol. 26(1)  
has already  
been published!

Please follow  
author guideline  
strictly & carefully!



## INSTRUCTIONS TO AUTHORS

Journal of Institute of Science and Technology (JIST)  
Institute of Science and Technology (IOST), Tribhuvan University  
Kirtipur, Kathmandu, Nepal  
E-mails: [journal@iost.tu.edu.np](mailto:journal@iost.tu.edu.np); [jist@tuiost.edu.np](mailto:jist@tuiost.edu.np)  
Website: <https://www.nepjol.info/index.php/JIST>

### SCOPE

*Journal of Institute of Science and Technology (JIST)* is a peer-reviewed multidisciplinary science journal published by the Institute of Science and Technology (IOST), Tribhuvan University (TU), Kathmandu, Nepal. JIST publishes two issues (June and December) in a year considering original research papers, review articles, short communications/reports/notes/comments and letters to the editor on diverse areas of Science and Technology, including botany, chemistry, computer, environment, geology, hydrology/meteorology, mathematics, microbiology, physics, statistics, zoology and allied fields. JIST is an open-access journal indexed in NepJOL (<https://www.nepjol.info/index.php/JIST>) and ranked TWO STARS by INASP Journal Publishing Practices and Standards (JPPS). JIST will move to online submission and tracking system promoting continuous publication of the articles.

*Authors are kindly requested to check the final paper thoroughly before submission – that you have considered all requirements stated in the instructions.*

Specific points to note:

- *The manuscript should be in grammatically correct English language (preferably British). Text title (12 pt. Uppercase) and subtitles (10 pt. Sentence case) and text 10 pt., table and figure captions 9.5 pt. (Bold) in Times New Roman. Do not give numbers for title and subtitle.*
- *The length of the paper, including tables and figures, should preferably not exceeding 5-10 typed pages for the original article and 3-4 pages for short communications.*
- *The manuscript in a word file with table(s) and figure(s) inserted in the main text in the appropriate position, but high-quality JPEG or TIFF files should be sent separately.*
- *The text should be double spaced with a margin of at least 3 cm in A4.*
- *Paragraphs should be separated by a blank space.*
- *Enter the page number on every page.*
- *Language should be precise, clear without redundant words.*
- *Binomial names of organisms should be spelled out in full at the first use.*

### Instructions for preparing manuscript

#### Manuscripts

A full-length paper should normally be divided into the following parts: TITLE, Authors' names with affiliations and corresponding address with email. ABSTRACT, **Keywords** (3-5 words), INTRODUCTION, MATERIALS AND METHODS (or MODELS AND DATA), RESULTS, DISCUSSION (or RESULTS AND DISCUSSION or APPLICATIONS), CONCLUSIONS, ACKNOWLEDGEMENTS, REFERENCES, and ANNEXURES if any.

**TITLE:** Titles should indicate the content of the manuscript, serve as a guide to reference librarians, and facilitate communication. It should be concise, meaningful, and clear. Subtitles may be used whenever needed.

**Author(s):** The full name of the author(s) should be written centre aligned, below the title. The authors' list should include only those who have made a substantial contribution to the design and execution of the work and the writing of the manuscript. Provide the full postal address, including the country name and email address

of each author. Authors should identify the name and address of the author to whom correspondence should be sent.

**ABSTRACT:** Abstract should be understandable by itself and briefly explain the main messages of the paper. It must contain an experimental question, method, major findings and conclusions not exceeding 250 words. The abstract must be followed by 3-5 keywords in alphabetical order.

**INTRODUCTION:** The purpose of your research should appear in the introduction. State the questions you sought to answer and provide pertinent and adequate background information of previous findings for those questions.

**MATERIALS AND METHODS:** Provide sufficient information clearly to allow someone to repeat your work. A clear description of your experimental design, sampling procedures, and statistical procedures should be described. Give the model number for equipment used (if any). The methods already published should be indicated by a reference, and only relevant modifications should be described.

**RESULTS:** Results should be clear and stated concisely. Present the results logically in text, tables and figures but do not interpret your findings.

**DISCUSSION:** Differentiate the results of your study from data obtained from other secondary sources. Interpret your results, relate them to the results of previous research, and discuss the implications of your results.

[NOTE: Results and discussion sections can be combined if you think necessary]

**CONCLUSIONS:** State clearly the main conclusions of the research and give a clear explanation of the importance and relevance. This section should be based on your findings and standalone.

**ACKNOWLEDGEMENTS:** Acknowledge only those who have made an important contribution to the study. Many contributions justify acknowledgements, such as technical help, financial support, sources of materials, and persons who have contributed intellectually to the development of the manuscript. Do not acknowledge anyone who has no contribution.

**AUTHORS CONTRIBUTION STATEMENT:** The authors should mention the contributions to the work by each author. For instance, the section should cover but not limited to: conceptualization, project administration, fieldwork, laboratory works, resources, supervision, writing original drafts, review and editing, etc.

**CONFLICT OF INTEREST:** The authors should declare if there is any conflict of interest. If there is no conflict of interest, that should also be clearly stated as 'the authors do not have any conflict of interest pertinent to this work'.

**ETHICAL STATEMENT:** The authors should state that it is their original work and has not been previously published or submitted for publication elsewhere. In addition, if human subjects and/or animals are part of the research work, the authors must provide ethical approval from the Institutional Review Board (or similar entity) to show that they obtained consent to carry out the research.

**DATA AVAILABILITY STATEMENT:** The data availability statement should be clarified by mentioning the responsible author who has owned the raw data. For instance, one can state: 'The data that support the findings of this study are available from the corresponding author, upon reasonable request'.

**REFERENCES:** List all cited references alphabetically following the format explained below in separate section.

## Tables, Figures, Pictures, and Equations

The tables and figures should be marked with self-explanatory notes and figure legends. Figure and table captions should be given below and above, respectively. Figures and illustrations should be in JPEG/TIFF (at least 300 dpi resolution) format. Each figure and table should be linked with the text. Figure and Table number should be in sequence, using Arabic numerals – i.e., Fig. 1, 2, 3, etc., Table 1, 2, 3, etc. Equations should be written in Equation Editor/Math Type. They should be numbered. All the new symbols must be clearly explained.

Metric units: for all kinds of measurements would be preferred.

**Biological taxonomic treatments:** Scientific names and taxonomic treatments by the concerned author should follow the International Code of Nomenclature for algae, fungi, and plants (CN), International Code of Zoological Nomenclature (ICZN), International Code of Nomenclature of Bacteria (ICNB), International Code of Nomenclature for Cultivated Plants (ICNCP) and International Committee on Taxonomy of Viruses (ICTV).

## CITATIONS

Before submitting the manuscript, please check each citation in the text against the References and vice-versa to match exactly. Citations in the text should be formatted as follows (APA, 6th edition referring style):

**Single author:** The author's last name and the year of publication, e.g., (Sharma, 2008) or Sharma (2008).

**Two authors:** Both author's last names and the year of publication, e.g., (Gotelli & Ellison, 2004).

**Three or more authors:** First author's last name followed by '*et al.*', e.g., (Ghale *et al.*, 2019) or Ghale *et al.* (2019).

**Groups of references:** Many references, when cited in the parenthesis, should first be cited chronologically and then alphabetically, e.g., (Dickinson & Lukas, 1979; Singer, 1996; Adhikari & Bhattarai, 2014).

## REFERENCES

The list of references should include only those works that are cited in the text. Personal communications should only be mentioned in the text, not in the references.

The reference list should be arranged alphabetically by the last names of the first author. If the last name of the first author is the same in two or more references, the last name of the second author and so on should be considered while preparing the list. Different kinds of publications should be listed in different styles, as mentioned below.

### *Journal articles*

Surname, Given Name Initial. Second Name Initial (if any). Published Year in the bracket. Paper Title (sentence case). *Full Journal Name (italics)*, Volume No. (Issue No.), (blank space) xx-xx (page ranges without spacing).

Sharma, C.M. (2008). Freshwater, fishes, fisheries, and habitat prospects of Nepal. *Aquatic Ecosystem Health & Management*, 11(3), 289-297.

Ghimire, M.P., & Richter, M. (2017). Chemical gating of a weak topological insulator: Bi<sub>14</sub>Rh<sub>3</sub>I<sub>9</sub>. *Nano Letters*, 17(10), 6303-6308.

Chhatkuli, D.N., Paudel, S., & Aryal, B. (2020). Study of star formation rate and metallicity of an interacting dwarf galaxy NGC 2604. *Journal of Institute of Science and Technology*, 25(2), 55-60.

Ghale, D.B., Bohara, N.B., Duwal, N., & Bhattarai, J. (2019). Investigation on the mineralogical phase of ancient brick samples of Kathmandu valley (Nepal) using XRD and FTIR analysis. *Rasayan Journal of Chemistry*, 12(2), 402-408.

Neupane, B., Dang, N.C., Acharya, K., Reppert, M., Zazubovich, V., *et al.* (2010) Insight into the electronic structure of the CP47 antenna protein complex of photosystem II: Hole burning and fluorescence study. *Journal of American Chemical Society*, 132(12), 4214-4229.

### **Book**

Gotelli, N.J., & Ellison, A.M. (2004). *A primer of ecological statistics*. Sunderland, Massachusetts, USA: Sinauer Associates, Inc.

### **Edited Book**

Sutherland, W.J. (Ed). (2006). *Ecological census techniques: A handbook* (2nd ed.). Cambridge, United Kingdom: Cambridge University Press.

### **Book Chapters**

Richter, M. (2001). Density Functional Theory applied to 4f and 5f Elements and Metallic Compounds. In K.H.J. Buschow (Ed.), *Handbook of magnetic materials* (pp. 87-s228), Vol. 13, Elsevier, Amsterdam, Netherlands.  
Sharma, C.M., Borgström, R., & Rosseland, B.O. (2011). Biomanipulation in Lake Årungen, Norway: A tool of biological control. In Ansari, A.A., Singh Gill, S., Lanza, G.R., Rast, W. (Eds.) *Eutrophication: causes, consequences and control* (pp. 292-323), Springer.

### **Report**

Bhattarai, J. (2019). *Investigation on physico-chemical and sintering properties of ceramic tiles and bricks available in local market of Kathmandu Valley*. The University Grants Commission-Nepal, Sanothimi, Bhaktapur, Nepal. p. 121.

### **Conference paper**

Swar, D.B. (2008). History of rainbow trout (*Oncorhynchus mykiss*) introduction in Nepal. In T.B. Gurung (Ed.), *Proceedings of the first national workshop on scaling up rainbow trout (Oncorhynchus mykiss) farming strategies in Nepal* (pp. 21-24), Kathmandu, Nepal.

### **Theses/Dissertations**

Pyakurel, U. (2016). *Evacuation planning problem with contraflow approach*. PhD Thesis, Central Department of Mathematics, Institute of Science and Technology, Tribhuvan University, Nepal.  
Bhattarai, J. (1998). *Tailoring of corrosion-resistant tungsten alloys by sputtering*. PhD Thesis, Department of Materials Science, Faculty of Engineering, Tohoku University, Japan.

**The manuscript should be sent to the following address (most preferably by e-mail)**

Office of the Chief Editor/Editor  
Journal of Institute of Science and Technology  
Institute of Science and Technology  
Tribhuvan University, Kirtipur, Kathmandu, Nepal  
E-mail: [journal@iost.tu.edu.np](mailto:journal@iost.tu.edu.np); [jist@tuiost.edu.np](mailto:jist@tuiost.edu.np)

The decisions of the Chief Editor are final for publishing the articles that have been submitted. The opinions expressed in the articles are the author's own and do not reflect the publisher's view or the Editorial Board. In addition, it is expected to suggest the names and full addresses (with email) of three potential referees relating to the subject area of the manuscript.

### **Submission Preparation Checklist**

As a part of the submission process, authors are required to check off their submission's compliance with all of the following items, and [submissions](#) may be returned to authors that do not adhere to these guidelines.

1. The submission has not been previously published, nor is it before another journal for consideration (or an explanation has been provided in Comments to the Editor).
2. The submission file is in Open Office, Microsoft Word, RTF, LaTeX<sub>2<sub>ε</sub></sub> or WordPerfect document file format.
3. Where available, DOI or URLs for the references have been provided.



4. The text is double-spaced; uses a 10-point font; employs italics rather than underlining (except with URL addresses); and all illustrations, figures, and tables are placed within the text at the appropriate points, rather than at the end.
5. Use the table function to prepare the tables, not spreadsheets.
6. The text adheres to the stylistic and bibliographic requirements outlined in the [Author Guidelines](#).
7. If submitting to a peer-reviewed section of the journal, the instructions in [Ensuring a Blind Review](#) have been followed.
8. Authors must have obtained permission to use the materials from other works.
9. The ethical approval certificates to carry out the research work must be submitted to the journal along with the manuscript, if applicable.
10. A cover letter must be submitted declaring the originality, no parallel submission elsewhere, and ethical statements.

### **Publication Charges**

The Journal of Institute of Science and Technology does not charge a fee for submission, processing and publication.

### **Copyright Notice and Licensing Policy**

The copyright of the articles is held by the Institute of Science and Technology, Tribhuvan University (IoST-TU). The views and interpretations in this journal are those of the author(s). They are not attributable to the IoST-TU and do not imply the expression of any opinion concerning the legal status of any country, territory, city, area of its authorities, or concerning the delimitation of its frontiers or boundaries. The corresponding author is responsible for any conflict of interest between authors and others.

The articles in the *Journal of Institute of Science and Technology* are licensed under a [Creative Commons Attribution-Share Alike 4.0 International License](#) (CC: BY-SA), which permits use, distribution and reproduction in any medium or format, remix, transfer, and build upon the materials for any purpose, even commercially, provided the original work is properly cited.

### **Authorship Change**

If you require to change the authorship, including the order of the authors, during or after the review, you need to send the consent letter to the Editorial Office. The consent letter is available upon request. The change in authorship after the acceptance of the article is not entertained unless there is a valid reason or some technical mistakes. The Chief Editor will make the final decision in such cases.

### **Peer Review Process**

Following the submission of the manuscript to the journal, the editorial board will check whether the submitted manuscript is appropriate for the journal or not. The manuscript will go through a plagiarism check before starting the review process. If deemed suitable for the journal, the Chief Editor will assign the article to reviewers corresponding to their expertise. Generally, the article is sent to two reviewers; however, the third reviewer will also be assigned in the situation where it is deemed necessary. The reviewers are given two weeks period for reviewing the article. Double-blind peer review is applied for the article submitted. Once the author submits the corrected paper addressing the reviewer's comments, it will be sent to the corresponding reviewers again to decide whether the manuscript has the potential for acceptance. Authors should incorporate all questions or should defend (clarify) reviewers' comments. However, the final decision to accept the paper for publication is taken by the Chief Editor.