Dear all,

Attach is a lecture given by Prof. Prashant Kamat at the Egypt-US ASI Conference a few weeks ago on ethical behavior and on how to conceive and write good papers. Prashant is Deputy Editor for J. Phys. Chem. Lett., and, like me (I am a senior editor of JPC), sees many instances where people do not act properly or ethical in the pursue of their research. I strongly recommend that you take a look at this presentation, and think seriously about the points it raises. This type of discussion should constitute part of your education as a scientist.

Francisco

Research Ethics

Prashant V. Kamat

Professor of Chemistry & Biochemistry
University of Notre Dame, Notre Dame IN 46556

Deputy Editor, Journal of Physical Chemistry Letters

Available at http://www.nd.edu/~pkamat

Based on the lectures of

Leonard V. Interrante
Editor-in-chief, Chemistry of Materials
Presented at in the Symposium on Scientific Publishing, ACS National Meeting, Atlanta, GA March 2006

On Being a Scientist: Third Edition
Committee on Science, Engineering, and Public Policy, National Academy of Sciences, National Academy of Engineering, and Institute of Medicine
http://www.nap.edu/catalog/12192.html

Where do we learn ethical decision making?

1. Mentor, advisor
2. Fellow graduate students
3. Family
4. Friends not in graduate school
5. Other faculty
6. Religious beliefs
7. Discussions in courses, labs, seminars
8. Professional organizations
9. Courses dealing with ethical issues

J. P. Swazey, K. S. Louis, and M. S. Anderson, “The ethical training of graduate students requires serious and continuing attention,” *Chronicle of Higher Education 9 (March 1994):B1–2; J. P. Swazey, “Ethical* problems in academic research,” *American Scientist 81(Nov./Dec. 1993):542–53.*

Obligations of researchers to adhere to professional standards

- To honor the trust that their colleagues place in them.
- To themselves. Irresponsible conduct in research can make it impossible to achieve a goal.
- To act in ways that serve the public.

On Being Scientist
http://www.nap.edu/catalog/12192.html
Available free for one download

Outline

Part I. Sharing Scientific Knowledge

- Research publication
- Authorship and collaborative Research
- Scientific misconduct – FFP & QRP
- Examples of scientific misconduct in literature

Part II. How to compose an effective scientific paper

- Getting ready with data
- First draft
- Structure of a scientific paper
- Selecting a journal

Scientific Knowledge

The object of research is to extend human knowledge beyond what is already known.

But an individual's knowledge enters the domain of science only after it is presented to others in such a fashion that they can independently judge its validity.

(NAP, "On Being a Scientist" 1995)

Sharing Scientific Knowledge

"Science is a shared knowledge based on a common understanding of some aspect of the physical or social world."

(NAP, "On Being a Scientist" 1995)

Presentations

Social conventions play an important role in establishing the reliability of scientific knowledge.

Publications in peer reviewed journals

Research results are privileged until they are published.

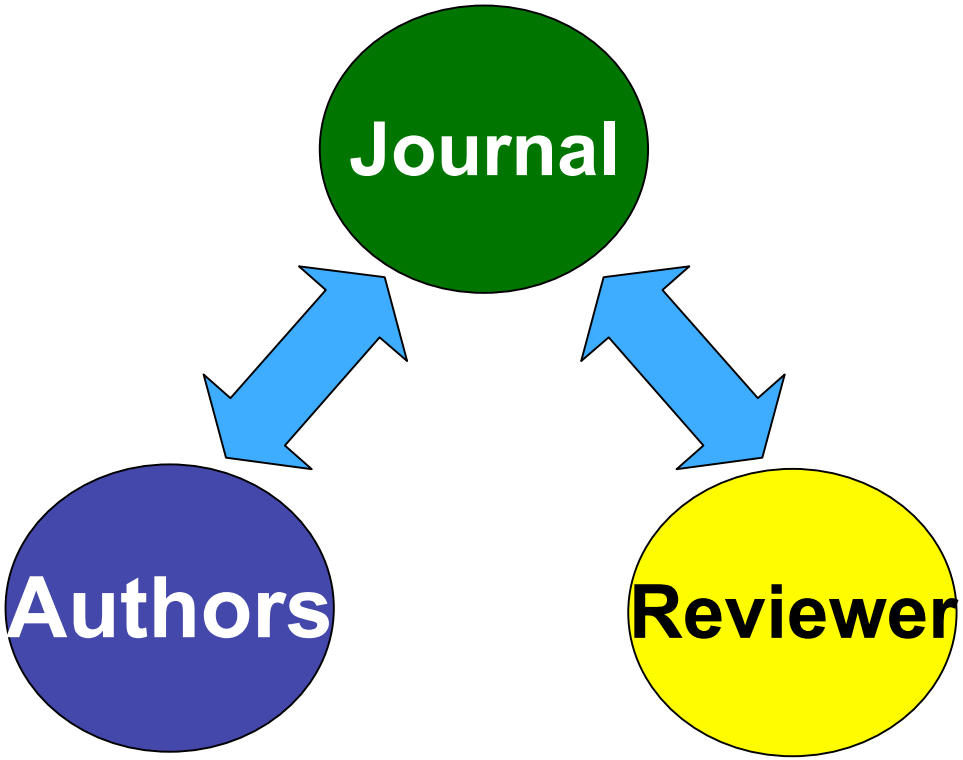
Thesis

Why Publish?

- "**A paper is an organized description of hypotheses, data and conclusions, intended to instruct the reader**." If your research does not generate papers, it might just as well not have been done."
  (G. Whitesides, Adv. Mater., 2004, 16, 1375)

- **"if it wasn't published, it wasn't done."**
  (E.H. Miller 1993)

Scientific Publication is a Team Effort



ACS Journals:http://pubs.acs.org/about.html

Authorship

- The list of authors establishes accountability as well as credit.
- Policies at most scientific journals state that a person should be listed as the author of a paper only if that person made a direct and substantial intellectual contribution to the design of the research, the interpretation of the data, or the drafting of the paper.
- The acknowledgments section can be used to thank those who indirectly contributed to the work.

Including “honorary,” “guest,” or “gift” authors dilutes the credit due the people who actually did the work, inflates the credentials of the added authors, and makes the proper attribution of credit more difficult.

(“On Being a Scientist” , NAP)

Author Responsibilities

Preparation and Submission of Manuscripts

Follow General Rules:

- Ensure work is new and original research.
- All Authors listed on ms are aware of submission and agree with content and support submission.
- Agree that the manuscript can be examined by anonymous reviewers.
- Provide copies of related work submitted or published elsewhere.
- Obtain copyright permission if figures/tables need to be reproduced.
- Include proper affiliation.

What is publishable….

Journals like to publish papers that are going to be widely read and <u>useful to the readers.</u>

- Papers that report **"original and significant" findings** that are likely to be of interest to a broad spectrum of its readers.
- Papers that are **well organized and well written**, with clear statements regarding how the findings relate to and advance the understanding/development of the subject.
- Papers that are **concise and yet complete** in their presentation of the findings.

What is not acceptable…

- Papers that are **routine extensions of previous reports** and that do not appreciably advance fundamental understanding or knowledge in the area.
- **Incremental / fragmentary reports** of research results.
- **Verbose, poorly organized, papers** cluttered with unnecessary or poor quality illustrations.
- **Violations of ethical guidelines**, including questionable research practices (QRP) and plagiarism of any type or degree (of others or of oneself).

Office of Research Integrity
US Department of Health and Human Services

http://ori.dhhs.gov/misconduct/definition_misconduct.shtml

Research Misconduct

Research misconduct means **Fabrication, Falsification, or Plagiarism (FFP)** in proposing, performing, or reviewing research, or in reporting research results.

(a) Fabrication is making up data or results and recording or reporting them.

(b) Falsification is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.

(c) Plagiarism is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit.

(d) Research misconduct does not include honest error or differences of opinion.

Data Manipulation

- Researchers who manipulate their data in ways that deceive others are violating both the basic values and widely accepted professional standards of science.
- They mislead their colleagues and potentially impede progress in their field or research.
- They undermine their own authority and trustworthiness as researchers.

Misleading data can also arise from poor experimental design or careless measurements as well as from improper manipulation.

When a mistake appears in a journal article or book, it should be corrected in a note, erratum (for a production error), or Additions/Corrections

Other Types of Ethical Violations

- Duplicate publication/submission of research findings; failure to inform the editor of related papers that the author has under consideration or “in press”
- Unrevealed conflicts of interest that could affect the interpretation of the findings
- Misrepresentation of research findings - use of selective or fraudulent data to support a hypothesis or claim

Definitions:
Plagiarism and Self-Plagiarism

- Plagiarism: using the ideas or words of another person without giving appropriate credit (Nat. Acad. Press document).
- Self-Plagiarism: The verbatim copying or reuse of one's own research (IEEE Policy statement).

Both types of plagiarism are considered to be unacceptable practice in scientific literature

ACS Publication Policy
Plagiarism statement for Ethical Guidelines

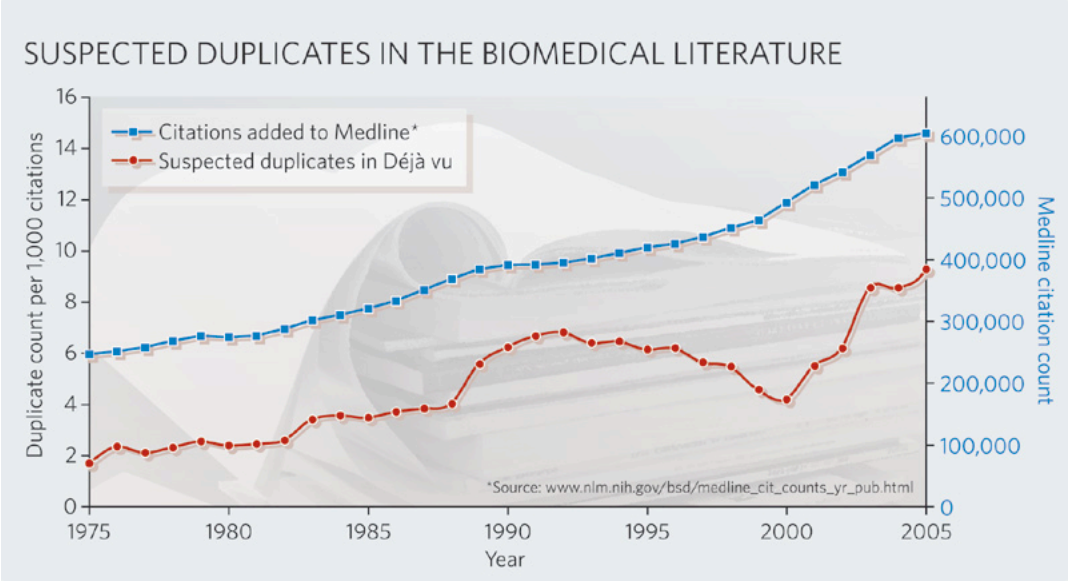
January 2009

B. 9. It is the responsibility of the author to ensure that the submitted manuscript is original and shall not contain plagiarized material. **Plagiarism is passing off another person's work as one's own, i.e., reusing text, results, or creative expression without explicitly acknowledging or referencing the original author or publication.**

Authors should be aware this includes **self-plagiarism, defined as the reuse of significant portions of the author's own published work or works, without attribution to the original source.** Examples of plagiarism include verbatim copying of published articles; verbatim copying of elements of published articles (e.g., figures, illustrations, tables); verbatim copying of elements of published articles with crediting, but not clearly differentiating original work from previously published work; and self-plagiarism.

It is the **responsibility of the author to obtain proper permission** and to appropriately cite or quote the material not original to the author. In this context, "quote" is defined as reusing other works with proper acknowledgement. Appropriate citation applies whether the material was written by another author or the author him or herself.

Pervasiveness of Duplication



Mounir Errami & Harold Garner *Nature* **451**, 397-399 (24 Jan 2008)

China and Japan, have estimated duplication rates that are roughly twice that expected for the number of publications they contribute to Medline. Perhaps the complexity of translation between different scripts, differences in ethics training and cultural norms contribute to elevated duplication rates in these two countries.

Citations

- Read the work before you cite.
- Important to cite the work correctly and completely.

Paper trail reveals references go unread by citing authors

Philip Ball

Many of the references cited in scientific papers have not been read by the authors citing them, according to an analysis of how errors in citations propagate through the literature.

It isn't easy to establish directly — and truthfully — whether citations have been reference being copied from someone else's citation list. The most common misprint appeared 78 times.

Based on the number of distinct misprints, the two researchers estimate that only 22–23% of citations followed from a reading of the original paper. And they postulate that this is typical of the scientific literature as a whole.

NATURE|VOL 420 | 12 DECEMBER 20002 p 594

Sooner or later .....
ethical violations get exposed

Some recent examples

24 MAY 2002 VOL 296 SCIENCE, p 1376

RESEARCH INTEGRITY

Pioneering Physics Papers Under Suspicion for Data Manipulation

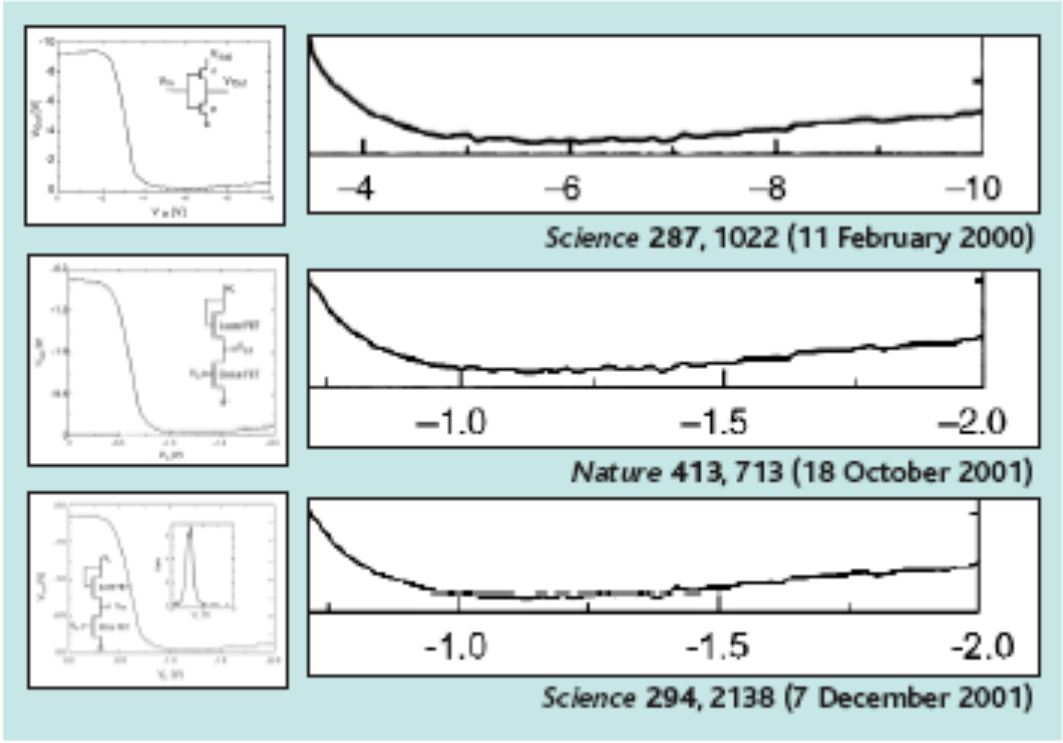
Recent discoveries at Bell Laboratories—the research arm of Lucent Technologies in Murray Hill, New Jersey—said to be of Nobel quality suddenly became mired in questions last week. Outside researchers presented evidence to Bell Labs management on 10 May suggesting possible manipulation of data involving five papers published in *Science*, *Nature*, and *Applied Physics Letters* over 2 years. In response, Bell Labs officials said that they are forming a committee of independent researchers to investigate. Their conclusions may not be known for months, but scientists who have seen the data are already saying that the potential fallout from the investigation could be devastating.

The Bell Labs papers describe a series of different experiments with organic conduc-

Angeles, and director of the California NanoSystems Institute: "It's hard to understand. I know these people. Most of them are good, careful scientists." "It's a little overwhelming," adds Lydia Sohn, a Princeton University physicist who helped bring some of the discrepancies to light. "It's just disturbing, and disappointing, and sad." The noise pattern is particularly disturbing, says Charles Lieber, a chemist and nanoscience expert at Harvard University in Cambridge, Massachusetts: "It's virtually impossible for me to believe that some of this wasn't made up."

Schön himself acknowledges that the similar noise pattern is "difficult to explain." But others affiliated with Bell Labs suggest privately that a systematic artifact in the measurement equipment might account for

24 MAY 2002 VOL 296 SCIENCE, p 1376



Striking resemblance. Published data from studies of different devices revealed a similarity in recorded "noise." Schön says the bottom figure was sent to *Science* by mistake (see correction, p. 1400).

Science

27 JULY 2007 VOL 317 SCIENCE

Retraction

WE WISH TO RETRACT OUR REPORT "*CDX2* GENE EXPRESSION AND TROPHECTODERM LINEAGE specification in mouse embryos" (*1*). Allegations of research misconduct were received by the University of Missouri-Columbia (MU) Provost, and an investigation found that the first author (K.D.) engaged in research misconduct by intentionally falsifying and fabricating digital images in the preparation of Figs. 4I; 4N; 4S; 2G; 3, J to L; S2, V to X; and S6, I to K accompanying the *Science* article. In addition, the original raw image files for the majority of the figures in the paper have not been located (the exceptions being the confocal scanning images in Figs. S1, S3, S4, S5, and S6), raising the possibility that the data they represent may also be suspect. We have decided to withdraw the article in its entirety in view of the fact that the paper was founded at least in part on falsified or fabricated images.

The corresponding author (R.M.R.) takes responsibility for placing excessive trust in his coworker and for not assuring that a complete set of raw data existed at the time the questions first arose about the paper. We deeply regret any scientific misconceptions that have resulted from the publication of this article.

The first author resigned from MU shortly after the allegations of research misconduct were received and could not be found to sign the retraction.

R. MICHAEL ROBERTS,[1] M. SIVAGURU,[2] H. Y. YONG[3]

[1]Division of Animal Sciences, University of Missouri, Columbia, MO 65211, USA. [2]Institute for Genomic Biology, University of Illinois, Urbana-Champaign, IL 61801, USA. [3]BK21 Dental Research Institute, College of Dentistry, Seoul National University, 28 Yongun-dong, Chongno-gu, Seoul 110-749, Korea.

Reference

1. K. Deb, M. Sivaguru, H. Y. Yong, R. M. Roberts, *Science* **311**, 992 (2006).

Original Paper
Oriented Assembly of Fe3O4 Nanoparticles into Monodisperse Hollow Single-Crystal Microspheres Yu et al, *J. Phys. Chem. B* 2006, *110,* 21667-21671 (Figure 3)

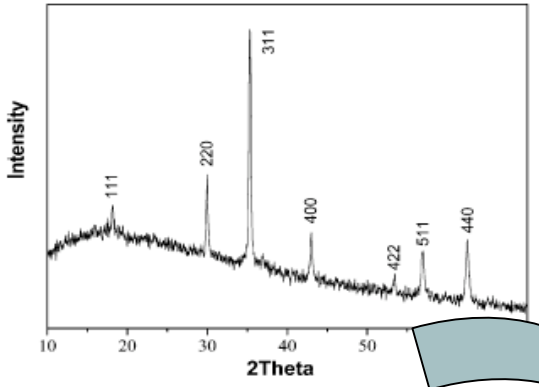
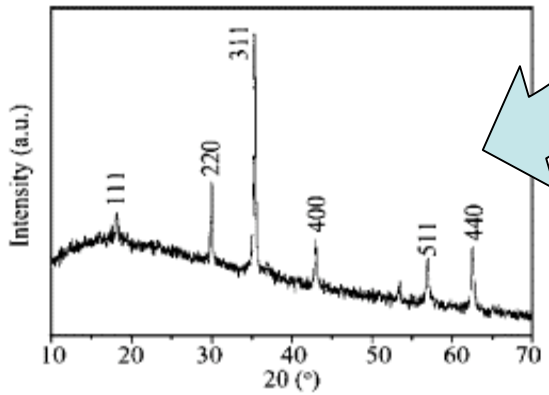
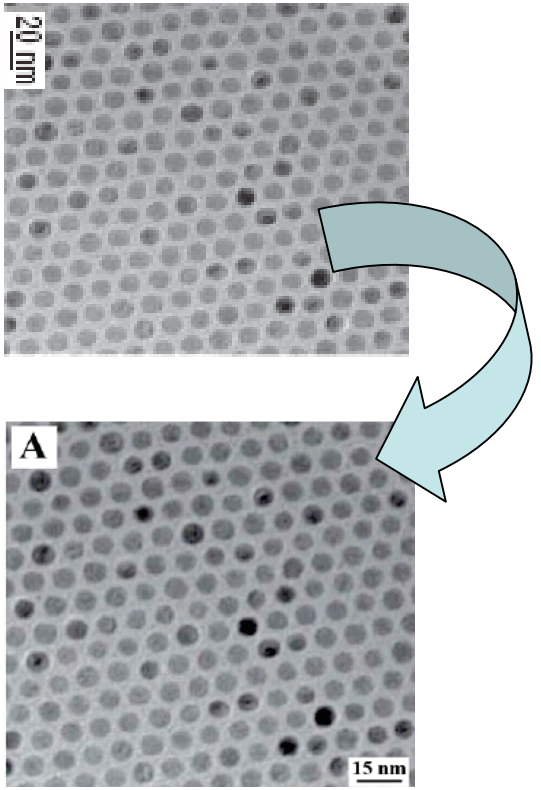


Figure 3. A typical XRD pattern of Fe_3O_4 hollow microspheres.



Original paper:
Ultra-large-scale syntheses of monodisperse nanocrystals, Park et al. Nature Materials, 2004, 3, 891 (Figure 3C)



Plagiarized paper:

Fabrication of Monodisperse Magnetic Fe3O4-SiO2 Nanocomposites with Core-Shell Structures Hua Fang,* Chun-yang Ma, Tai-li Wan, Mei Zhang, and Wei-hai Shi J. Phys. Chem C **2007,** *111,* 1065-1070

ACS

C&EN
CHEMICAL & ENGINEERING NEWS

FEBRUARY 18, 2008 | VOLUME 86, NUMBER 07 | PP. 37-38

A Massive Case Of Fraud

Journal editors are left reeling as publishers move to rid their archives of scientist's falsified research

William G. Schulz

A CHEMIST IN INDIA has been found guilty of plagiarizing and/or falsifying more than 70 research papers published in a wide variety of Western scientific journals between 2004 and 2007, according to documents from his university, copies of which were obtained by C&EN. Some journal editors left reeling by the incident say it is one of the most spectacular and outrageous cases of scientific fraud they have ever seen.

The culprit, sources say, is chemistry professor Pattium Chiranjeevi of Sri Venkateswara University in Tirupati, India. SVU conducted an investigation into Chiranjeevi's work after a journal editor presented evidence to university officials that the professor had plagiarized and possibly falsified several manuscript submissions. Chiranjeevi, who communicates through a wide variety of e-mail addresses, has not responded to multiple requests for comment by C&EN.

Chiranjeevi retains his teaching position at SVU, according to a university source who has requested anonymity. "He is a permanent employee of the university, and the administration cannot fire him easily," the source says. Instead, Chiranjeevi has been barred from research and research

A CHEMIST IN INDIA has been found guilty of plagiarizing and/or falsifying more than 70 research papers published in a wide variety of Western scientific journals between 2004 and 2007, according to documents from his university, copies of which were obtained by C&EN. Some journal editors left reeling by the incident say it is one of the most spectacular and outrageous cases of scientific fraud they have ever seen.

Can Stem Cells Become Sperm Cells?

A Potential New Hope for Infertile Men

abcNEWS Health

ABC News

By RADHA CHITALE

ABC News Medical Unit

July 9, 2009

Professor Karim Nayernia, is seen at Newcastle University

Now, new research may provide a glimmer of hope that infertile men may one day be able to contribute to the gene pool.

"We have a system which enables us for the first time to produce human sperm from stem cells," said Dr. Karim Nayernia, a professor of stem cell biology at Newcastle University in the United Kingdom and the lead researcher on this study, published July 8 in the journal Stem Cells and Development.

"Studying sperm maturation is not accessible in vivo [in a body]. You cannot follow the system," Nayernia said. "Now we have a system to monitor the stages of male
infertility."

Science AAAS ScienceInsider
Breaking news and analysis from the world of science policy
July 28, 2

Journal Editor Retracts Paper on Sperm Made From Stem Cells

The paper, published online by ***Stem Cells and Development*** **on 8 July with Karim Nayernia of Newcastle University in the United Kingdom** as the corresponding author, had already received some criticism from other experts; Dr Allan Pacey of the University of Sheffield in the United Kingdom, for example, was quoted by *The Independent* as saying: "As a sperm biologist of 20 years' experience, I am unconvinced from the data presented in this paper that the cells produced ... can be accurately called 'Spermatozoa.' "

The paper's problems soon got much worse. Graham Parker, editor-in-chief of *Stem Cells and Development*, told *Science*Insider that he received an email on 10 July from the editors of another journal, *Biology of Reproduction*, claiming that **two paragraphs from Nayernia paper's introduction were copied without attribution from a 2007 review article** by Makoto Nagano of McGill University in Montreal, Canada, that was published in their journal.

Parker says Nayernia told him the offending text was inserted by a postdoctoral fellow. But Parker says the explanation he received was not consistent with an innocent mistake. "Once I had established that the suggested reason for the text's inclusion was not being substantiated I decided to retract the paper" on 21 July, Parker says.

What are the reasons for plagiarism?

http://plagiarism-main.blogspot.com/

http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml

SCIENTIFIC INTEGRITY SCIENCE VOL 323 6 MARCH 2009, p1293

Responding to Possible Plagiarism

Documenting reactions from authors and journal editors to plagiarism may help others address the problem.

Tara C. Long,[1] Mounir Errami,[2] Angela C. George,[1] Zhaohui Sun,[2] Harold R. Garner[1,2]*

212 pairs of articles with signs of potential plagiarism were chosen for this study.

- 86.2% similarity between an original article and its duplicate.
- 73.1% the average number of shared references .
- Only 22.2% duplicates cited the original article as a reference.
- 71.4% of the manuscript pairs shared at least one highly similar or identical table or figure.
- 42% also contained incorrect calculations, data inconsistencies, and reproduced or manipulated photographs.

….The increasing availability of scientific literature on the World Wide Web has proven to be a double-edged sword, allowing plagiarism to be more easily committed, while simultaneously enabling its simple detection through the use of automated software.

SCIENTIFIC INTEGRITY SCIENCE VOL 323 6 MARCH 2009, p1293

Responding to Possible Plagiarism

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Tara C. Long,[1] Mounir Errami,[2] Angela C. George,[1] Zhaohui Sun,[2] Harold R. Garner[1,2]*

The responses from duplicate authors were varied:

- 28% denied any wrongdoing.
- 35% admitted to having borrowed previously published material.
- 22% were from coauthors claiming no involvement in the writing of the manuscript.
- 17% claimed they were unaware that their names appeared on the article.

93% of the original authors were not aware of the duplicate's existence

The journal editors primarily confirmed receipt and addressed issues involving policies and potential actions.

SCIENCE VOL 323 6 MARCH 2009, p1293

Selected Responses from the authors

"There are probably only 'x' amount of word combinations that could lead to 'y' amount of statements. … I have no idea why the pieces are similar, except that I am sure I do not have a good enough memory.

"I was not involved in this article. I have no idea why my name is included."

"This article was mainly done by a young fellow Dr. [ ]. I made the corrections in text and completed the article Unfortunately Dr. [ ] has died in January this year, so we can't ask him for the reasons….."

"I am not a native English speaker so I do have problems in expressing my ideas... You and other English language speakers are lucky from this point of view.…"

"To be honest with you, I was not aware of the fact that I need to take prior permission of the authors of the original article. As such I am facing many difficulties and hardships in my personal life. …"

The corresponding author has been my teacher (and a very good one at that) from whom I have learned many things. My respect for him was of the utmost level until I found that he had been plagiarizing papers from all over the world….."

How Journals Detect and Handle Problem Papers

Detect:

- Information received from reviewers or other editors.
- Literature search for related papers by the author.
- Withdrawal of a paper from publication.

Handle:

- Placing the author on a “watch list” for careful examination of future submissions prior to requesting reviews.
- Banning authors from publication in the journal for several years.
- Informing the co-authors and editors of related journals.

Summary (Part I)

- Ethics is an integral part of research.
- Fabrication, falsification, or manipulation of data, plagiarism, self-plagiarism, misrepresentation of research findings, duplication of submission of research findings are all unacceptable behavior in scientific research.
- Reproduction of statements, figures, and tables in a report, presentation and/or paper require proper citation.
- Published work is protected by Copyright Law.
  Copyright permission is necessary if you are reproducing your work in another publication
  (This applies even if it is your own work).

How to Write an Effective Research Paper

- Getting ready with data
- First draft
- Structure of a scientific paper
- Selecting a journal
- Submission
- Revision and galley proof

Disclaimer: The suggestions and remarks in this presentation are based on personal research experience. Research practices and approaches vary. Exercise your own judgment regarding the suitability of the content.

–P. Kamat

Getting ready with data

- Gather all important data, analyses, plots and tables.
- Organize results so that they follow a logical sequence (this may or may not be in the order of experiments conducted).
- Consolidate data plots and create figures for the manuscript. Limit the number of total figures (6-8 is usually a good number). Include additional data, multimedia in the Supporting Information.
- Discuss the data with your coworkers.

First draft

- Identify two or three important findings emerging from the experiments. Make them the central theme of the article.

- Note good and bad writing styles in the literature. Some are simple and easy to follow, some are just too complex.

- Note the readership of the journal that you are considering to publish your work.

- Prepare figures, schemes and tables in a professional manner *(Pay attention to quantification of data accuracy, significant digits, error bars).*

0.001	$1x10^{-3}$	-- one sig fig
0.00100	$1.00x10^{-3}$	-- three sig figs

Structure of a scientific paper

Title

Abstract

TOC Graphics

Introduction

Experimental Section

Results and Discussion

Conclusions

Acknowledgments

References

Supporting Information

Title

- Compose a title that is simple, attractive and accurately reflects the investigation.
- Avoid words such as Investigation, Study, Novel, Facile, etc.
- Avoid acronyms that are known only to specialized community.

Study of SERS Chemical Enhancement Factors Using Buffer Layer Assisted Growth of Metal Nanoparticles on Self-Assembled Monolayers

Masato M. Maitani[†], Douglas A. A. Ohlberg[‡], Zhiyong Li[‡], David L. Allara[†,‡], Duncan R. Stewart[‡] and R. Stanley Williams[‡]

Publication Date (Web): April 16, 2009 (Communication)
DOI: 10.1021/ja809347y

Which of these two titles invites you to read the paper?

"Signal-On" Detection of DNA Hole Transfer at the Single Molecule Level

Tadao Takada, Yuichiro Takeda, Mamoru Fujitsuka and Tetsuro Majima*

Publication Date (Web): April 23, 2009 (Communication)
DOI: 10.1021/ja9009919

Abstract

- First couple of sentences should focus on what the study is about.
- Include major findings in a style that a general readership can read and understand.
  Avoid detailed experimental procedures and data.
- Keep it short, simple, informative, and effective.
- Be creative in generating curiosity.

Large Aggregated Ions Found in Some Protic Ionic Liquids

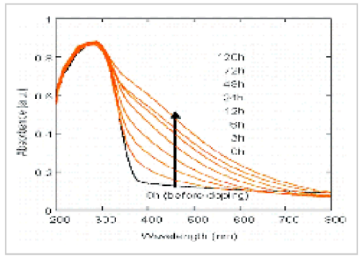
Danielle F. Kennedy and Calum J. Drummond
J. Phys. Chem. B, ***2009***, ***113*** (17), pp 5690–5693

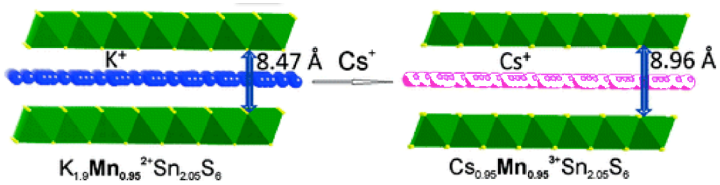
Large aggregated parent ions, for example, $C_8A_7^+$ (C = cation and A = anion), have been observed within some protic ionic liquids (PILs) using electrospray ionization mass spectrometry (ESI-MS). We have shown that the formation and size of aggregates is dependent on the nature of the anion and cation. Solvent structuring in select PILs through aggregation can contribute to their classification as “poor ionic liquids” and can also strongly influence the entropic component to the free energy of amphiphile self-assembly in select PILs.

TOC Graphics

- A scheme or figure to convey the theme of paper.
- Make use of TOC Graphics to convey your theme.

Graph versus Scheme





N Doping of Oxide Nanosheets

Yasumichi Matsumoto*, Michio Koinuma*, Yoshifumi Iwanaga, Tetsuya Sato and Shintaro Ida

Publication Date (Web): April 24, 2009 (Communication)

DOI: 10.1021/ja807388t

Highly Efficient and Rapid Cs^+ Uptake by the Layered Metal Sulfide $K_{2x}Mn_xSn_{3-x}S_6$ (KMS-1)

Manolis J. Manos and Mercouri G. Kanatzidis*

Publication Date (Web): April 17, 2009 (Article)

DOI: 10.1021/ja900977p

Structure of a scientific paper

Introduction

- Start with a general background of the topic.
- Add 2-3 paragraphs that discuss previous work.
- Point out issues that are being addressed in the present work.

Experimental Section

- Include Materials & Methods, Characterization, Measurements, and Data analysis.

Results and Discussion (combined or separate)

- Describe the results in detail and include a healthy discussion.
- The order of figures should follow the discussion themes, not the sequence in which they were obtained.
- Discuss how your data compare or contrast with previous results.
- Include schemes/photographs to enhance the scope of discussion.

Avoid

- Excessive presentation of data/results without any discussion.
- Citing every argument with a published work.

Structure of a scientific paper-2

Conclusions

- Include major findings followed by a brief discussion on future perspectives and/or application to other disciplines
  - Do not rewrite the abstract
  - Statements starting with “Investigated” or “Studied” are not conclusions!

Acknowledgments

- Thank funding agency
- Thank colleagues/scientists/technicians who might have provided assistance

References

- Follow style of specific Journal (Use EndNote, RefWorks)
- Check for the accuracy of all citations

Supporting Information

- Include methods, analysis, blank experiments, additional data

Selecting a Journal

- Each journal specializes in a specific area of research.
  Hence their readership varies.
  A proper choice of journal can make a larger impact of your research.

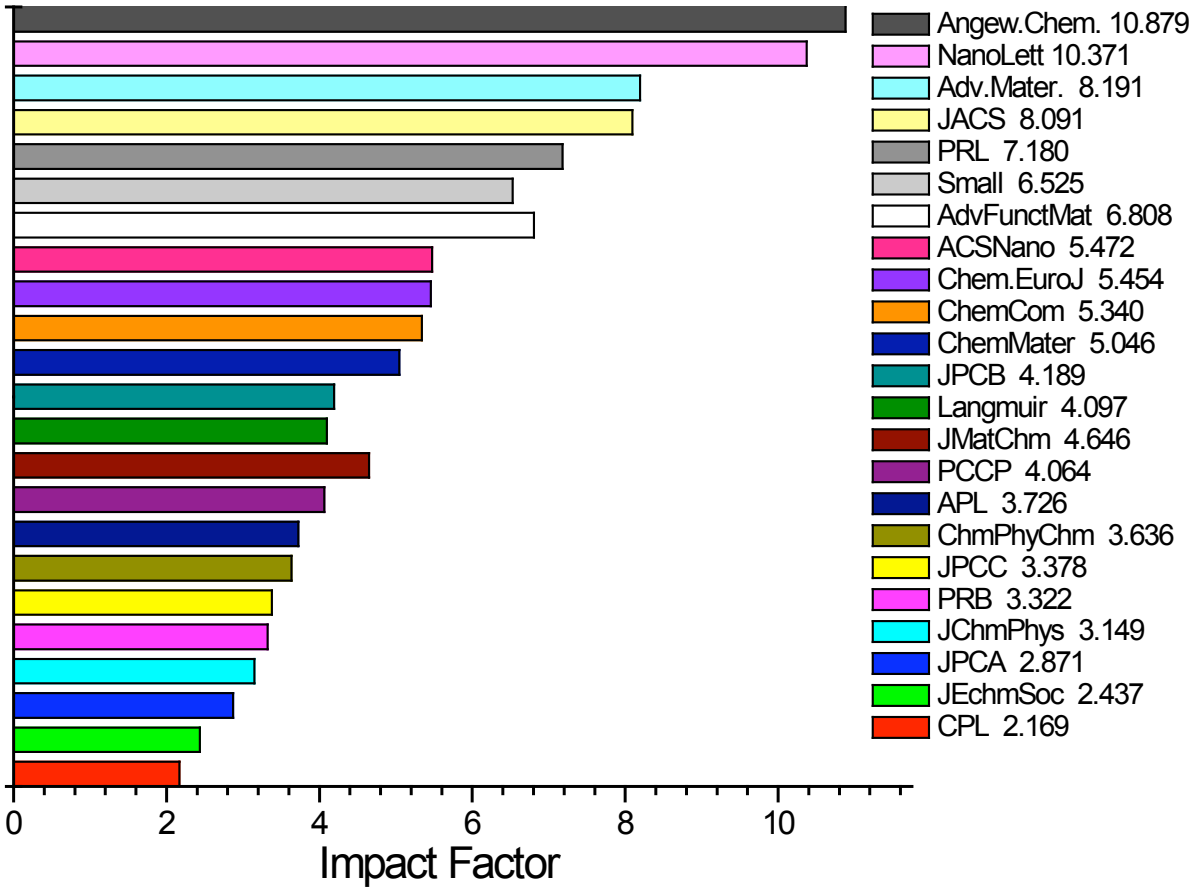
- Get to know the focus and readership of the journal that you are considering.
  Distinguishe between general and specialized area journals.

- Select 2 or 3 possible journals in the chosen area.
  Discuss with your coworkers and decide on the journal .

- Find out the journal's submission criteria and format.

Tip: Does your references cite journals in the appropriate area?

2008 IMPACT FACTORS OF POPULAR JOURNALS



$$IF_{(2008)} = \frac{\text{No. of 2006\&2007 citations in 2008}}{\text{No of papers published in 2006\&2007}}$$

Submission

- Read the finalized paper carefully.
  Check for accuracy of figures and captions.
  Are the figures correctly referred to in the text?

- Get feedback from coworkers and colleagues.
  Try to get the paper read by at least one or two colleagues who are not familiar with the work.

- Cover Letter to the editor:
  Provide a brief paragraph highlighting the importance of **this work**.
  Provide names of possible reviewers.

- **Have all coauthors approve the finalized version of the paper.**

- Submit the paper online along with copyright form.

Revisions and Galley Proof

- The manuscript is usually reviewed by 2-3 reviewers.
- Reviewers point out deficiencies and/or suggestions to improve the scientific content.
- Read their comments carefully.
  If reviewer misunderstands a point, the point probably needs revision.
- Do not blame the reviewer for his/her misunderstanding!
- Be polite and respectful when disagreeing a reviewer's comment.
- Include a point-by-point explanation of changes made **in the text** in response to reviewers' comments.
- Also provide a point-by-point response in your rebuttal letter.
- Once again, carefully read the paper for accuracy.
- Submit the revised version .
- After acceptance, you will receive the galley proof soon after
  This is the last chance to make any final (**minor**) corrections.

What to do if a paper gets rejected...

- Do not get discouraged.
  Read editorial comments and discuss with you advisor, other students, and other collaborators.
  Find out how you can make this study stronger.

- Do not just turn around and submit the paper to another journal.
  Read carefully the comments and find ways to improve the scientific quality of the paper.

- Carry out additional experiments if needed.
  Improve the quality of scientific discussions.
  Provide quantitative and mechanistic information.
  Make sure that your work provides new physical insights.

- Rejected papers can be resubmitted if and only the concerns of the reviewers are adequately addressed and new results are included.

- If you have questions, contact the editorial office.

What to Avoid

- Data without scientific discussion, applications of data, or reviews of the literature are not sufficient.

- Routine synthesis and characterization of materials or studies that report incremental advances are not suitable for publication.

- Use of the phrase “Novel” or “First-time” in the title or abstract. Such descriptions do not impress the reader or the reviewer. (Other over used phrases “One-pot synthesis”, “Facile”).

Issues of Language

- The authors should make every effort to make a good presentation with proper usage of English grammar.
- Use short sentences, to the point.
- "English is not my Native Language" is not a valid justification for submitting poor manuscripts that cannot be comprehended.
- Ask a colleague to comment on your paper before sending it for publication.
- Reviewers do not wish to review papers that are not readable. Reviewers often recommend rejection of poorly written papers.
- Publisher offices may help with minor language editing of accepted manuscripts,
  But only if the English was good enough for the paper to be reviewed

Good Record Keeping

- It is your fundamental obligation to create and maintain an accurate, accessible, and permanent record of data.

- Record sufficient detail for others to check and replicate the work.

- Depending on the field, this will require:
    - Entering data into bound notebooks with sequentially numbered pages using permanent ink,
    - Using a computer application with secure data entry fields,
    - Identifying when and where work was done, and/or
    - Retaining data for specified lengths of time.

- Every scientific result must be carefully prepared, submitted to the peer review process, and scrutinized even after publication.

Guidelines For Authors and Scientists

- Ethical Guidelines to Publication of Chemical Research (ACS Pubs. Div.) - available via Paragon or ACS Journals web site.
- “On Being a Scientist: Responsible Conduct in Research”; National Academy Press, Wash. D.C, 1995 (http://www.nap.edu/readingroom/books/obas/).
- IEEE Policy Statement on Self-Plagiarism (http://www.comsoc.org/pubs/jrnal/transcom/Self_Plagiarism.pdf).
- Managing Allegations of Scientific Misconduct: A Guidance Document for Editors, January 2000, Office of Research Integrity, Office of Public Health and Science, U.S. Dept. of Health and Human Services http://ori.dhhs.gov.