



Processamento de Artigos de Alto Impacto

Prof. Dr. Valtencir Zucolotto
Laboratório de Nanomedicina e Nanotoxicologia
Instituto de Física de São Carlos, USP

IFSC, Novembro de 2012

Módulo 1: O Gênero Literário

Seções de Um Artigo Científico

Módulo 2: Estrutura 1: *Abstract*

Módulo 3: Estrutura 2: *Introduction*

Módulo 4: Estrutura 3: *Results and Discussion, Conclusion*

Módulo 5: Estilo

Linguagem 1: Especificidade, Complexidade e Ambiguidade

Módulo 6: Linguagem 2: Redundâncias, Ação no Verbo, Fluidez de Texto, Ritmo de Escrita

Módulo 7: Linguagem 3: *Plain English*, Escrever em Inglês, Preposições

Módulo 8: Linguagem 4: *Topic Sentences, Cover Letters, Final Remarks*



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1.

Why?, What, when?....

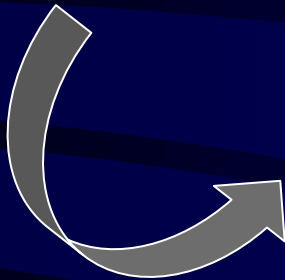
Publication is one of the most important steps
of the scientist's work

If nobody knows, or can benefit from your work,

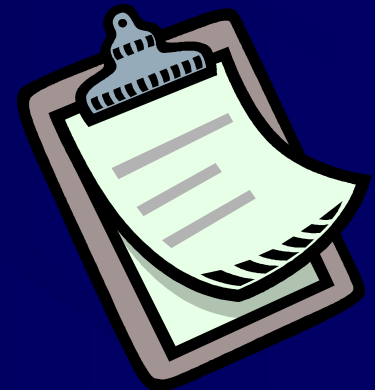
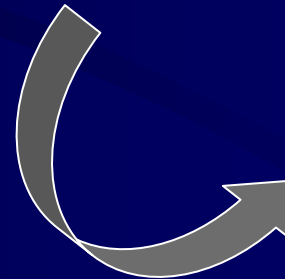
Why being at work ??



When ?



Scientific Method /
Hypothesis testing





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Lesson Zero

Scientific writing as a “new” Literary Genre



A bit of History...

In the very beginning....

- Informal Letters exchanged by scientists.
- **1665**: Creation of the first scientific periodical: *The Philosophical Transactions of the Royal Society*.

This new arena for discussion led to the development of
a new genre:

The Scientific Report



Who will read your paper?

Highly technical journal vs. less specific ones.

What terms will you have to define?

Background information included

Report your results clearly

Use as few words as necessary

Save words!!



References

All information or ideas must be referenced!
Including your own work



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2. *Sections of a Regular Paper*



Organization of a paper



Adapted from: Hill et al., Teaching ESL students to read and write experimental papers, TESOL Quarterly, 16: 333, 1982:

A well-written Title is concise and clear:
Use the **minimum** number of words.

Rewrite the title in the final version of the paper.



Title, Authors and Affiliations

Emphasize your key findings whenever possible

Title:

Metal-Polymer nanocomplexes induce spontaneous regression of lung tumors

Title:

NLRP6 negatively regulates innate immunity and host defence against bacterial pathogens

Arnand et al., Nature, 2012, doi:10.1038/nature11250



Title, Authors and Affiliations



Who are the authors of a paper?

Guidelines to define authorship:

All authors must be able to present/discuss/defend the paper.



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Abstract



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Abstract

Contextualization

Gap

Purpose

Methodology

Results

Conclusions

Alúcio, S.M. (1995). *Ferramentas para Auxiliar a Escrita de Artigos Científicos em Inglês como Língua Estrangeira*. Tese de Doutorado, IFSC-USP, 228 p.



Case 1

M2P1 Nature Mat

Self-assembly of components larger than molecules into ordered arrays is an efficient way of preparing microstructured materials with interesting mechanical and optical properties. Although crystallization of identical particles or particles of different sizes or shapes can be readily achieved, the repertoire of methods to assemble binary lattices of particles of the same sizes but with different properties is very limited. This paper describes electrostatic self-assembly of two types of macroscopic components of identical dimensions using interactions that are generated by contact electrification. The systems we have examined comprise two kinds of objects (usually spheres) made of different polymeric materials that charge with opposite electrical polarities when agitated on flat, metallic surfaces. The interplay of repulsive interactions between like-charged objects and attractive interactions between unlike-charged ones results in the self-assembly of these objects into highly ordered, closed arrays. Remarkably, some of the assemblies that form are not electroneutral—that is, they possess a net charge. We suggest that the stability of these unusual structures can be explained by accounting for the interactions between electric dipoles that the particles in the aggregates induce in their neighbors.

Grzybowski et al., *Nature Materials* 2, 241–245 (2003)



Abstract

- 1) **Context:** Self-assembly of components larger than molecules into ordered arrays is an efficient way of preparing microstructured materials with interesting mechanical and optical properties.
- 2) **GAP:** Although crystallization of identical particles or particles of different sizes or shapes can be readily achieved, the repertoire of methods to assemble binary lattices of particles of the same sizes but with different properties is very limited.
- 3) **Purpose:** This paper describes electrostatic self-assembly of two types of macroscopic components of identical dimensions using interactions that are generated by contact electrification.
- 4) **Methodology:** The systems we have examined comprise two kinds of objects (usually spheres) made of different polymeric materials that charge with opposite electrical polarities when agitated on flat, metallic surfaces.
- 5) **Results:** The interplay of repulsive interactions between like-charged objects and attractive interactions between unlike-charged ones results in the self-assembly of these objects into highly ordered, closed arrays. Remarkably, some of the assemblies that form are not electroneutral—that is, they possess a net charge.
- 6) **Conclusions:** We suggest that the stability of these unusual structures can be explained by accounting for the interactions between electric dipoles that the particles in the aggregates induce in their neighbors.



Case 2

M2P2 Nature Mat

Bioinert polyelectrolyte multilayers comprised of poly(acrylic acid) and polyacrylamide were deposited on colloidal particles (1.7 μm diameter) at low pH conditions by layer-by-layer assembly using hydrogen-bonding interactions. The multilayer films were coated uniformly on the colloidal particles without causing any flocculation of the colloids, and the deposited films were subsequently cross-linked by a single treatment of a carbodiimide aqueous solution. The lightly cross-linked multilayer films show excellent stability at physiological conditions (pH 7.4, phosphate-buffered saline), whereas untreated multilayer films dissolved. The multilayer-coated surfaces, both on flat substrates and on colloidal particles, exhibit excellent resistance toward mammalian cell adhesion. With this new solution-based cross-linking method, bioinert H-bonded multilayer coatings offer potential for biomedical applications.

Yang et al, **Langmuir**; 2004; 20; 5978



Context??

Gap??

Purpose?: Bioinert polyelectrolyte multilayers comprised of poly(acrylic acid) and polyacrylamide were deposited on colloidal particles (1.7 μm diameter) at low pH conditions by layer-by-layer assembly using hydrogen-bonding interactions.

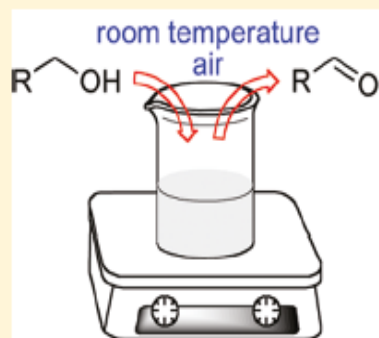
Methodology: The multilayer films were coated uniformly on the colloidal particles without causing any flocculation of the colloids, and the deposited films were subsequently cross-linked by a single treatment of a carbodiimide aqueous solution.

Results: The lightly cross-linked multilayer films show excellent stability at physiological conditions (pH 7.4, phosphate-buffered saline), whereas untreated multilayer films dissolved. The multilayer-coated surfaces, both on flat substrates and on colloidal particles, exhibit excellent resistance toward mammalian cell adhesion.

Conclusions: With this new solution-based cross-linking method, bioinert H-bonded multilayer coatings offer potential for biomedical applications.

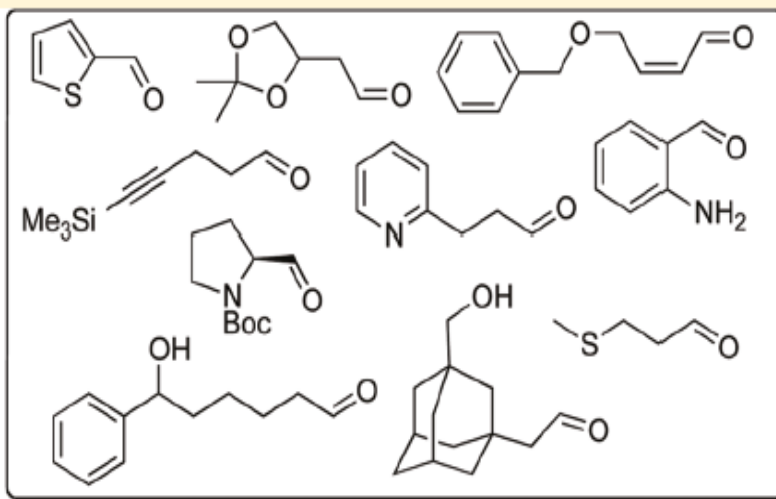


ABSTRACT:



Catalyst:

5 mol % (bpy)Cu^IX
5 mol % TEMPO
10 mol % *N*-methylimidazole



Aerobic oxidation reactions have been the focus of considerable attention, but their use in mainstream organic chemistry has been constrained by limitations in their synthetic scope and by practical factors, such as the use of pure O₂ as the oxidant or complex catalyst synthesis. Here, we report a new (bpy)Cu^I/TEMPO catalyst system that enables efficient and selective aerobic oxidation of a broad range of primary alcohols, including allylic, benzylic, and aliphatic derivatives, to the corresponding aldehydes using readily available reagents, at room temperature with ambient air as the oxidant. The catalyst system is compatible with a wide range of functional groups and the high selectivity for 1° alcohols enables selective oxidation of diols that lack protecting groups.

Hoover et al., J. Am. Chem. Soc. 133, 16901, 2011



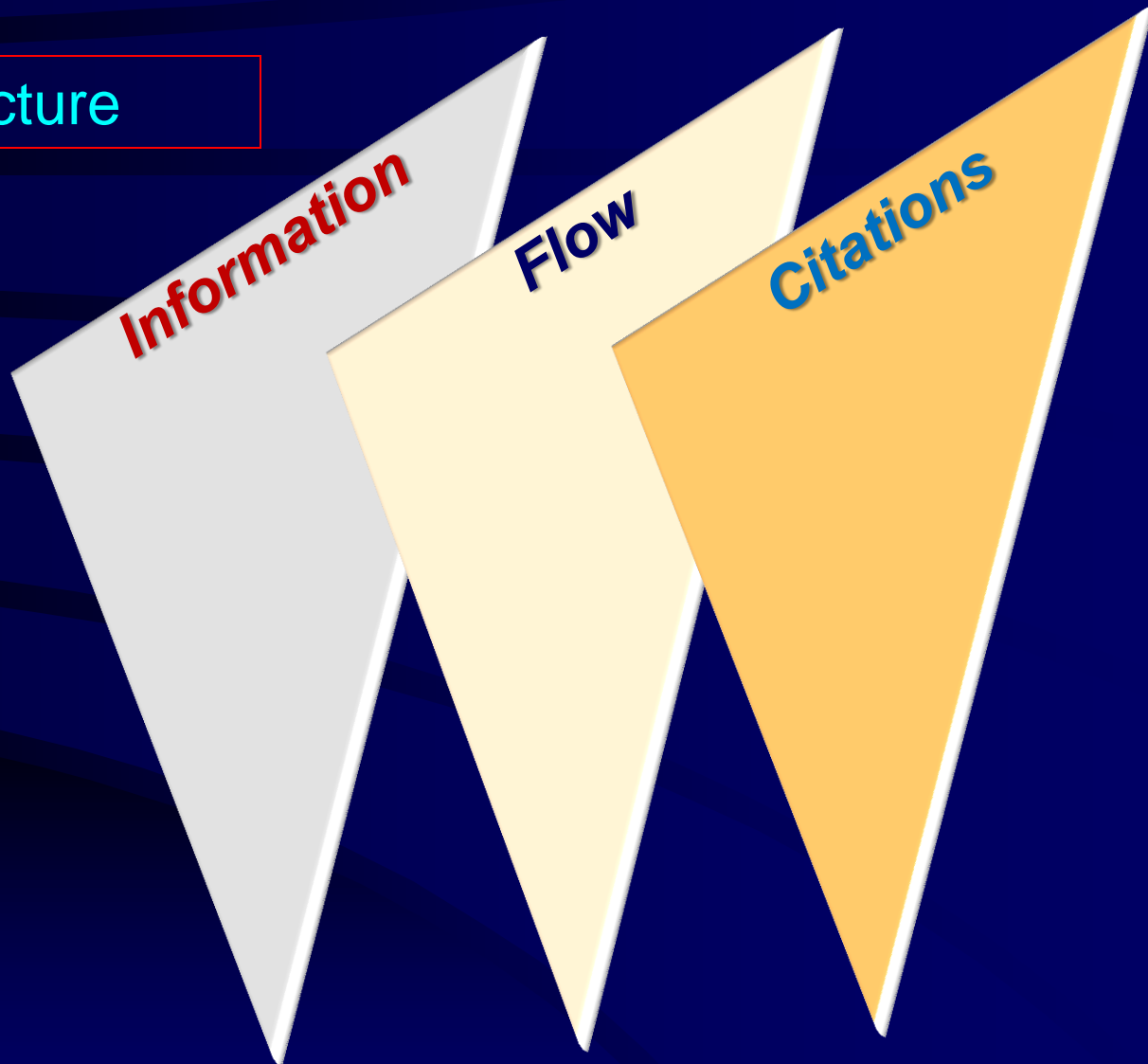
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Introduction



Introduction

3-D Architecture



Escrita Científica

Prof. Dr. Valtencir Zucolotto
zuco@ifsc.usp.br



Introduction

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1. Information



1. Contextualization

Present the research field and show the importance of the main area,
Make terms and processes familiar.

M3P1 Lang

“The ability to pattern mammalian cells in specific areas on a surface has become a very important topic of research because of its applications in tissue engineering, cell arrays, and biosensors. [...]. Early work to confine cells to micron-size areas was performed by Carter, where fibroblasts were patterned on islands of alladium [1]. Later, the Whitesides group utilized self-assembled monolayers (SAMs) to present microcontact printed adhesive islands against an inert ethylene glycol (EG) background to geometrically control cell adhesion.[2]”

Rubner et al., *Langmuir* **2004**, 20, 1362.



2. State the Gap

Open Questions, Restrictions and Limitations

M3P8 Anal Chem

“One common drawback of the full scan MS approach is the lower selectivity caused by higher background or interferences as compared to that seen in the SRM approach. Recently, there have been significant advances in the capabilities of high-resolution mass spectrometry (HR-MS) instrumentation [11,12]. HR-MS can provide additional advantages in resolving each isotopic ion from the background so that higher selectivity can be achieved.

Juan et al., Analytical Chem, In Press



3. Show the State-of-the-Art Evidencing recent research and findings

M3P8 Anal Chem

“One common drawback of the full scan MS approach is the lower selectivity caused by higher background or interferences as compared to that seen in the SRM approach. **Recently, there have been significant advances** in the capabilities of high-resolution mass spectrometry (HR-MS) instrumentation [11,12]. HR-MS can provide additional advantages in resolving each isotopic ion from the background so that higher selectivity can be achieved.

Juan et al., Analytical Chem, In Press



4. State the purpose of the paper

M3P5 Lang

“In this paper, detailed characteristics of the hydrated (LPEI/PAA)OEGDA composite are investigated and the reason for its relatively high ionic conductivity is discussed. Morphological effects due to the presence of OEGDA oligomer on the phase transition will also be described.”

Lowman et al., *Langmuir* **2004**, 20, 9791-9795

M3P6 Lang

“**In the work reported here**, a polyelectrolyte multilayer platform capped by a polyanionic surface was created through layer-by-layer assembly [21] and stamped with a polycationic pattern using POPS, to form docking sites for the negatively charged magnetic beads.”

Lyles et al., *Langmuir* **2004**, 20, 3028-3031



1. Contextualization

Present the research field and show the importance of the main area

2. State the Gap

Open Questions, Restrictions and Limitations

3. Show the State-of-the-Art

Evidencing recent research and findings

4. State the purpose of the paper



Introduction

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2. Flow



Structure

Information in the text flows from General to Specific, arriving at purpose.



Introduction

General

Contextualization

Your Field

Sumarizing Previous
Research

Purpose

Specific

Your work



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Introduction



3. Citations



The citation process:

Authors cite to prove where the ideas came from

Authors **DO NOT** cite to show where the text came from!!!



Selecting references to cite

Seminal Papers

Contextualization / Gap

Most Recent Papers

State of the Art / Gap

Most Important Papers

Relevance / Motivation / Importance



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Results and Discussion



Results – Discussion – Conclusion

Results – Discussion

Results and Discussion – Conclusion

Results – Discussion and Conclusion

Source: Science Research Writing for Non-Native Speakers of English, Hilary Glasman-Deal, Imperial College Press, 2009

An Interesting Example...

M4P1 Nature

“It has not escaped our notice that the specific pairing we have postulated immediately suggests a possible copying mechanism for the genetic material”

Watson, JD, Crick, FHC, *Nature*, 171, 737, 1953.



Conclusions

Function: To state the importance of the paper to the development of the field.

Ideas flowing from **Specific** to **General**.

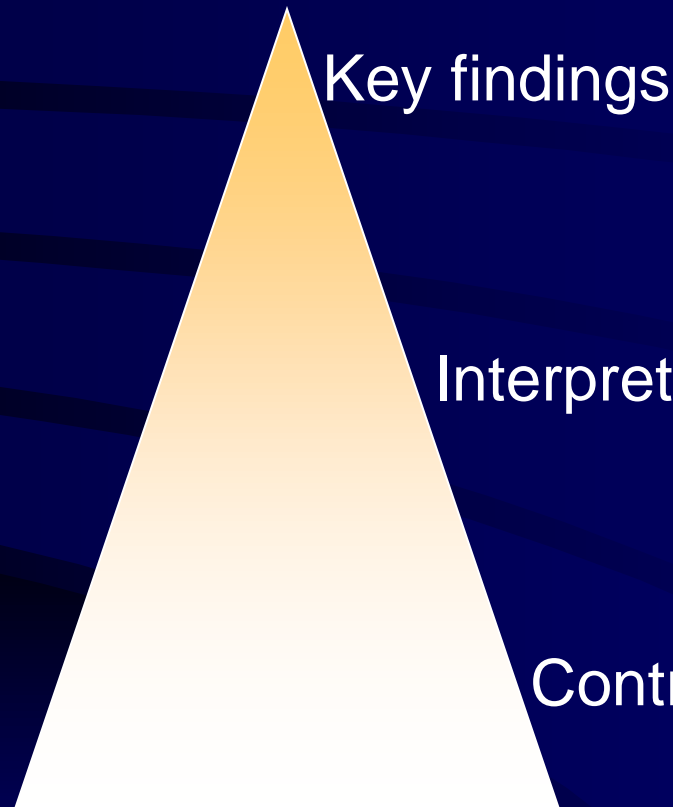


Pyramidal Structure

Specific



General



Key findings

Interpretation of main Results

Contribution to the field



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Conclusions

Style

- Present tense;
- Third Person, preferably;



Example 3

In this study, we demonstrated cancer immunotherapy using DCs pulsed with multifunctional core–shell nanoparticles consisting of a superparamagnetic Fe₃O₄ core covered with a photonic ZnO shell. The nanoparticles provided simple and consistent outcomes for the ex vivo antigen loading of DCs, for in vivo tracking and induction of strong anti-CEA immune responses, even in an immune-tolerant host. The ability of the nanoparticles to be efficiently loaded into DCs in a short incubation period (1 h) without surface modifications or transfection agents may expedite clinical trials. It might be possible to bypass the complex chemical modifications of the Fe₃O₄ surface that are generally performed in an organic environment to conjugate tumour antigens, a step that has the potential to alter their antigenicity. When combined with a tumour-associated antigen, nanoparticle- loaded DCs did not show changes in viability and phenotype. Taken together, the core–shell nanoparticle could be applied in diverse DC-based immunotherapies that need to monitor antigen loading in vitro and track DCs in vivo to ensure consistent clinical efficacy.

Cho et al., Nature Nanotechnology, 6, 2011, 675



Example 2

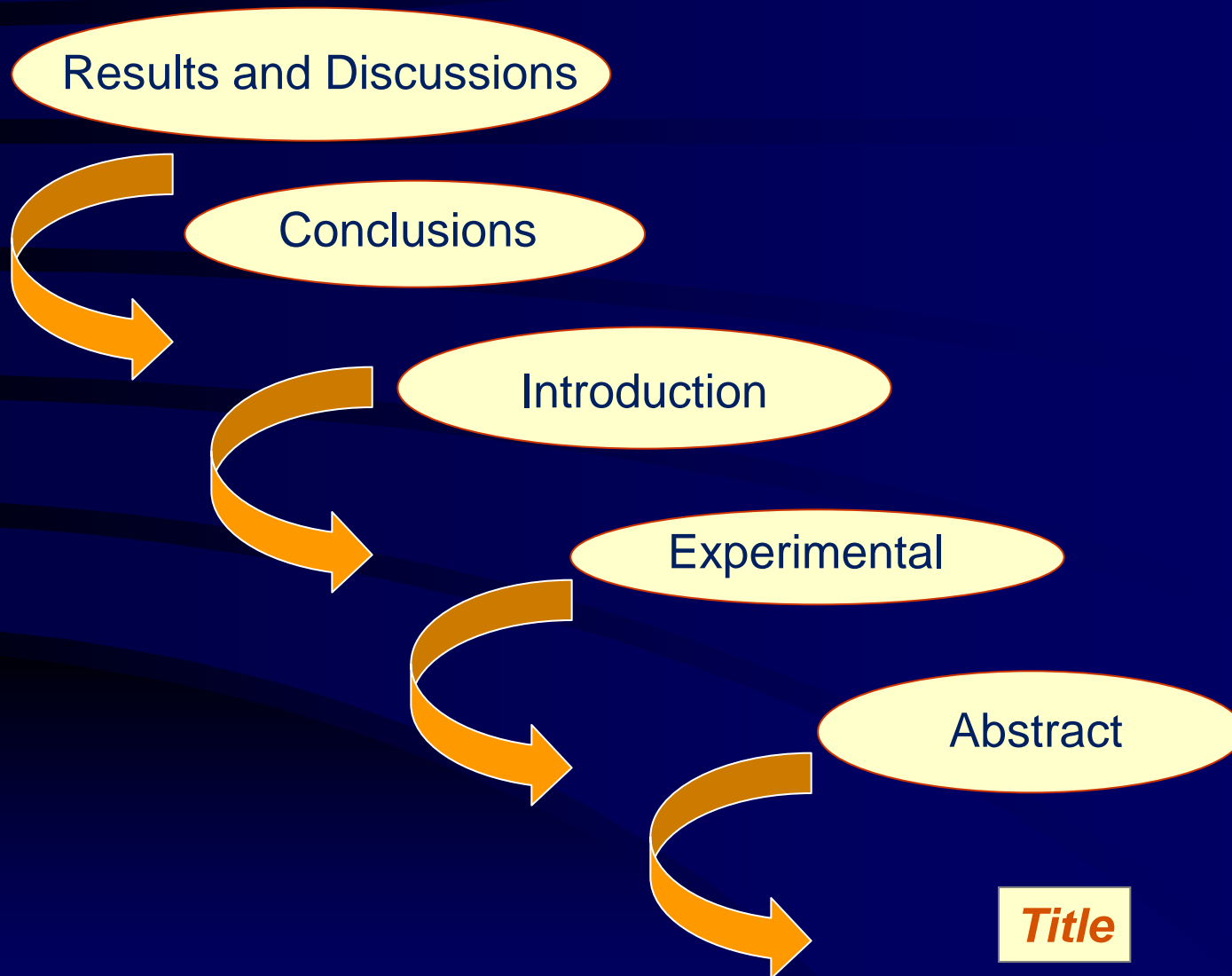
M4P4 Mechatronics

For the purpose of increasing generated power in harvesting energy, according to Eq. (14) that has been derived in this paper, the elastic base can indeed lower the resonant frequency of the miniature generator to approach ambient vibration frequency. The resonant frequency reduction percentage depends on mass and stiffness of the proposed elastic base. Based on Eq. (14) and Table 1, the resonant frequency reduction percentage can reach 70% when $r = 1$ and $a = 10$. If the miniature generator is attached to the rigid base, the maximum power is 1.08 nW. By contrast, if the miniature generator is attached to an elastic base with a point mass, the maximum value of the power 0.92 μ W is obtained with the mass ratio $a = 10$ and stiffness ratio $r = 6$. The power of different cases on elastic base with point mass is shown in Table 4. In this study, the arm swing frequency is designated as 15 Hz, and the theoretical resonant frequency of the miniature generator of piezoelectric bender shown in Eq. (22) is about 81.2 Hz. According to Table 1, when the stiffness ratio r is fixed if the mass ratio a increases, the resonant frequency decreases and is close to 15 Hz, the arm swing frequency. Therefore, the bender vibration amplitude becomes larger. The more the bender deforms, the more.....

W. Li et al., Mechatronics 21 (2011) 1183



A Suggested Sequence





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Language I

*Lets face it, English is a stupid language.
There is no egg in the eggplant.
No ham in the hamburger.
And neither pine nor apple in the pineapple.
English muffins were not invented in England.
French fries were not invented in France.*

A huge problem: **Long Sentences**

The mechanical analyses had been carried out using stress-strain measurements and indicated that the copper-based alloys are more resistant than the silver-based ones, which may be due to the fabrication process used for each composite material, since the copper alloys had been produced via casting, whereas the silver composites had been fabricated via reactive extrusion under high pressures, controlled atmosphere, and at temperatures ranging from 300 – 400 °C.

?????????

Too long!, Too wordy!

Too many ideas in a single sentence!!



M5P1 Nature

“ This analysis suggests that gene expression evolution was faster on the X chromosome than on autosomes in the common ancestor of therian mammals (two-tailed $P,0.05$ for brain, cerebellum and heart; $P,0.1$ for kidney, liver and testis; randomization test), which corresponds to the time when the original proto-XY chromosomes evolved into sex chromosomes, and remained accelerated in the common eutherian ancestor (two-tailed $P,0.05$ for brain, cerebellum and kidney; $P,0.1$ for heart, liver and testis). By contrast, the rate of X-chromosome expression evolution was similar to that of autosomes more recently, as reflected by the terminal eutherian branches ($P.0.1$ for all tissues and branches), consistent with our hypothesis that gene expression evolution proceeded at a higher rate only on the newly formed X chromosome.”

Brawand et al., Nature, 2011, 478, 343



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Ambiguity

Words/phrases with more than one meaning





Word Choice:

“Tissue temperature increased as the particles released the phytotherapics”

????

The word “as” may be interpreted as “because” or “while”



Unclear Pronoun

Since the platform has a support system connected to the equipment, **it** was mounted inside the lab.

What was mounted inside the lab????

It = The platform or the support system??



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Language II



Redundancies

During the data collection phase of the study, all experimental measurements were performed in a period of time of 3 months. All the obtained results were further analyzed and possible errors were completely eliminated.

Better:

During the data collection, all measurements were performed in 3 months. The results were further analyzed and possible errors were eliminated.

Best:

All measurements were performed in 3 months.



Redundancies

Efficient Scientific Writing:





Common redundancies from Non-Native Speakers

Alternative choices

Basic fundamentals

Completely eliminate

Currently underway

Empty space

Introduced a new

Mix together

Never before

Period of time

Separate entities

Still persists

Quite unique

Very similar

Join together

Completely full

Obtained Results

Definitely proved

Exactly true

First of all

Adapted from Michael Alley. *The Craft of Scientific Writing*, 3rd edition (Springer-Verlag, 1996).



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Language III



The concept of Plain English

Needlessly Complex words:

Avoid	Use
Utilization	Use
Finalize	End
Utilize	Use
Firstly, Secondly	First, Second
Commencement	Beginning



The concept of Plain English

Needlessly Complex phrases:

Avoid	Use
Has the Operationability	Operate
The majority of	Most
In agreement	Agree
Due to the fact that	Because
Plays a key Role	Essential
In the course of	in
By means of	By
??	??



Strong Verbs

Replace verb phrases by the correspondent strong verb

Weak verb phrase

Made the arrangement for
Made the decision
Made the measurement of
Performed the development of

Strong Verb

Arranged
Decided
Measured
Developed



“A continuous improvement in patient’s condition was observed”

Better:

“Patient’s condition improved”

Adapted from Michael Alley. *The Craft of Scientific Writing*, 3rd edition (Springer-Verlag, 1996).



Administration of dopamine produced a decrease
in the frequency of convulsions

Better:

Administration of dopamine decreased convulsions
frequency

Brazilian's problems with articles

*The method of diagnosis employed for
determination of tumor of breast was the
imunoassay ELISA*

????

This is Portuguese written with English words



Better ??

The diagnosis method used for breast cancer detection was the ELISA imunoassay.



Better

ELISA immunoassay was used to diagnose breast cancer.



In Scientific Writing:

Breast cancer was diagnosed by ELISA



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Final Remarks



The cover Letter

The cover letter is the document that introduce the manuscript to the editor.

A good cover letter makes clear the importance of the paper and the reasons it deverves to be published.

Hafner, J.H, *The art of Cover Letter*, ACS Nano, 4 (5) 2487, 2010



Example 2:

Dear Editor:

Please find attached the manuscript entitled: **A new strategy to investigate the toxicity of nanomaterials using Langmuir monolayers as membrane models**, which we submit for publication in Nanotoxicology. The reasons why we believe it deserves to be published stem from the following features:

- i) To our knowledge, this manuscript is the first report of a novel strategy to investigate the types of interaction that may occur between a nanomaterial, *viz.*, carbon nanotubes and phospholipid membranes, in a way that experimental parameters can be controlled at the molecular level.
- ii) The methodology is reported here for a specific carbon nanotube/dendrimer complex, which had been applied as drug-delivery systems. However, this new methodology may be of interest to a wider audience investigating the toxicity of nanomaterials, either *in vitro* or *in vivo*, since the same strategy can be applied to different nanocomplexes, nanoparticles, etc.

Sincerely

Prof. Dr. Valtencir Zucolotto



The Manuscript



JPCC Manuscript

JPCC manuscript corrected version

JPCC response letter

BB response letter



After Acceptance

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JPCC Proofs

JPCC Editorial revision



Plagiarism

You may cite others' words, data, etc. using your own words;

Do not paraphrase other author's text

Do not paraphrase your early papers.



Plagiarism



CÓDIGO DE
BOAS PRÁTICAS
CIENTÍFICAS

As más condutas graves mais típicas e frequentes são as seguintes.

- (a) A *fabricação*, ou afirmação de que foram obtidos ou conduzidos dados, procedimentos ou resultados que realmente não o foram.
- (b) A *falsificação*, ou apresentação de dados, procedimentos ou resultados de pesquisa de maneira relevantemente modificada, imprecisa ou incompleta, a ponto de poder interferir na avaliação do peso científico que realmente conferem às conclusões que deles se extraem.
- (c) O *plágio*, ou a utilização de ideias ou formulações verbais, orais ou escritas de outrem sem dar-lhe por elas, expressa e claramente, o devido crédito, de modo a gerar razoavelmente a percepção de que sejam ideias ou formulações de autoria própria.

http://www.fapesp.br/boaspraticas/codigo_fapesp0911.pdf



Relatório da Comissão de Integridade de Pesquisa do CNPq

A comissão instituída pela portaria PO-085/2011 de 5 de maio de 2011, constituída pelos pesquisadores Alaor Silvério Chaves, Gilberto Cardoso Alves Velho, Jaílson Bittencourt de Andrade, Walter Colli e coordenada pelo Dr. Paulo Sérgio Lacerda Beirão, diretor de Ciências Agrárias, Biológicas e da Saúde do CNPq, vem apresentar seu relatório final

Plágio: consiste na apresentação, como se fosse de sua autoria, de resultados ou conclusões anteriormente obtidos por outro autor, bem como de textos integrais ou de parte substancial de textos alheios sem os cuidados detalhados nas Diretrizes. Comete igualmente plágio quem se utiliza de ideias ou dados obtidos em análises de projetos ou manuscritos não publicados aos quais teve acesso como consultor, revisor, editor, ou assemelhado.

Autoplágio: consiste na apresentação total ou parcial de textos já publicados pelo mesmo autor, sem as devidas referências aos trabalhos anteriores.

From the Editors of ACS Journals:

*Recycling Is Not Always Good: The
Dangers of Self-Plagiarism, ACS Nano, 6 (1), 1–4, 2012*



Translations ??

~~Final version of a paper translated into English~~



Sources

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Yoon et al., *International Journal of Plasticity* 27 (2011) 1165

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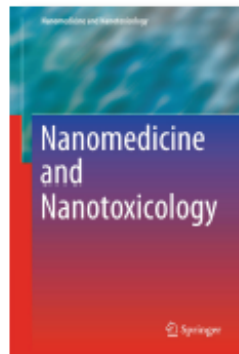
Valtencir Zucolotto

Associate Editor: *Journal of Biomedical Nanotechnology*
zuco@ifsc.usp.br

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Muito Obrigado

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