DYES AND PIGMENTS

DESCRIPTION

*Dyes and Pigments* covers the scientific and technical aspects of the chemistry and physics of dyes, pigments and their intermediates. Emphasis is placed on the properties of the colouring matters themselves rather than on their applications or the system in which they may be applied.

Thus the journal accepts research and review papers on the synthesis of dyes, pigments and intermediates, their physical or chemical properties, e.g. spectroscopic, surface, solution or solid state characteristics, the physical aspects of their preparation, e.g. precipitation, nucleation and growth, crystal formation, liquid crystalline characteristics, their photochemical, ecological or biological properties and the relationship between colour and chemical constitution. However, papers are considered which deal with the more fundamental aspects of colourant application and of the interactions of colourants with substrates or media.

The journal will interest a wide variety of workers in a range of disciplines whose work involves dyes, pigments and their intermediates, and provides a platform for investigators with common interests but diverse fields of activity such as cosmetics, reprographics, dye and pigment synthesis, medical research, polymers, etc.

AUDIENCE

Chemists interested in Dyes, Pigments and Colouring Matters, also workers in diverse areas such as Cosmetics, Reprographics, Polymers, etc.

IMPACT FACTOR

2018: 4.018 © Clarivate Analytics Journal Citation Reports 2019
ABSTRACTING AND INDEXING

Current Contents - Engineering, Technology & Applied Sciences
Science Citation Index
Engineering Index
Chemical Abstracts
Web of Science
INSPEC
Scopus

EDITORIAL BOARD

Editors-in-Chief
B. Mark Heron, University of Huddersfield, HD1 3DH, Huddersfield, United Kingdom
Mark Wainwright, Liverpool John Moores University School of Pharmacy and Biomolecular Sciences, L3 3AF, Liverpool, United Kingdom

Executive Editor
Xiang Ma, East China University of Science and Technology, 200237, Shanghai, China
Juyoung Yoon, Ewha Womans University Department of Chemistry and Nanoscience, 03760, Seodaemun-gu, Korea, Republic of

Associate Editors
Sylvain Achelle, Organometallics Materials and Catalysis team, Rennes, France
Karen de Clerck, Ghent University Department of Materials Textiles and Chemical Engineering, 9052, Zwijnaarde, Belgium
Carlos Lodeiro Espiño, New University of Lisbon Faculty of Science and Technology, 2829-516, Caparica, Portugal
Denis Jacquemin, Interdisciplinary Chemistry Synthesis Analysis Modelling, Nantes, France
Mark Van der Auweraer, KU Leuven Molecular Imaging and Photonics, 3001, Leuven, Belgium

Honorary Editors
S.M. Burkinshaw
A.T. Peters
H. Tian

Editorial Board
Norman Allen, Manchester Metropolitan University, Manchester, United Kingdom
Filip Bureš, University of Pardubice, Pardubice, Czech Republic
Fundamental properties of push-pull molecules and dyes; Nonlinear optical materials; Solar cells, sensors, switches; Redox couple based batteries; Light-induced organic transformations
Rachel Crespo, Queen Mary University of London, London, United Kingdom
Understanding of excited state mechanisms at the interface of molecular and material sciences, nonadiabatic mechanisms, aggregation induced emission and computational chemistry
Daniel Escudero-Masa, KU Leuven, Leuven, Belgium
Modeling the excited states, photophysical and photochemical processes of molecular systems
N.A. Garcia, National University of Rio Cuarto, Cordoba, Argentina
Pier Luigi Gentili, University of Perugia Department of Chemistry Biology and Biotechnologies, Perugia, Italy
Chemical Artificial Intelligence; Neuromorphic Engineering; Non-linear dynamics; Photochemistry; Systems Chemistry.
Francesca Giuntini, Liverpool John Moores University, Liverpool, United Kingdom
Parik Goswami, University of Huddersfield, Huddersfield, United Kingdom
Product development using flexible materials and application of chemistry for functionalising textiles
Ahmet Gül, Istanbul Technical University, Istanbul, Turkey
Xuechuan Hong, Wuhan University, Wuhan, China
Small-molecule Dyes for NIR-II, NIR-IIa and NIR-IIb Biomedical Fluorescence Imaging
Woo-Dong Jang, Yonsei University, Seoul, Korea, Republic of
Design of functional porphyrin-based supramolecular assemblies and stimuli-responsive functional materials
Victor Jerca, Ghent University, Gent, Belgium
Teofil Jesionowski, Poznan University of Technology, Poznan, Poland
Hae-Jo Kim, Hankuk University of Foreign Studies, Dongdaemun-gu, Korea, Republic of
Development of novel fluorescent probes that are applicable to detect toxic chemicals such as mercury, gold, and cyanide ions in the environment; Development of NIR dyes (Rhodamine, Cy7) that are suitable for in vivo imaging of reactive oxygen/nitrogen species (RONS) or glutathione; Development of PET probes ([18]F, [64]Cu) that are adjustable to monitor the tumor-related phenomena

Sehoon Kim, Korea Institute of Science and Technology, Seongbuk-gu, Korea, Republic of

Development of biophotonic molecular nanoparticles for bioimaging, biosensing, photomedicine and theranostic applications

Ramón Martinez Mañez, Polytechnic University of Valencia, Valencia, Spain

Masaki Matsui, Gifu University, Gifu, Japan

Klaus Müller, Max Planck Institute for Polymer Research, Department of Polymer Synthesis, Mainz, Germany

Graphenes and carbon materials; multi-dimensional polymers with complex shape-persistent architectures; dyes and pigments; chemistry and physics of single molecules; biosynthetic hybrids

Heinz Mustroph, FEW Chemicals GmbH, Bitterfeld-Wolfen, Germany

Hiroyuki Nakazumi, Osaka Prefecture University College of Engineering School of Materials Chemistry and Chemical Engineering Department of Applied Chemistry, Osaka, Japan

Functional dyes

Graça Neves, University of Aveiro, Aveiro, Portugal

Synthesis, functionalization, and potential applications of tetrapyrrrole macrocycles like porphyrins, corroles, and phthalocyanines

Tebello Nyokong, Rhodes University, Grahamstown, South Africa

Design of porphyrin-type complexes alone or in the presence of nanomaterials for applications in healthcare (photodynamic therapy), pollution control, renewable energy (dye sensitized solar cells), safety (optical limiting), and sensing

Elisabete Oliveira Marques, New University of Lisbon, Lisboa, Portugal

Nanoparticles, Chemosensors, Drug delivery, Nanochemistry, Dyes and Sensors

Borys Osmialowski, Nicolaus Copernicus University in Torun, Torun, Poland

Synthesis and properties of fluorescent dyes preferentially carrying BF2-moiety; Supramolecular chemistry focused on complexes stabilised by hydrogen bonding; Tautomeric equilibria

Andrea Pucci, University of Pisa, Pisa, Italy

Polymer science; Preparation, modification and characterization of mono- or multiphase polymer (nano)systems with functional properties for applications such as chromogenic materials responsive to external stimuli of various kinds, or for applications in the energy field

Claudio Roscini, Catalan Institute of Nanoscience and Nanotechnology, Barcelona, Spain

Development of temperature and light-responsive materials (photochromism, thermochromism, upconversion) based on organic molecular dyes and polymeric micro/nanoparticles (e. g. pigments)

Robert Smith, University of Central Lancashire, Preston, United Kingdom

Andy Towns, Lambson Ltd, Wetherby, United Kingdom

Gilles Ulrich, University of Strasbourg, Strasbourg, France

Chemical engineering of purely organic and boron-based luminescent dyes for various applications ranging from optoelectronics to biological labelling

Zhaohui Wang, Tsinghua University Department of Chemistry, Beijing, China

Functional Dyes; Organic electronics; Organic Semi-conductors; Molecular devices; Self-assembly

Liangliang Zhu, Fudan University, Shanghai, China

Self-assembled optoelectronic functional materials

Weihong Zhu, East China University of Science and Technology, Shanghai, China
GUIDE FOR AUTHORS

Your Paper Your Way
We now differentiate between the requirements for new and revised submissions. You may choose to submit your manuscript as a single Word or PDF file to be used in the refereeing process. Only when your paper is at the revision stage, will you be requested to put your paper in to a 'correct format' for acceptance and provide the items required for the publication of your article.
To find out more, please visit the Preparation section below.

Introduction
A note to authors and readers of Dyes and Pigments regarding the submission and publication of articles about dye removal

Dyes and Pigments covers the scientific and technical aspects of the chemistry and physics of dyes, pigments and their intermediates. Emphasis is placed on the properties of the colouring matters themselves rather than on their applications or the system in which they may be applied.

Thus the journal accepts research and review papers on the synthesis of dyes, pigments and intermediates, their physical or chemical properties, e.g. spectroscopic, surface, solution or solid state characteristics, the physical aspects of their preparation, e.g. precipitation, nucleation and growth, crystal formation, liquid crystalline characteristics, their photochemical, ecological or biological properties and the relationship between colour and chemical constitution. However, papers are considered which deal with the more fundamental aspects of colourant application and of the interactions of colourants with substrates or media.

The journal will interest a wide variety of workers in a range of disciplines whose work involves dyes, pigments and their intermediates, and provides a platform for investigators with common interests but diverse fields of activity such as cosmetics, reprographics, dye and pigment synthesis, medical research, polymers, etc.

Please feel free to contact us for any comments, questions or feedback. In addition, we are always interested in any publication proposals for books, electronic products, new journals and co-operation for existing journals.

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.

Preprints
Please note that preprints can be shared anywhere at any time, in line with Elsevier's sharing policy. Sharing your preprints e.g. on a preprint server will not count as prior publication (see 'Multiple, redundant or concurrent publication' for more information).

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

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 on this). 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.

Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the Publisher is required for resale or distribution outside the institution and for all other derivative works, including compilations and translations. If excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases.

For gold open access articles: Upon acceptance of an article, authors will be asked to complete an 'Exclusive License Agreement' (more information). Permitted third party reuse of gold open access articles is determined by the author's choice of user license.

Author rights
As an author you (or your employer or institution) have certain rights to reuse your work. More information.

Elsevier supports responsible sharing
Find out how you can share your research published in Elsevier journals.

Role of the funding source
You are requested to identify who provided financial support for the conduct of the research and/or preparation of the article and to briefly describe the role of the sponsor(s), if any, in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. If the funding source(s) had no such involvement then this should be stated.

Open access
Please visit our Open Access page 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 and you will be guided stepwise through the creation and uploading of your files. The system automatically converts source files to a single PDF file of the article, which is used in the peer-review process. Please note that even though manuscript source files are converted to PDF files 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 removing the need for a paper trail.

Short communications are subject to the same quality controls as normal, full papers, and should include supplementary information, but should be no longer than 1500 words, with 10 or fewer references and with no more than two figures and/or schemes. It is expected that such submissions will be suitable for the more rapid communication of important, initial work, rather than providing a vehicle for submissions which do not contain sufficient material to justify a standard-length paper. Authors should make a clear case for the novelty/special merit of the work in their introductory section. The journal will aim for a 14-day-to-first-decision basis. The journal also welcomes Mini
Review articles which provide a concise overview of the current opinion in a particular topic. If you wish to contribute a Mini Review of approximately 2000 words, please contact one of the Editors so that they can confirm whether your proposed topic is suitable for the journal.

Submit your article
Please submit your article to the Elsevier Editorial System at http://ees.elsevier.com/dypi

Referees
Please submit, with the manuscript, the titles, names, addresses and e-mail addresses of three independent referees, of which one is an international expert in the field. Note that the editor retains the sole right to decide whether or not the suggested reviewers are used.

PREPARATION

NEW SUBMISSIONS
Submission to this journal proceeds totally online and you will be guided stepwise through the creation and uploading of your files. The system automatically converts your files to a single PDF file, which is used in the peer-review process.
As part of the Your Paper Your Way service, you may choose to submit your manuscript as a single file to be used in the refereeing process. This can be a PDF file or a Word document, in any format or layout that can be used by referees to evaluate your manuscript. It should contain high enough quality figures for refereeing. If you prefer to do so, you may still provide all or some of the source files at the initial submission. Please note that individual figure files larger than 10 MB must be uploaded separately.

References
There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the article number or pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct.

Formatting requirements
There are no strict formatting requirements but all manuscripts must contain the essential elements needed to convey your manuscript, for example Abstract, Keywords, Introduction, Materials and Methods, Results, Conclusions, Artwork and Tables with Captions.
If your article includes any Videos and/or other Supplementary material, this should be included in your initial submission for peer review purposes. Divide the article into clearly defined sections.
Double spacing text:
Please ensure the text of your paper is double-spaced- this is an essential peer review requirement.

Line numbering text:
Please ensure your paper has consecutive line numbering - this is an essential peer review requirement.

Page Numbering text:
Please ensure your paper includes page numbers - this is an essential peer review requirement.

Figures and tables embedded in text
Please ensure the figures and the tables included in the single file are placed next to the relevant text in the manuscript, rather than at the bottom or the top of the file. The corresponding caption should be placed directly below the figure or table.

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. The text should be in single-column 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 latest Elsevier article class to prepare your manuscript and BibTeX to generate your bibliography. Our Guidelines has full details.

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 succinctly and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Compound numbers / Structure identifiers
Authors are most strongly recommended to use Arabic numbers in bold typeface (1, 2, 3, 4, 5 etc...) and these should increase sequentially for each new structure introduced / discussed or even referenced in some instances. It would be acceptable to subdivide each number by the use of letters leading to 1a, 1b, 1c, 2a, 2b, 2c, 3a, 3b and perhaps, if essential, further subdivided 1aa, 1ab, 1ac, 1b, 1ba, 1bb, 1ca, 2cb, 2aa, 2ab, etc.... for extended sub-series of compounds. The use of similar series of lengthy acronyms to identify compounds is confusing and should be avoided.

Material and method
Provide sufficient detail to allow the work to be reproduced. Methods already published should be indicated by a reference: only relevant modifications should be described.

Key information for all instruments employed in the study should be provided including manufacturer and model number as well as the key operational parameters required to reproduce the data.

Characterization data for all new compounds/intermediates should adopt the following style: Compound name, identification number as used within the manuscript, appearance, yield %, either mp °C or bp °C (at pressure (mmHg)), IR data (including medium e.g. KBr, neat, Nujol) cm⁻¹, ¹H NMR data, as for example δH (solvent e.g. CDCl₃, operating frequency e.g. 400 MHz), chemical shift of the signal (number of hydrogen atoms e.g. 2H), signal multiplicity e.g. q, coupling constant e.g. J = XX Hz, structural assignment where possible). ¹³C NMR data is desirable and data for other nuclei e.g. ¹⁹F, ³¹P and ¹⁹N, is optional. Finally either elemental analyses for CHN (other atoms may be included) in the form of e.g. ‘Found: C, 78.3; H, 6.7; N, 14.3%’; ‘molecular formula CₓHᵧN₂OₜS’ requires C, 78.4; H, 6.9; N, 14.7%’ or HRMS e.g. ‘Found: [M+H]⁺ 234.5678; ‘molecular formula CₓHᵧN₂OₜS’ requires [M+H]⁺ 234.5690. Note: For elemental analyses, accuracy to within 0.4 % is expected, and for mass spectral data used for identification, exact masses, quoted to four decimal places, should be accurate to within 5 ppm. Where such found and required analytical data vary by greater than these limits the suitability of the data will be decided by the editor. Other specific data such as Uv-vis, fluorescence, phosphorescence, cyclic voltammetry etc... may also be included in
the experimental section e.g. Uv-Vis data $\lambda_{\text{max}}$ (solvent) XXX nm and molar extinction coefficient $\varepsilon_{\text{max}}$ XXXX mol\(^{-1}\)dm\(^3\)cm\(^{-1}\), fluorescence data, excitation $\lambda_{\text{max}}$ (solvent) nm, emission $\lambda_{\text{max}}$ XXX nm, Stokes shift (nm or cm\(^{-1}\)), quantum yield ($\phi_{\text{fl}}$) and ideally excited state lifetime ($\tau$).

X-ray crystallographic data - here important aspects of the structure would typically be discussed with only key information provided either in the experimental section or as a reference/footnote. A submission number (CDCCXXXXX) to the Cambridge Crystallographic Data Centre must also be provided (this ensures that the crystal structure data has been checked (CIFCheck file)).

For polymer samples the purity of monomers should be established by the foregoing techniques. The polymer molecular weight (number average molar mass and mass average molar mass) and the polydispersity index and thermal properties must be reported. For those polymers that possess only a low number of monomer units (oligomers) then conventional characterization (see above) should be used.

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.

Highlights
Highlights are mandatory for this journal as they help increase the discoverability of your article via search engines. They consist of a short collection of bullet points that capture the novel results of your research as well as new methods that were used during the study (if any). Please have a look at the examples here: example Highlights.
Highlights should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point).

**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.

Also, non-standard or uncommon abbreviations, acronyms and compound identifiers (either numbers or acronyms) must be avoided. Common, widely used abbreviations including for example, abbreviations for common characterization techniques such as NMR, HRMS, IR, Uv-Vis, PXRD, SEM, TEM, and common terms HOMO, LUMO and well-known research areas/subjects such as PDT, DSSC, OLED are acceptable.

**Graphical abstract**
A Graphical abstract is optional and should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership online. One short sentence may be permitted. Authors must provide images that clearly represent the work described in the article. Graphical abstracts should be submitted as a separate file in the online submission system. Image size: Please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more. The image should be readable at a size of 5 × 13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files. See https://www.elsevier.com/graphicalabstracts for examples. Authors can make use of Elsevier's Illustration and Enhancement service to ensure the best presentation of their images also in accordance with all technical requirements: Illustration Service. Please note that compound numbers/acronyms must not be used in the highlights.

**Keywords**
Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

**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.).

**Formatting of funding sources**
List funding sources in this standard way to facilitate compliance to funder's requirements:

Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa].

It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.

If no funding has been provided for the research, please include the following sentence:

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.
Units
Follow internationally accepted rules and conventions: use the international system of units (SI) and their approved subdivisions e.g. Kg, g, mg, μg, L, mL, μL. 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.
• The use of a commercially available electronic structure drawing package e.g. ChemDraw®, to generate chemical structures is encouraged.
• 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 printed version.
• Submit each illustration as a separate file.
A detailed guide on electronic artwork is available on our website: https://www.elsevier.com/artworkinstructions
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/half-tone (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) regardless of whether or not these illustrations are reproduced in color in the printed version. For color reproduction in print, you will receive information regarding the costs from Elsevier after receipt of your accepted article. Please indicate your preference for color: in print or online only. 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.

Users of Mendeley Desktop can easily install the reference style for this journal by clicking the following link:
http://open.mendeley.com/use-citation-style/dyes-and-pigments
When preparing your manuscript, you will then be able to select this style using the Mendeley plug-ins for Microsoft Word or LibreOffice.

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.
List: Number the references (numbers in square brackets) in the list in the order in which they appear in the text.
Examples:
Reference to a journal publication:
Reference to a journal publication with an article number:
Reference to a book:
Reference to a chapter in an edited book:
Reference to a website:
Reference to a dataset:
Note shortened form for last page number. e.g., 51–9, and that for more than 6 authors the first 6 should be listed followed by 'et al.' For further details you are referred to 'Uniform Requirements for Manuscripts submitted to Biomedical Journals' (J Am Med Assoc 1997;277:927–34) (see also Samples of Formatted References).

Journal abbreviations source
Journal names should be abbreviated according to the List of Title Word Abbreviations.

Video
Elsevier accepts video material and animation sequences to support and enhance your scientific research. Authors who have video or animation files that they wish to submit with their article are strongly encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed. All submitted files should be properly labeled so that they directly relate to the video file's content. In order to ensure that your video or animation material is directly usable, please provide the file in one of our recommended file formats with a preferred maximum size of 150 MB per file, 1 GB in total. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect. Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please visit our video instruction pages. Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content.

Data visualization
Include interactive data visualizations in your publication and let your readers interact and engage more closely with your research. Follow the instructions here to find out about available data visualization options and how to include them with your article.

Supplementary material
Supplementary material such as applications, images and sound clips, can be published with your article to enhance it. Submitted supplementary items are published exactly as they are received (Excel or PowerPoint files will appear as such online). Please submit your material together with the article and supply a concise, descriptive caption for each supplementary file. If you wish to make changes to supplementary material during any stage of the process, please make sure to provide an updated file. Do not annotate any corrections on a previous version. Please switch off the 'Track Changes' option in Microsoft Office files as these will appear in the published version.

Research data
This journal encourages and enables you to share data that supports your research publication where appropriate, and enables you to interlink the data with your published articles. Research data refers to the results of observations or experimentation that validate research findings. To facilitate reproducibility and data reuse, this journal also encourages you to share your software, code, models, algorithms, protocols, methods and other useful materials related to the project.
Below are a number of ways in which you can associate data with your article or make a statement about the availability of your data when submitting your manuscript. If you are sharing data in one of these ways, you are encouraged to cite the data in your manuscript and reference list. Please refer to the "References" section for more information about data citation. For more information on depositing, sharing and using research data and other relevant research materials, visit the research data page.

**Data linking**

If you have made your research data available in a data repository, you can link your article directly to the dataset. Elsevier collaborates with a number of repositories to link articles on ScienceDirect with relevant repositories, giving readers access to underlying data that gives them a better understanding of the research described.

There are different ways to link your datasets to your article. When available, you can directly link your dataset to your article by providing the relevant information in the submission system. For more information, visit the database linking page.

For supported data repositories a repository banner will automatically appear next to your published article on ScienceDirect.

In addition, you can link to relevant data or entities through identifiers within the text of your manuscript, using the following format: Database: xxxx (e.g., TAIR: AT1G01020; CCDC: 734053; PDB: 1XFN).

**Mendeley Data**

This journal supports Mendeley Data, enabling you to deposit any research data (including raw and processed data, video, code, software, algorithms, protocols, and methods) associated with your manuscript in a free-to-use, open access repository. During the submission process, after uploading your manuscript, you will have the opportunity to upload your relevant datasets directly to Mendeley Data. The datasets will be listed and directly accessible to readers next to your published article online.

For more information, visit the Mendeley Data for journals page.

**Data in Brief**

You have the option of converting any or all parts of your supplementary or additional raw data into one or multiple data articles, a new kind of article that houses and describes your data. Data articles ensure that your data is actively reviewed, curated, formatted, indexed, given a DOI and publicly available to all upon publication. You are encouraged to submit your article for Data in Brief as an additional item directly alongside the revised version of your manuscript. If your research article is accepted, your data article will automatically be transferred over to Data in Brief where it will be editorially reviewed and published in the open access data journal, Data in Brief. Please note an open access fee of 600 USD is payable for publication in Data in Brief. Full details can be found on the Data in Brief website. Please use this template to write your Data in Brief.

**MethodsX**

You have the option of converting relevant protocols and methods into one or multiple MethodsX articles, a new kind of article that describes the details of customized research methods. Many researchers spend a significant amount of time on developing methods to fit their specific needs or setting, but often without getting credit for this part of their work. MethodsX, an open access journal, now publishes this information in order to make it searchable, peer reviewed, citable and reproducible. Authors are encouraged to submit their MethodsX article as an additional item directly alongside the revised version of their manuscript. If your research article is accepted, your methods article will automatically be transferred over to MethodsX where it will be editorially reviewed. Please note an open access fee is payable for publication in MethodsX. Full details can be found on the MethodsX website. Please use this template to prepare your MethodsX article.

**Data statement**

To foster transparency, we encourage you to state the availability of your data in your submission. This may be a requirement of your funding body or institution. If your data is unavailable to access or unsuitable to post, you will have the opportunity to indicate why during the submission process, for example by stating that the research data is confidential. The statement will appear with your published article on ScienceDirect. For more information, visit the Data Statement page.

**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, at no cost, receive a customized Share Link providing 50 days free access to the final published version of the article on ScienceDirect. The Share Link can be used for sharing the article via any communication channel, including email and social media. 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. Corresponding authors who have published their article gold open access do not receive a Share Link as their final published version of the article is available open access on ScienceDirect and can be shared through the article DOI link.

**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.

© Copyright 2018 Elsevier | https://www.elsevier.com