DESCRIPTION

The ICT Express journal published by the Korean Institute of Communications and Information Sciences (KICS) is an international, peer-reviewed research publication covering all aspects of information and communication technology. The journal aims to publish research that helps advance the theoretical and practical understanding of ICT convergence, platform technologies, communication networks, and device technologies. The technology advancement in information and communication technology (ICT) sector enables portable devices to be always connected while supporting high data rate, resulting in the recent popularity of smartphones that have a considerable impact in economic and social development. The high processing capability and the ubiquitous connectivity of recent communication devices allow telecommunication technology to be converged with other industry sectors, such as healthcare, automobile, transportation, entertainment, building architecture, and energy. The journal invites short-length (up to 4 pages in double columns) high-quality, original letter articles that explicitly address the unique technical challenges encountered in the convergence of information and communication technology. Each submission will be reviewed by experts in the field.

ABSTRACTING AND INDEXING

Korea Citation Index (KCI)
Directory of Open Access Journals (DOAJ)
Scopus
Emerging Sources Citation Index (ESCI)
INSPEC
Ei Compendex

EDITORIAL BOARD

Editor-in-Chief
Eun-Soo Kim, Kwangwoon University School of Business, Korea, Republic of

Co-Editors-in-Chief
Yacine Ghamri-Doudane, University of La Rochelle, France
Yeong Min Jang, Kookmin University, Korea, Republic of
Yeong Cheol Lee, Soongsil University, Korea, Republic of
Zhisheng Niu, Tsinghua University, China
Zary Segall, Royal Institute of Technology, Sweden
Executive Editors

Communication Networks

Dong-Soo Han, Korea Advanced Institute of Science and Technology, Korea, Republic of
Positioning and navigations applications, Location and context aware services, Location-based services (LBS), ITS/Telematics, U-health [Smart care, smart living, u-health infrastructure, u-health applications]

Jun Heo, Korea University, Korea, Republic of
Channel codes, LDPC codes, Physical-layer security, Polar codes, Turbo codes

Hwangnam Kim, Korea University, Korea, Republic of
Home area networks, Internet of things (IoT), Mobile ad-hoc networks, Multi-hop wireless networks, Wireless local area networks

Francesco Potorti, Alessandro Faedo Institute of Science and Technology National Research Council, Pisa, Italy
Internet of things (IoT), Location and context aware services, Location-based services (LBS), Positioning and navigation applications, Sensor networks

Device Technologies

Minglu Jin, Dalian University of Technology, China
Beamforming, Equalization, MIMO techniques, OFDM, Signal processing for communications

ICT Convergence

Ki H. Chon, University of Connecticut, Biomedical Engineering Department, United States
Medical/biosignal processing, U-health, Smartphone applications

Hyukjoon Lee, Kwangwoon University School of Business, Korea, Republic of
Location-based services (LBS), Internet of things (IoT)

Jungwoo Lee, Seoul National University, Korea, Republic of
Wireless communications, MIMO techniques, Green communications, Interference alignment

Editors

Communication Networks

Seung Jun Baek, Korea University, Korea, Republic of
Cellular and broadband wireless networks, Heterogeneous networks, Wireless local area networks, Internet of things (IoT)

Ho-Shin Cho, Kyungpook National University, Korea, Republic of
Cellular system, Medium Access Control, Nano(sacle) network, Resource allocation and management, Underwater network

Mostafa Zaman Chowdhury, Khulna University, Bangladesh
Cellular and broadband wireless networks, Heterogeneous networks, Mobile communications Resource allocation and management, Wireless communications

Jaehak Chung, Inha University, Korea, Republic of
Beamforming, Cellular systems, Cognitive radios, Cooperative communications, Internet of things (IoT), MIMO techniques, Multiple access, OFDM, Power line communications, Smart antennas, Space-time codes, Spectrum sensing, Spread spectrum technologies, Un

Takeo Fujii, The University of Electro-Communications, Japan
Cognitive radios, Dynamic spectrum management, ITS/Telematics, Software defined radios, Wireless communications

Taewon Hwang, Yonsei University, Korea, Republic of
Ad hoc mobile networks, cloud computing and data center, cognitive radios, cross-layer design and optimization, green communications

Ben-Othman Jalel, Sorbonne North Paris University, France
Car and vehicular IT, Cellular and broadband wireless networks, Cellular systems, Internet of things (IoT), Mobile ad-hoc networks, Mobile computing, Network architectures, Network security, vulnerability, and defenses, Network simulation and emulation

MinChul Ju, Kookmin University, Korea, Republic of
Cognitive networks, Cooperative communications, Green communications, Multi-hop wireless networks

Joonhyuk Kang, Korea Advanced Institute of Science and Technology, Korea, Republic of
Cognitive radios, Digital modulations and demodulations, Wireless communications

Dongkyun Kim, Kyungpook National University, Korea, Republic of
Ad hoc mobile networks, Car and vehicular IT, sensor networks, vehicular networks, wireless mesh networks and protocols

Sunwoo Kim, Hanyang University, Korea, Republic of
Beamforming, Location-based services, Signal processing for communications, Underwater networks, Vehicular networks

**HyungJune Lee**, Ewha Womans University, Korea, Republic of

Car and vehicular IT, Cyber-physical systems and networking, Mobile ad-hoc networks, Multi-hop wireless networks

**Jang-Won Lee**, Yonsei University, Korea, Republic of

Cellular and broadband wireless networks, Green networks, Mobile ad-hoc networks, Resource allocation and management

**Jong-Hyouk Lee**, Sejong University, Korea, Republic of

Information security, Mobility models and management, Mobile communications, Network security, vulnerability, and defenses, Vehicular networks

**Dae Woon Lim**, Dongguk University, Korea, Republic of

Information security, Network security, vulnerability, and defenses, Physical-layer security

**Huaping Liu**, Oregon State University, United States

CDMA, Cellular systems, Communication theory, Digital modulations and demodulations, Location-based services (LBS)

**Leandros Maglaras**, European Network and Information Society Security Agency Athens, Greece

Information security, Network security, vulnerability, and defenses, and Industrial Control Systems Security

**Sangheon Pack**, Korea University, Korea, Republic of

Content-centric networks, Network architectures, Future Internet, Mobility models and management, Network management

**Redha Mahmoud Radaydeh**, Alfaisal University, Saudi Arabia

Cellular and broadband wireless networks, MIMO techniques

**Danda B. Rawat**, Howard University, United States

Big data, Mobile cloud computing, Information security, Internet of things (IoT)

**Byoungyo Shim**, Seoul National University, Korea, Republic of

Channel modeling and characterization, Communication theory, Digital modulations and demodulations, Green communications, MIMO techniques

**Oh-Soon Shin**, Soongsil University, Korea, Republic of

Device-to-device communications, MIMO techniques, Mobile communications, Wireless communications, Wireless power transfer

**Youngchul Sung**, Korea Advanced Institute of Science and Technology, Korea, Republic of

Beamforming, Interference management, Multiple access, MIMO techniques, Signal processing for communications

**Xia Xiang-Gen**, University of Delaware, United States

Collaborative signal processing, Communication theory, Cooperative communications, OFDM, Relay systems, Signal processing for communications, Signal processing theory, Signal sampling

**Haibo Zhang**, University of Otago, New Zealand

Body area networks, Mobile ad-hoc networks, Sensor networks, Vehicular networks

**ICT Convergence**

**Aladdin Ayesh**, De Montfort University, United Kingdom

Ambient intelligence, Cyberphysical systems and networking, Mobile Robots, Sensor networks, Big Data

**Gangil Byun**, Ulsan National Institute of Science and Technology, Korea, Republic of

Antenna systems, Antennas, Beamforming, RF front-end circuitries and modules, Smart antennas

**Alex Casson**, The University of Manchester, United Kingdom

Body area networks, Brain-IT convergence, Medical and Bio-IT convergence, Medical/bio signal processing, UHealth

**Jo Woon Chong**, TEXAS TECH UNIVERSITY, United States

IT for livestock, Medical and Bio-IT convergence, Medical/bio signal processing, Sensor networks, U-health [Smart care, smart living, u-health infrastructure, u-health applications]

**Dong Seog Han**, Kyungpook National University, Korea, Republic of

Broadcasting and communications convergence, Car and vehicular IT, Digital modulations and demodulations, MIMO techniques, Mobile communications

**Sangkil Kim**, Pusan National University, Korea, Republic of

Antennas, Beamforming, Micro-Millimeter-wave circuits and systems, RF Front-end circuitries and modules, Wireless power transfer

**Kyunghan Lee**, Ulsan National Institute of Science and Technology, Korea, Republic of

Mobile communications, Mobile computing, Mobility models and management, Web services and performance, Wireless communications

**Sang Hyun Lee**, Korea University, Korea, Republic of
Coding theory, Internet of things (IoT), Positioning and navigations applications, Resource allocation and management, Wireless communications

Zhanyu Ma, Beijing University of Posts and Telecommunications, China
Big data, Image and video coding, Image signal processing, Speech and acoustic signal processing

Jungseok Oh, Seoul National University, Korea, Republic of
Antenna systems, Antennas, EMI/EMC & SI/PI, Micro-/Millimeter-wave circuits and systems, RF front-end circuitries and modules

Tae (Tom) Oh, Rochester Institute of Technology, United States
Information security, Internet of things (IoT)

Peter Wai Ming Tsang, City University of Hong Kong, Hong Kong
3D Image convergence, 3D rendering and processing, Optical communications

Qiao Wang, Southeast University, China
Big data, image signal processing, information theory, social computing and networks

Platform Technologies

Chien Chen, National Chiao Tung University, Taiwan
Routing and switching, Software-defined networking

JongWon Kim, Gwangju Institute of Science and Technology, Korea, Republic of
Cloud computing and data center, Content distribution network (CDN), Content-centric networks, Future Internet, Media streaming

In-Young Ko, Korea Advanced Institute of Science and Technology, Korea, Republic of
Cloud computing services, Convergence software, Ubiquitous applications, Ubiquitous/pervasive computing, Web services and performance

Feliksas Kuliesius, Vilnius University, Lithuania
Content distribution network (CDN), Content-centric networks, Internet of things (IoT), Network security, vulnerability, and defenses, Software-defined networking

Kyung Ho Lee, Yonsei University, Korea, Republic of
Cloud computing services, Internet of things (IoT), Service platforms, Web services and performance

Anh T. Pham, The University of Aizu, Japan
Broadband access technologies, Communication theory, Cooperative communications, Green communications, Information security, Multi-user/multi-points transmission

Ikkyeun Ra, University of Colorado, United States
Information security, Internet of things (IoT)

Gianluca Reali, University of Perugia, Italy
Big data, Bio/nature-inspired networking, Cloud computing and data center, Virtual and overlay networks

Advisors

Ezio Biglieri, University of California Los Angeles, United States

Hyung Jin Choi, Sungkyunkwan University, Korea, Republic of

Daehyoung Hong, Sogang University, Korea, Republic of

Géza Kolumbán, Pázmány Péter Catholic University, Budapest, Hungary

Kyung Sup Kwak, Inha University, Korea, Republic of

Byeong Gi Lee, Seoul National University, Korea, Republic of

Jaiyong Lee, Yonsei University, Korea, Republic of

Jinwoo Park, Korea University, Korea, Republic of

Edward G. Tiedemann, QUALCOMM Inc, United States

Dae Hee Youn, Yonsei University, Korea, Republic of

Managing Editors

Haewoon Nam, Hanyang University, Korea, Republic of

Sangheon Pack, Korea University, Korea, Republic of

Eun-Chan Park, Dongguk University, Korea, Republic of

Publication Editors

Chan-Byoung Chae, Yonsei University, Korea, Republic of

Sunghyun Choi, Seoul National University, Korea, Republic of

Junsu Kim, Korea Polytechnic University, Korea, Republic of

JeongGil Ko, Yonsei University, Seoul, Korea, Republic of

Jong-Hyouk Lee, Sejong University, Seoul, Korea, Republic of

Sang-Woon Jeon, Hanyang University, Seongdong-gu, Korea, Republic of

Oh-Soon Shin, Soongsil University, Korea, Republic of

Executive Director of Publication board

Insoo Sohn, Dongguk University, Korea, Republic of
Vice Executive Director of Publication board
Jong-Hyouk Lee, Sejong University, Korea, Republic of

Journal Assistant (administrator)
Grace Kim, Korean Institute of Communications and Information Sciences, Korea, Republic of

Publisher
Korean Institute of Communications and Information (KICS)
GUIDE FOR AUTHORS

Types of paper
ICT Express publishes original research papers in English in the fields of ICT convergence, platform technologies, communication networks, and device technologies. ICT Express accepts short-length (up to 4 pages in double columns) high-quality, original articles in Latex or Word format. Sample manuscript can be downloaded here.

Submission checklist
You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details.

Ensure that the following items are present:

One author has been designated as the corresponding author with contact details:
- E-mail address
- Full postal address

All necessary files have been uploaded:
Manuscript:
- Include keywords
- All figures (include relevant captions)
- All tables (including titles, description, footnotes)
- Ensure all figure and table citations in the text match the files provided
- Indicate clearly if color should be used for any figures in print
Graphical Abstracts / Highlights files (where applicable)
Supplemental files (where applicable)

Further considerations
- Manuscript has been 'spell checked' and 'grammar checked'
- All references mentioned in the Reference List are cited in the text, and vice versa
- Permission has been obtained for use of copyrighted material from other sources (including the Internet)
- A competing interests statement is provided, even if the authors have no competing interests to declare
- Journal policies detailed in this guide have been reviewed
- Referee suggestions and contact details provided, based on journal requirements

For further information, visit our Support Center.

BEFORE YOU BEGIN

Ethics in publishing
Please see our information pages on Ethics in publishing and Ethical guidelines for journal publication.

Declaration of interest
All authors must disclose any financial and personal relationships with other people or organizations that could inappropriately influence (bias) their work. Examples of potential conflicts of interest include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding. Authors should complete the declaration of interest statement using this template and upload to the submission system at the Attach/Upload Files step. If there are no interests to declare, please choose: 'Declarations of interest: none' in the template. This statement will be published within the article if accepted. More information.

Submission declaration and verification
Submission of an article implies that the work described has not been published previously (except in the form of an abstract, a published lecture or academic thesis, see 'Multiple, redundant or concurrent publication' for more information), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in
English or in any other language, including electronically without the written consent of the copyright-holder. To verify originality, your article may be checked by the originality detection service Crossref Similarity Check.

**Use of inclusive language**
Inclusive language acknowledges diversity, conveys respect to all people, is sensitive to differences, and promotes equal opportunities. Articles should make no assumptions about the beliefs or commitments of any reader, should contain nothing which might imply that one individual is superior to another on the grounds of race, sex, culture or any other characteristic, and should use inclusive language throughout. Authors should ensure that writing is free from bias, for instance by using 'he or she', 'his/her' instead of 'he' or 'his', and by making use of job titles that are free of stereotyping (e.g. 'chairperson' instead of 'chairman' and 'flight attendant' instead of 'stewardess').

**Author contributions**
For transparency, we encourage authors to submit an author statement file outlining their individual contributions to the paper using the relevant CRediT roles: Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Roles/Writing - original draft; Writing - review & editing. Authorship statements should be formatted with the names of authors first and CRediT role(s) following. More details and an example

**Authorship**
All authors should have made substantial contributions to all of the following: (1) the conception and design of the study, or acquisition of data, or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content, (3) final approval of the version to be submitted.

**Changes to authorship**
Authors are expected to consider carefully the list and order of authors **before** submitting their manuscript and provide the definitive list of authors at the time of the original submission. Any addition, deletion or rearrangement of author names in the authorship list should be made only **before** the manuscript has been accepted and only if approved by the journal Editor. To request such a change, the Editor must receive the following from the **corresponding author**: (a) the reason for the change in author list and (b) written confirmation (e-mail, letter) from all authors that they agree with the addition, removal or rearrangement. In the case of addition or removal of authors, this includes confirmation from the author being added or removed.
Only in exceptional circumstances will the Editor consider the addition, deletion or rearrangement of authors **after** the manuscript has been accepted. While the Editor considers the request, publication of the manuscript will be suspended. If the manuscript has already been published in an online issue, any requests approved by the Editor will result in a corrigendum.

**Copyright**
Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (see [more information](https://www.elsevier.com/terms-and-conditions/author-publishing-agreement)). An e-mail will be sent to the corresponding author confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement.

**Author rights**
As an author you (or your employer or institution) have certain rights to reuse your work. [More information](https://www.elsevier.com/terms-and-conditions/author-publishing-agreement).

*Elsevier supports responsible sharing*
Find out how you can [share your research](https://www.elsevier.com/terms-and-conditions/author-publishing-agreement) published in Elsevier journals.

**Open access**
Please visit our [Open Access page](https://www.elsevier.com/open-access) for more information.

*Elsevier Researcher Academy*
Researcher Academy is a free e-learning platform designed to support early and mid-career researchers throughout their research journey. The "Learn" environment at Researcher Academy offers several interactive modules, webinars, downloadable guides and resources to guide you through the process of writing for research and going through peer review. Feel free to use these free resources to improve your submission and navigate the publication process with ease.
Language (usage and editing services)
Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the English Language Editing service available from Elsevier's Author Services.

Submission
Submission to this journal proceeds totally online. Use the following guidelines to prepare your article. Via the homepage of this journal (https://www.evise.com/profile/api/navigate/ICTE) you will be guided stepwise through the creation and uploading of the various files. The system automatically converts source files to a single Adobe Acrobat PDF version of the article, which is used in the peer-review process. Please note that even though manuscript source files are converted to PDF at submission for the review process, these source files are needed for further processing after acceptance. All correspondence, including notification of the Editor's decision and requests for revision, takes place by e-mail and via the author's homepage, removing the need for a hard-copy paper trail. If you are unable to provide an electronic version, please contact the editorial office prior to submission [ictexpress@kics.or.kr].

Submit your article
Please submit your article via https://www.evise.com/profile/api/navigate/ICTE.

Over page charges:
The author(s) or his/her/their company or institution will be billed $100 per each page in excess of the first four published pages. The author(s) signifies his willingness to pay these charges simply by submitting his/her/their manuscript to the ICT Express. The Publisher holds the right to withhold publication under any circumstance, as well as publication of the current or future submissions of authors who have outstanding mandatory page charge debt. No mandatory overlength page charges will be applied to overview articles or invited articles in the journals.

Additional Information
Tables and figures may be presented with captions within the main body of the manuscript; if so, figures should additionally be uploaded as high resolution files.

PREPARATION

Peer review
This journal operates a single blind review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. More information on types of peer review.

Use of word processing software
It is important that the file be saved in the native format of the word processor used and authors submit it with its PDF file. The text should be in double-columns format. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. In particular, do not use the word processor's options to justify text or to hyphenate words. However, do use bold face, italics, subscripts, superscripts etc. When preparing tables, if you are using a table grid, use only one grid for each individual table and not a grid for each row. If no grid is used, use tabs, not spaces, to align columns. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier). Note that source files of figures, tables and text graphics will be required whether or not you embed your figures in the text. See also the section on Electronic artwork.
To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your word processor.

LaTeX
You are recommended to use the Elsevier article class elsarticle.cls to prepare your manuscript and BibTeX to generate your bibliography.
Our LaTeX site has detailed submission instructions, templates and other information.

Article structure
**Subdivision - numbered sections**
Divide your article into clearly defined and numbered sections. Subsections should be numbered 1.1 (then 1.1.1, 1.1.2, ...), 1.2, etc. (the abstract is not included in section numbering). Use this numbering also for internal cross-referencing: do not just refer to 'the text'. Any subsection may be given a brief heading. Each heading should appear on its own separate line.

**Introduction**
State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

**Material and methods**
Provide sufficient details to allow the work to be reproduced by an independent researcher. Methods that are already published should be summarized, and indicated by a reference. If quoting directly from a previously published method, use quotation marks and also cite the source. Any modifications to existing methods should also be described.

**Theory/calculation**
A Theory section should extend, not repeat, the background to the article already dealt with in the Introduction and lay the foundation for further work. In contrast, a Calculation section represents a practical development from a theoretical basis.

**Results**
Results should be clear and concise.

**Discussion**
This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

**Conclusions**
The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

**Appendices**
If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

**Essential title page information**
- **Title.** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
- **Author names and affiliations.** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.
- **Corresponding author.** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. This responsibility includes answering any future queries about Methodology and Materials. Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.
- **Present/permanent address.** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

**Abstract**
A concise and factual abstract is required. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.
**Keywords**
Authors are invited to submit keywords associated with their paper.

**Abbreviations**
Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

**Acknowledgements**
Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

**Units**
Follow internationally accepted rules and conventions: use the international system of units (SI). If other units are mentioned, please give their equivalent in SI.

**Math formulae**
Please submit math equations as editable text and not as images. Present simple formulae in line with normal text where possible and use the solidus (/) instead of a horizontal line for small fractional terms, e.g., X/Y. In principle, variables are to be presented in italics. Powers of e are often more conveniently denoted by exp. Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text).

**Footnotes**
Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors can build footnotes into the text, and this feature may be used. Otherwise, please indicate the position of footnotes in the text and list the footnotes themselves separately at the end of the article. Do not include footnotes in the Reference list.

**Artwork**

**Electronic artwork**

**General points**
- Make sure you use uniform lettering and sizing of your original artwork.
- Embed the used fonts if the application provides that option.
- Aim to use the following fonts in your illustrations: Arial, Courier, Times New Roman, Symbol, or use fonts that look similar.
- Number the illustrations according to their sequence in the text.
- Use a logical naming convention for your artwork files.
- Provide captions to illustrations separately.
- Size the illustrations close to the desired dimensions of the published version.
- Submit each illustration as a separate file.
- Ensure that color images are accessible to all, including those with impaired color vision.

A detailed guide on electronic artwork is available.

**You are urged to visit this site; some excerpts from the detailed information are given here.**

**Formats**
If your electronic artwork is created in a Microsoft Office application (Word, PowerPoint, Excel) then please supply 'as is' in the native document format.

Regardless of the application used other than Microsoft Office, when your electronic artwork is finalized, please 'Save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):

- EPS (or PDF): Vector drawings, embed all used fonts.
- TIFF (or JPEG): Color or grayscale photographs (halftones), keep to a minimum of 300 dpi.
- TIFF (or JPEG): Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi.
- TIFF (or JPEG): Combinations bitmapped line/halftone (color or grayscale), keep to a minimum of 500 dpi.

**Please do not:**
- Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); these typically have a low number of pixels and limited set of colors;
- Supply files that are too low in resolution;
- Submit graphics that are disproportionately large for the content.
Color artwork
Please make sure that artwork files are in an acceptable format (TIFF (or JPEG), EPS (or PDF) or MS Office files) and with the correct resolution. If, together with your accepted article, you submit usable color figures then Elsevier will ensure, at no additional charge, that these figures will appear in color online (e.g., ScienceDirect and other sites) in addition to color reproduction in print. Further information on the preparation of electronic artwork.

Figure captions
Ensure that each illustration has a caption. Supply captions separately, not attached to the figure. A caption should comprise a brief title (not on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

Tables
Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

References
Citation in text
Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

Web references
As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

Data references
This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

References in a special issue
Please ensure that the words 'this issue' are added to any references in the list (and any citations in the text) to other articles in the same Special Issue.

Reference management software
Most Elsevier journals have their reference template available in many of the most popular reference management software products. These include all products that support Citation Style Language styles, such as Mendeley. Using citation plug-ins from these products, authors only need to select the appropriate journal template when preparing their article, after which citations and bibliographies will be automatically formatted in the journal's style. If no template is yet available for this journal, please follow the format of the sample references and citations as shown in this Guide. If you use reference management software, please ensure that you remove all field codes before submitting the electronic manuscript. More information on how to remove field codes from different reference management software.

Reference style
Text: Indicate references by number(s) in square brackets in line with the text. The actual authors can be referred to, but the reference number(s) must always be given.
Example: '..... as demonstrated [3,6]. Barnaby and Jones [8] obtained a different result ....'
List: Number the references (numbers in square brackets) in the list in the order in which they appear in the text.
Examples:
AFTER ACCEPTANCE

Online proof correction
To ensure a fast publication process of the article, we kindly ask authors to provide us with their proof corrections within two days. Corresponding authors will receive an e-mail with a link to our online proofing system, allowing annotation and correction of proofs online. The environment is similar to MS Word: in addition to editing text, you can also comment on figures/tables and answer questions from the Copy Editor. Web-based proofing provides a faster and less error-prone process by allowing you to directly type your corrections, eliminating the potential introduction of errors.

If preferred, you can still choose to annotate and upload your edits on the PDF version. All instructions for proofing will be given in the e-mail we send to authors, including alternative methods to the online version and PDF.

We will do everything possible to get your article published quickly and accurately. Please use this proof only for checking the typesetting, editing, completeness and correctness of the text, tables and figures. Significant changes to the article as accepted for publication will only be considered at this stage with permission from the Editor. It is important to ensure that all corrections are sent back to us in one communication. Please check carefully before replying, as inclusion of any subsequent corrections cannot be guaranteed. Proofreading is solely your responsibility.

Offprints
The corresponding author will be notified and receive a link to the published version of the open access article on ScienceDirect. This link is in the form of an article DOI link which can be shared via email and social networks. For an extra charge, paper offprints can be ordered via the offprint order form which is sent once the article is accepted for publication. Both corresponding and co-authors may order offprints at any time via Elsevier’s Author Services.

AUTHOR INQUIRIES
Visit the Elsevier Support Center to find the answers you need. Here you will find everything from Frequently Asked Questions to ways to get in touch.

You can also check the status of your submitted article or find out when your accepted article will be published.