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# Empirical Parameters for Solvent Acidity, Basicity, Dipolarity, and Polarizability of the Ionic Liquids [BMIM][BF<sub>4</sub>] and [BMIM][PF<sub>6</sub>]

ARTICLE *in* THE JOURNAL OF PHYSICAL CHEMISTRY B · MARCH 2015

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## Information for Authors of Papers (Revised May 2015)

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## JOURNAL SCOPE

*The Journal of Physical Chemistry A/B/C* is devoted to reporting new and original experimental and theoretical basic research of interest to physical chemists, biophysical chemists, and chemical physicists. Review and Feature Articles, which include extensive discussions on previously published literature, are by invitation only (please refer to the next section on Manuscript Types).

An essential criterion for acceptance of research articles in the journal is that they provide **new physical insight**. Manuscripts that are essentially reporting data or applications of data are, in general, not suitable for publication in *JPC A/B/C*.

### ***JPC A* (Isolated Molecules, Clusters, Radicals, and Ions; Environmental Chemistry, Geochemistry, and Astrochemistry; Theory)**

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- A2 Spectroscopy, Photochemistry, and Excited States
- A3 Environmental, Combustion, and Atmospheric Chemistry;  
Aerosol Processes, Geochemistry, and Astrochemistry
- A4 Molecular Structure, Quantum Chemistry, and General Theory

## **JPC B (Biophysical Chemistry, Biomaterials, Liquids, and Soft Matter)**

- B1 Biophysical Chemistry and Biomolecules
- B2 Biomaterials, Surfactants, and Membranes
- B3 Liquids; Chemical and Dynamical Processes in Solution
- B4 Glasses, Colloids, Polymers, and Soft Matter

## **JPC C (Energy Conversion and Storage, Optical and Electronic Devices, Interfaces, Nanomaterials, and Hard Matter)**

- C1 Energy Conversion and Storage; Energy and Charge Transport
- C2 Surfaces, Interfaces, Porous Materials, and Catalysis
- C3 Plasmonics, Optical Materials, and Hard Matter
- C4 Physical Processes in Nanomaterials and Nanostructures

## **Guidelines for Nanomaterial Papers**

To be appropriate for publication in *JPC A/B/C*, nanomaterial papers should demonstrate an improved understanding of a physical process. Papers that emphasize nanomaterial synthesis and characterization are not appropriate for the Journal.

## **Guidelines for Theory Papers**

To be appropriate for publication in *JPC A/B/C*, theory papers must satisfy at least one of the following criteria:

1. provide significant new physical insight into an experimentally relevant system or process
2. present a new theoretical or computational methodology of general interest

## **MANUSCRIPT TYPES**

**Note that all Letters or Communications should be submitted to *The Journal of Physical Chemistry Letters*.**

**Articles** should report original research having significant new physical insight that is expected to have a definable impact on the advancement of science, technology, and the field of physical chemistry. Manuscripts should cover the research with thoroughness and clarity but should be as concise as possible. Articles are scheduled for publication in the order of acceptance within limitations of available space. A table of contents (TOC) graphic is required for use in the Web edition of the journal.

**Feature Articles** are usually published by invitation. However, authors in important and active research fields of interest to physical chemists are encouraged to propose such articles.

Two-page proposals should be sent to the Deputy Editors of the corresponding journal section for consideration. Contact information for the Deputy Editors can be found on the masthead of each journal section.

For Feature Article submissions, the author should provide a clear, concise, and critical status report of the field as an introduction to the article. The author's own contribution and its

relationship to other work in the field should constitute the main body of the article. Controversies, if they exist, should also be outlined. Possible future directions and the significance of the research area to the field of physical chemistry should be pointed out. Feature Articles are limited to ~8 printed pages (equivalent to ~40 pages of double-space-typed text with figures, tables, references). A brief biography for each author of the Feature Article must be included. Photograph(s) may also be included with the biography. A TOC graphic is required for use in the Web edition of the journal.

**Review Articles** are strictly reviews of active and rapidly changing fields with little or no new data reported. They are ~8 pages long (~40 typed pages). Authors are encouraged to submit two-page proposals to the Deputy Editor of the corresponding journal section for consideration. A brief biography for each author of the Review Article must be included. Photograph(s) may also be included with the biography. A TOC graphic is required for use in the Web edition of the journal.

**Comments** are significant remarks on work previously published (usually in *JPC A/B/C*) and are restricted to approximately one page (1000 words or equivalent) including tables, figures, and text. There is no abstract. Comments are subject to critical review. If Comments are concerned with the work of other authors, the Editors will generally permit those authors to reply if approved by the Reviewers. It is essential that the discussion focus on scientific issues in both the Comment and the Reply.

**Additions and Corrections** may be used to address important issues or correct errors and omissions of consequence that arise after publication of an article. Additions and Corrections may be requested by the author(s) or initiated by the Editor after discussions with the corresponding author. Readers who detect errors of consequence in the work of others should contact the corresponding author of that work. All Additions and Corrections are subject to approval by the Editor, and minor corrections and additions will not be published. Additions and Corrections from authors should be submitted via the ACS Paragon Plus environment by the corresponding author for publication in the “Addition/Correction” section of the Journal. The corresponding author should obtain approval from all of the article coauthors prior to submitting an Addition and Correction or provide evidence that such approval has been solicited. The Addition and Correction should include the original article title and author list, citation including DOI, and details of the correction. For proper formatting, see examples in a current issue of the Journal.

**Retractions.** Articles may be retracted for scientific or ethical reasons. Articles that contain seriously flawed or erroneous data such that their findings and conclusions cannot be relied upon may be retracted in order to correct the scientific record. Retractions may be requested by the article author(s) or by the journal Editor(s), but are ultimately published at the discretion of the Editor. When an article is retracted, a notice of Retraction will be published containing information about the original article title, author list, and the reason for the Retraction. Retracted articles will be accompanied by the related Retraction notice and will be marked as “Retracted”. The originally published article will remain on the web except in extraordinary circumstances (e.g. where deemed legally necessary or if the availability of the published content poses public health risks). The American Chemical Society follows guidance from the Committee on Publication Ethics (COPE) when considering retractions; for more information see: <http://publicationethics.org/>.

**Special Issues** are published throughout the year. These issues may be a Memorial, Festschrift, or collection of papers from a Meeting or Symposium. *JPC A/B/C* also publishes Special Sections, which are placed at the front of an issue (followed by regular journal content). Suggestions for Special Issue or Special Section topics may be directed to the Deputy Editors of the corresponding journal section. As a general guideline, full Special Issues contain at least 40 Articles, and Special Sections have approximately 20 Articles.

## **MANUSCRIPT PREPARATION**

### **Manuscript Format**

Manuscripts must be prepared using accepted word-processing software, and all parts must be double-spaced. All pages must be numbered consecutively starting with the title page and including tables and figures. A standard font, in a size of 12 points or greater, must be used.

**Standard American English usage is required. Authors who are not familiar with standard American English are urged to seek assistance; deficiencies in grammar may be a serious hindrance during the review process.** For more information, authors may visit the [Language Editing Services](#) listed under the Publishing Tools tab of the author & Reviewer Resource Center.

*The ACS Style Guide* (3rd ed., 2006; ISBN 13:9780841239999) is available at <http://pubs.acs.org/page/books/index.html>. The Third Edition is the definitive source for all information needed to write, review, submit, and edit scholarly and scientific manuscripts. Refer to a current issue of the Journal for general style.

The various sections of the manuscript should be assembled in the following sequence:

- Title, Authorship, and Affiliations (single page)
- Manuscript Title (in Title Case)
- Abstract (single page)
- Introduction
- Experimental and/or Theoretical Methods (including embedded Figures, Figure Captions, and Tables)
- Results and Discussion (including embedded Figures, Figure Captions, and Tables)
- Conclusions
- Acknowledgment/Dedication
- Supporting Information Description
- References (Manuscript titles should be provided and they should be in title case or sentence case. Mixed cases are not acceptable.)
- Table of Contents Image (at the beginning or end of the manuscript) and labelled accordingly.
- Author Biographies (for Feature Articles & Review Articles only)

- Supporting Information: submitted as separate files and not repeated in the manuscript (proposed cover art images should be submitted as Supporting Information for Review Only)

## Title

The title should be specific and informative and be in Title Case. Using keywords in the title assists in effective literature retrieval. The title, authorship, and institutional affiliations should be included on a single page. Avoid using common phrases such as “investigation”, “study,” “demonstration”, or “performance evaluation”, uncommon acronyms, and words such as “First”, “Novel”, “Facile”, and “One Pot” in the title and abstract.

## Authorship

Be consistent in authorship designation on the manuscript and on all correspondence. First name, middle initial, and last name are preferred for correct identification, but omit titles. Give the complete mailing address of the institution where the work was conducted and identify the affiliation of each author. If the current address of an author is different, include it in a footnote on the title page. The corresponding author to whom inquiries about the paper should be addressed must be marked with an asterisk; provide the telephone number, fax number, and e-mail address of this correspondent.

## Abstract

The abstract should be a clear, concise, one paragraph summary (100–200 words). It should be informative rather than descriptive, giving scope, purpose, experimental approach, significant results, and major conclusions. Do not cite references, tables, figures, or sections of the paper in the abstract. Do not use graphics, equations, or tables in the Abstract because this material will not display in secondary sources (e.g., *Chemical Abstracts*). Abbreviations and acronyms should be defined upon first usage. Authors’ abstracts are used directly for *Chemical Abstracts*. Follow the recommended format when preparing the abstract. Representative abstracts are shown below in the [Appendix](#).

## Introduction

Discuss relationships of the study to previously published work but do not reiterate or attempt to provide a complete literature survey. The purpose or reason for the research being reported and its significance, originality, or contribution to new knowledge in the field should be clearly and concisely stated. Do not include or summarize current findings in this section.

## Experimental and/or Theoretical Methods

**General Information.** Complicated chemical equations, schemes, and structures should be supplied as artwork, ready for publication. Schemes and charts should be numbered consecutively with Arabic numbers. Capital, lowercase, and Greek letters should be easily discernible or identified if ambiguity might result. Complicated superscripts and subscripts should be avoided. Fractional exponents should be used instead of root signs. [Tables](#), [Figures](#), and [Figure Captions](#) should be embedded within the Experimental/Theoretical Methods section.

Authors should consult a current copy of the Journal and [The ACS Style Guide](#) for examples of style and general recommendations. See also: Mills, I.; et al. *Quantities, Units and Symbols in Physical Chemistry*, 2nd ed.; Blackwell Scientific Publications: Oxford, U.K., 1993.

**Hazards.** Any unusual hazards in the chemicals, equipment, or procedures used in an investigation should be clearly identified.

## Results/Discussion

Results and Discussion may be presented in separate sections or combined into a single section, whichever format conveys the results in the most lucid fashion. The author should discuss the significance of observations, measurements, or computations and should also point out how these contribute to the scientific objectives indicated in the Introduction. [Tables](#), [Figures](#), and [Figure Captions](#) should be embedded within the text.

## Conclusions

A brief summary should be given for the principal conclusions of the work.

## Appendices

Appendices should only be used when a specific equation or result needs to be derived. Otherwise, authors should use Supporting Information.

## Acknowledgment/Dedication

Acknowledgments of financial assistance for the conduct of research, citations of theses, or indications of presentation at a research meeting should be brief and placed in this section. Dedications are not recommended and must reference scientific contributions without being overly personal. Statements deemed inappropriately personal will be removed by the Journal office staff.

## Supporting Information Paragraph

If the manuscript is accompanied by any supporting information for publication, a brief description of the supplementary material is required in the manuscript. The appropriate format is:

**Supporting Information.** Brief statement in nonsentence format listing the contents of the material supplied as Supporting Information.

## References

References to the literature should be numbered in one consecutive series by order of appearance in the text, with the text citations presented as non-parenthesized superscript Arabic numbers. Authors should consult [The ACS Style Guide](#) for the appropriate style to use in citations of journal papers, books, and other publications. References will be linked to various electronic sources (e.g., the corresponding abstract from Chemical Abstracts Service, full text from other American Chemical Society Journals, etc.); therefore, the accuracy of references is critical. Authors are responsible for the accuracy of the references. It is the responsibility of the Author(s) to ensure that cited references have not been retracted.

Unnecessarily long lists of references, including excessive self-citation, should be avoided; however, authors must provide references to all relevant publications in which portions of the present work have appeared. [Citation of recent papers published in physical chemistry and chemical physics journals that highlight the significance of the work to the general readership is encouraged.](#)

Journal references should contain author names, article title (preferably in Title Case), abbreviated journal title, year, volume, and pages (first–last):

McMahon, D. P.; Cheung, D. L.; Troisi, A. Why Holes and Electrons Separate So Well in Polymer/Fullerene Photovoltaic Cells. *J. Phys. Chem. Lett.* **2011**, 2, 2737–2741.

For work published online (e.g., ASAP), the DOI should be furnished in addition to the standard bibliographic information. The DOI is an accepted form of citation before and after the article appears in an issue.

Brown, A.; Ngai, T. Y.; Barnes, M. A.; Key, J. A.; Cairo, C. W. Substituted Benzoxadiazoles as Fluorogenic Probes: A Computational Study of Absorption and Fluorescence. *J. Phys. Chem. A* **2011**, DOI: 10.1021/jp2079296.

Book references should contain author names, book title (written in title case), publisher, city, and year:

Datta, S. *Electronic Transport in Mesoscopic Systems*; Cambridge University Press: Cambridge, U.K., 1995.

References with more than 10 authors should list the first 10 authors followed by “et al.” The complete author list may also be put into Supporting Information.

In literature references, journal abbreviations should be those used by Chemical Abstracts Service [see *Chemical Abstracts Service Source Index (CASSI) 1907–2004*]. For references to *JPC A/B/C*, part A, B, or C must be specified for papers published in 1997 forward.

Additional data and peripheral discussion should be placed in the Supporting Information (SI) rather than in the References. Supplementary references may be placed in Supporting Information. Submitted papers should not depend on unpublished material, and excessive reference to material in press or reports not readily found in research libraries is discouraged. If pertinent references are in press or unpublished for any reason, upload copies of the references as Supporting Information for Review Only to enable Reviewers to evaluate the manuscript. Papers accepted for publication are cited as “in press”; the DOI should be given if the paper is published online. Note that the use of unpublished work by others requires their permission.

## Tables

Tables should be numbered consecutively with Arabic numbers. Preferably, each table should be embedded in the manuscript after it is first referenced. Alternatively, they can be put at the end of the manuscript. Each table must have a brief title that describes its contents. The title should be understandable without reference to the text. Details should be put in footnotes, not in the title. Tables should be used when the data cannot be presented clearly as narrative, when many numbers must be presented, or when more meaningful interrelationships can be conveyed by a tabular format. Tables should supplement, not duplicate, information presented in the text and figures. Tables should be simple and concise.

Column headings should be lowercase, except for symbols and proper names. Define nonstandard abbreviations in footnotes. Footnotes in tables should be given letter designations and be cited in the table by italic superscript letters. The sequence of letters should proceed by line rather than by column. If a reference is cited both in the text and in a table, a lettered footnote that refers to the numbered reference in the text should be inserted in the table.



In setting up tables, authors should keep in mind the area of the Journal's page (17.8 cm × 25.0 cm) and the column width (8.5 cm) and should make tables conform to the limitations of these dimensions.

## Figure Captions

A caption giving the figure number and a brief description, preferably only one or two sentences, must be included for each figure. Do not use color in the captions. If color is necessary, include a key in the artwork itself.

## Figures

All figures must be mentioned in the text in consecutive order and must be numbered with Arabic numbers. Preferably, each figure should be embedded in the manuscript following the first reference to the figure. It is also possible to put figures at the end of the manuscript. If symbols are used, it is preferable to place a key in the artwork itself, not in the caption. Ensure that any symbols and abbreviations used in the text agree with those in the figures. See more detailed information on submission of graphics under [Artwork](#) below.

## Table of Contents (TOC) Image

A TOC graphic is required for Articles, Feature Articles, and Review Articles. TOC graphics will appear only in the Web edition of the journal and will also be published in the Abstract of the manuscript. The illustration should capture the Reader's attention and, in conjunction with the manuscript title, give the Reader a quick visual impression of the essence of the paper without providing specific results. The graphic should be in the form of a structure, graphical image, photograph, reaction scheme, or equation. Photos of people are not allowed. The author must submit the graphic in the actual size to be used for the TOC, fitting in an area no larger than 3.25 in. × 1.75 in. (approx. 8.5 cm × 4.75 cm). Larger images will be reduced to fit within those dimensions. The type size of labels and other symbols within the graphic must be legible. Tables and spectra are not acceptable. Provide the TOC graphic upon submission of the paper as the last page of the manuscript.

## Author Biographies

Feature Articles and Review Articles include a brief biography for each author of the paper. Biographies should contain approximately four to five sentences describing the author's education, previous and current positions, and scientific interests. Photograph(s) are optional but welcome. Photos of authors posed individually are acceptable; however, if more than five authors wish to include photographs, a group picture is required. Biographies (and photographs) are to be submitted as part of the manuscript.

## Preparing and Submitting Manuscripts Using TeX/LaTeX

Authors who submit manuscripts composed in TeX/LaTeX should submit a PDF file of the manuscript along with the native TeX/LaTeX manuscript package as a ZIP Archive. Use of the freely available **achemso style package** to help prepare your submission is strongly encouraged. The **achemso** package provides the official macros (**achemso.cls**) and BibTeX styles (**achemso.bst** and **biochem.bst**) for submission to ACS journals. The package and instructions are available from [CTAN, the Comprehensive TeX Archive Network](#). For complete information on submitting TeX/LaTeX files, see [Preparing and Submitting Manuscripts Using TeX/LaTeX](#).

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## ARTWORK

### General Considerations

All graphics must be created in digital format. Although tiff, jpg, and pdf formats are preferred, a list of all graphic file options may be found on [the ACS Website](#).

In general, graphics should be copied from the graphics program window and pasted directly into the manuscript. The author should make sure that the graphic is at the appropriate resolution (see below) before copying and pasting. The graphics should be resized in the graphics program and then pasted into the manuscript. The author should not resize graphics after they are pasted into a text file. This instruction is true regardless of the graphic format (cds, tif, eps, pdf, etc.). It may help to print the manuscript on a laser printer to ensure all artwork is clear and legible.

### Quality

The quality of the graphics in the Journal depends on the quality of the originals provided by the author. Figures cannot be modified or enhanced by the Journal production staff. Images produced from continuous-tone graphics such as photographs should have high contrast. The RGB and resolution requirements are essential for producing high-quality graphics within the published manuscript. Graphics submitted in CMYK or at lower resolutions may be used; however, the colors may not be consistent, and graphics of poor quality may not be able to be improved.

### Resolution

Digital graphics pasted into manuscripts should have the following minimum resolution:

Black and white line art	1200 dpi
Grayscale art	600 dpi
Color art (RGB color mode)	300 dpi

## Size

Graphics must fit a one- or two-column format on the Journal page. For efficient use of Journal space, single-column graphics are preferred.

	single (preferred)	double
width		
minimum		10.5 cm (4.13 in.)
maximum	8.25 cm (3.25 in.)	17.78 cm (7 in.)
maximum depth	24 cm (9.5 in.)	24 cm (9.5 in.)

For best results, **submit graphics in the actual size at which they should appear in the published version.** Original graphics that do not need to be reduced to fit a single or double column will yield the best quality. Lettering should be no smaller than 4.5 points in the final published format. Helvetica or Arial fonts work well for lettering. Dashed, dotted, and solid lines should be no thinner than 0.5 point. Lettering and lines should be of uniform density and the lines unbroken. If the submitted artwork must be reduced, larger lettering and thicker lines should be used so that, when reduced, the artwork meets the above mentioned criteria.

Avoid using complex textures and shading to achieve a three-dimensional effect. Parallel or cross-hatched lines should be used to fill enclosed areas with a pattern.

## Color

The use of color to enhance the clarity of complex structures, figures, spectra, schemes, etc. is encouraged. Color graphics will appear in color in both print and Web products. Color reproduction of graphics will be provided **at no cost to the author.** For manuscripts containing color, a surcharge is added to the standard cost of paper reprints. Graphics intended to appear in black and white or grayscale should not be submitted in color.

## Chemical Structures

Structures should be produced with the use of a drawing program such as ChemDraw. Authors using the current versions of ChemDraw will find the necessary parameters incorporated into this program ("ACS Document 1996"). Authors using older versions of ChemDraw should use the following settings:

(1) As drawing settings, select:

chain angle	120°
bond spacing	18% of width
fixed length	14.4 pt (0.508 cm, 0.2 in.)
bold width	2.0 pt (0.071 cm, 0.0278 in.)
line width	0.6 pt (0.021 cm, 0.0084 in.)
margin width	1.6 pt (0.056 cm, 0.0222 in.)
hash spacing	2.5 pt (0.088 cm, 0.0347 in.)

(2) As text settings, select:

font	Arial/Helvetica
size	10 pt

(3) Under the preferences, choose:

units	points
tolerances	5 pixels

(4) Under page setup, choose:

paper	US Letter
scale	100%

(5) Use the ChemDraw ruler or appropriate margin settings to create charts, equations, and schemes with maximum widths of 8.25 cm (one-column format) or 17.8 cm (two-column format). If the foregoing drawing-setting lengths and widths are selected in centimeters rather than in points or inches, the ChemDraw ruler will be calibrated in centimeters.

(6) Copy and paste the graphics into the manuscript text file at the appropriate locations. Do not use the “insert” function.

Authors using other drawing packages should set the program parameters to match the above values as closely as possible.

## Schemes

Sequences of reactions are called schemes and should be numbered consecutively with Arabic numbers. Schemes may have brief titles describing their contents and footnotes, if needed, for further detail.

## Charts

Groups of structures that do not show reactions are called charts and should be numbered consecutively with Arabic numbers. Charts may have brief titles describing their contents and footnotes, if needed, for further detail.

## Cover Art

Cover art images may be submitted with any type of manuscript, although publication preference will be given to Feature Articles, Review Articles, and Articles that review very favorably and manuscripts by authors who review regularly for the journal. All authors are encouraged to submit images for consideration as cover art. Cover images must capture the importance and excitement of the science discussed within the manuscript while also being “eye-catching” and aesthetically appealing. Submitted images are approved by the Managing and Deputy Editors. Cover images approved for publication may be modified by the ACS graphic artist pending the Author’s final approval. Images to be considered for the cover must be approximately 8 in. × 8 in. (20.32 cm × 20.32 cm) with a minimum of 300 dpi resolution (2400 × 2400 pixels, ~10 MB in file size). Do not reduce the image size or resolution when uploading it into ACS Paragon Plus. Preferred image files are eps, tif, jpg, and png (not pdf). Cover art files should be submitted as Supporting Information for Review Only. Images chosen for the cover will be published at **no cost to the author**.

## Web-Enhanced Objects

The Journal encourages the submission of Web-enhanced objects (WEOs) for the presentation of graphical results that go beyond conventional print publication capabilities, including 3D rotatable figures, animations, spectra, video, and sound. Links to WEOs will appear in the Web HTML version of the paper. Files suitable for this form of publication should be viewable with commonly available Internet plug-ins (e.g., Chime) or helper applications (Rasmol, Mercury, etc.). Authors should submit WEOs via the ACS Paragon Plus Website as part of their submission and clearly indicate to the Editor that the material is WEO material. Descriptions of WEOs should be noted in the appropriate places within the graphic caption or text of the paper, noting the type of file and format. Example: "A 3D rotatable image in xyz format is available." For more information, go to <http://pubs.acs.org/page/4authors/submission/weo.html>.

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Authors may want to have their manuscripts edited professionally before submission to improve clarity. The ACS ChemWorx English Editing Service can assist you in improving and polishing the language in your manuscript. You can learn more about the services offered, at <http://es.acschemworx.acs.org>.

## SUBMISSION OF MANUSCRIPTS

Manuscripts must be submitted via the ACS Paragon Plus Environment (<http://paragonplus.acs.org/login>). Complete instructions and an overview of the electronic online submission process are available through the secure ACS Paragon Plus website. Authors must also submit all revisions of manuscripts via the ACS Paragon Plus Environment. The online submission site employs state-of-the-art security mechanisms to ensure that all electronically submitted papers are secure. These same security mechanisms are utilized throughout the peer review process and permits access only to Editors and Reviewers who are assigned to a particular paper.

Authors whose manuscripts are published in the Journal will be expected to review manuscripts submitted by other researchers from time to time.

In addition to the information requested by the ACS Paragon Plus submission system, all manuscripts must be accompanied by a **cover letter** that contains **clear and precise** information about the submission. Please use official letterhead of the author's affiliation that lists the telephone number, fax number, and e-mail address. The cover letter must include all of the following points:

- Manuscript title.
- Authors, including the full names (preferred), titles, and positions of ALL authors (undergraduate or graduate student, post-doc, professor, etc.). All authors must have accounts in ACS Paragon Plus. The corresponding author must be a Senior author (Professor, Research Associate, or similar), not a student. Please list corresponding author's name, address, telephone number, and current institution e-mail address.
- Manuscript type (Article, Feature Article, Review Article, Comment, Special Issue, or Addition/Correction).
- Journal Part and Section that is most appropriate for your manuscript based on scope. [Please note that the final decision on Journal Part and Section remains with the Editors.]

- **Explanation of the manuscript's significance, including its originality, new physical insights, and contribution to new knowledge in the field.**
- Notification if manuscript contains a dedication statement.
- List of at least three to five recommended Reviewers for the manuscript. Include the institution, telephone number, and e-mail addresses for each suggested Reviewer.

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- List all authors on the manuscript correctly with current and accurate e-mail addresses for each. It is essential to provide correct e-mail addresses for Coauthors because ACS Paragon Plus will notify these authors via e-mail that the manuscript has been submitted. Entering inaccurate e-mail addresses will delay the review process if Coauthors cannot be contacted. Secondary e-mail addresses are encouraged to prevent delays. Use of fictitious e-mail addresses will be considered an ethical violation.
- Ensure that all Coauthors are aware of the submission. [See [Ethics](#) section for details.]
- If the manuscript is written in Microsoft Word, turn off the "Line Numbers and Track Changes" feature (after accepting or rejecting all changes) before uploading into ACS Paragon Plus.
- Check that the manuscript type matches the designation in the cover letter.
- Accurately answer custom questions about prior submission history.
- Make sure that the references are formatted correctly.
- Include a Table of Contents Graphics image. TOCs should not contain offensive material, and copyright permission will be requested if material has been published elsewhere.

**Patent Activities and Intellectual Property Issues.** Authors are responsible for ensuring that all patent activities and intellectual property issues are satisfactorily resolved prior to first publication (Just Accepted, ASAP, or in an issue). Acceptance and publication will not be delayed for pending or unresolved issues of this nature.

**Funding Sources.** When submitting a manuscript to the Journal via ACS Paragon Plus, the submitting author is asked to identify the funding sources for the work presented in the manuscript. Identifying funding sources is optional during submission of an original manuscript. Funding source information is required when a revised manuscript is submitted. Funding sources can be selected from the list of agencies included in the FundRef Registry <http://www.crossref.org/fundref/>.

## **ETHICS**

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## APPENDIX: Examples of Abstracts

One or two sentences providing background on the problem.

Two or three sentences summarizing the methodology and results.

A concluding sentence highlighting the significance of the study.

Nitrogen oxides, including nitrogen dioxide and nitric acid, react with mineral dust particles in the atmosphere to yield adsorbed nitrate. Although nitrate ion is a well-known chromophore in natural waters, little is known about the surface photochemistry of nitrate adsorbed on mineral particles. In this study, nitrate adsorbed on aluminum oxide, a model system for mineral dust aerosol, is irradiated with broadband light ( $\lambda > 300$  nm) as a function of relative humidity (RH) in the presence of molecular oxygen. Upon irradiation, the nitrate ion readily undergoes photolysis to yield nitrogen-containing gas-phase products including NO<sub>2</sub>, NO, and N<sub>2</sub>O, with NO being the major product. The relative ratio and product yields of these gas-phase products change with RH, with N<sub>2</sub>O production being highest at the higher relative humidities. Furthermore, an efficient dark reaction readily converts the major NO product into NO<sub>2</sub> during post-irradiation. Photochemical processes on mineral dust aerosol surfaces have the potential to impact the chemical balance of the atmosphere, yet little is known about these processes. In this study, the impact that adsorbed nitrate photochemistry may have on the renoxification of the atmosphere is discussed. (*J. Phys. Chem. A* **2009**, *113*, 7818–7825).

Polymer-fullerene bilayer heterostructures are suited to study excitonic processes in conjugated polymers. Excitons are efficiently quenched at the polymer-fullerene interface, whereas the polymer-vacuum interface is often considered as an exciton-reflecting interface. Here, we report about efficient exciton quenching close to the polymer-vacuum interface of spin-coated MDMO-PPV (poly[2-methoxy-5-(2'-ethyl-hexyloxy)-*p*-phenylenevinylene]) films. The quenching efficiency is estimated to be as high as that of the polymer-fullerene interface. This efficient quenching is consistent with enhanced intermolecular interactions close to the polymer-vacuum interface due to the formation of a "skin layer" during the spin-coating procedure. In the skin layer, the polymer density is higher; that is, the intermolecular distances are shorter than in the rest of the film. The effect of exciton quenching at the polymer-vacuum interface should be taken into account when the thickness of the polymer film is on the order of the exciton diffusion length; in particular, in the determination of the exciton diffusion length. (*J. Phys. Chem. B* **2009**, *113*, 9104–9109).

Nanostructured metallic architectures have unique and highly attractive properties, including large optical field enhancements resulting in strong light scattering and absorption. Modification of prefabricated nanostructures by simple galvanic displacement (GD) allows for the design of new nanomaterials with enhanced optical properties. In this paper, we have studied the optical properties of two families of Ag fractals before and after GD in a Au(III) solution. The new nanomaterials showed significantly improved optical enhancing properties that allowed for straightforward and highly reproducible single-molecule detection by surface-enhanced resonance Raman scattering (SERRS). (*J. Phys. Chem. C* **2009**, *113*, 12897–12900).