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ACS Scholar Adunoluwa Obisesan

BS, Massachusetts Institute of Technology, June 2021 (Chemical-biological Engineering, Computer Science & Molecular Biology)



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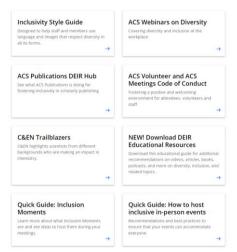


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with professionalism, integrity, and ethics underpinning all

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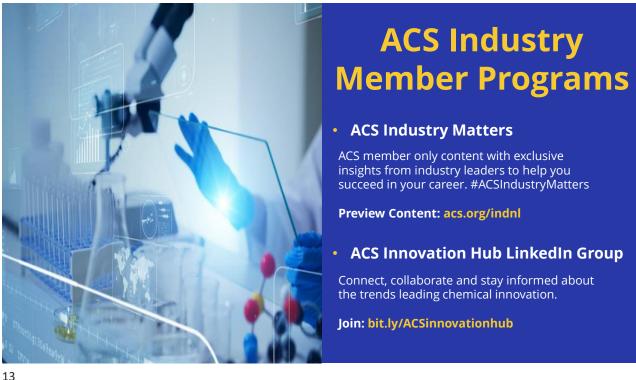








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Thursday, August 10, 2023 | 2-3pm ET

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Revising Technical Manuscripts to Improve Coherence, Clarity & Conciseness



Celia M. Elliott University of Illinois cmelliot@illinois.edu



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"abstractitis"—the downfall of so many

"writing that is so abstruse that even the writer does not know what he or she is trying to say."—Sir Ernest Gowers, GCB

"The words ...dance before my eyes in a meaningless procession: cross-reference to cross-reference, exception upon exception—couched in abstract terms that offer no handle to seize hold of—leave in my mind only a confused sense of some vitally important, but successfully concealed, purport, which it is my duty to extract, but which is within my power, if at all, only after the most inordinate expenditure of time." (Yale L.J. 167, 169 [1947]).

How to avoid "abstractitis"

- <u>Clarify</u> replace jargon with terms that are understandable and meaningful to your audience; use simple subjects and action verbs; de-convolute syntax
- **2. Quantify** replace wimpy, qualitative adjectives with quantitative descriptors
- **3.** Objectify give concrete examples; use analogies

2

25

Plan for time to reflect and revise

You should allow as much time for revision as you do for writing your paper in the first place

Revising concentrates on four elements

- 1. Clarifying the selection and presentation of ideas, tailored to the audience
- 2. Organizing the narrative logically
- 3. Evaluating the use of language (emphasis, tone, vocabulary)
- 4. Proofreading for mechanical errors



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Revising should proceed in three steps

- Confirming the content and logical organization (ideas)
- Editing for style (language, tone, emphasis)
- Proofreading for mechanics (spelling, punctuation, and grammar)

Allow sufficient time for each step! (it will always take longer than expected)

The Elliott editing equations:

$$t = 3h + \varepsilon$$
 [1]

$$t = 5(h + a) + \varepsilon$$
 [2]

2

27

1. Look at the science first (macroscopic scale)



- Is the information valid, significant, timely, and complete?
- Is the context clear? What is new and different? What have you contributed?
- Is the information presented at an appropriate level for the audience and the purpose?
- Is the narrative arranged in a logical, coherent structure?
- Do figures, equations, and tables support, emphasize, and clarify the main points?

TIP: Get an overview of the whole paper

- Cut and paste the first sentence of every paragraph into a new document
- Read the new document aloud
- Does it have a clear logical structure?
- Is the context clear?
- Does it have gaps or unexplained assumptions?
- Are the conclusions supported by the evidence?
- Does it have redundancies or extraneous information?

2

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Include summary statements

- At the end of each paragraph to lead logically to the next paragraph*
- At the end of each subsection
- At the end of each section
- At the end of the paper
- Adding summary statements helps readers follow your logical argument and prompts them to go back and reread if they don't understand something

^{*}Building Good Paragraphs: http://people.physics.illinois.edu/Celia/Lectures/Paragraphs.pdf







Audience Survey Question ANSWER THE QUESTION ON THE INTERACTIVE SCREEN IN ONE MOMENT

How much time should you allow for revising a technical manuscript?

- 1 hour per page
- Depends on how technical the text is
- At least 3x longer than you think it will take
- Doesn't matter—you'll have to revise it again when you get the reviewers' comments
 - * If your answer differs greatly from the choices above tell us in the questions window!









Audience Survey Question

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*Your mileage may differ, but plan for plenty of time to reflect.

2. Focus on the "style" (mesoscopic scale)

- Use precise, unambiguous language
- Avoid gratuitous jargon—scale to your audience
- Use straightforward, declarative sentences and keep them short (<25 words)
- Use action verbs, not weak verbs of being http://people.physics.illinois.edu/Celia/Verbs.pdf
- Eliminate "fluffy" stuff
 http://people.physics.illinois.edu/Celia/Lectures/Fluff.pdf

3

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Write shorter sentences (<25 words)

The following sentence (63 words), while grammatically correct, is impossible to understand on the first reading



"A program of chemical analysis and receptor modeling is proposed in which samples obtained at the EB ENTEK sites will be used to estimate the sources and/or source regions of trace elemental deposition into the area and the effects of specific urban areas on the airborne particulate matter compositions and thus, their potential contribution to the contamination of the area's water supplies."

Avoid long strings of nouns used as adjectives, too

"mean field anisotropic superconducting reverse bias toroid magnet"

<sigh>

3/1

Observe the three-preposition rule

No sentence shall contain more than three prepositional phrases.

A pollution problem <mark>with</mark> diesel engines has historically been their tendency to produce soot and smoke, but oxygen <mark>in</mark> the methyl ester group leads <mark>to</mark> lower soot emissions <mark>from</mark> diesel engines <mark>when</mark> using biodiesel fuel.

Here's how to fix this unwieldy sentence:

Air-polluting soot and smoke are produced by diesel engines that burn petroleum fuels. The use of biodiesel fuel, which contains oxygen in the methyl ester group, reduces soot emissions.

Sometimes you just have to start over.— cme

3

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Keep verbs close to their subjects

Several <u>schemes</u> ranging from minimal computational cost and poor accuracy to high computational cost and high accuracy <u>can be employed</u>.

Several schemes can be employed, ranging from minimal computational cost and poor accuracy to high computational cost and great accuracy.

A <u>program</u> to be used in conjunction with a PC data acquisition card <u>was</u> <u>written</u>.

A program was written for a PC data acquisition card.

Recast *negative expressions* — a positive is easier to understand and is usually more concise

Although some data supported the hypothesis, it could not be concluded that output scaled linearly with current.

Output appeared to scale nonlinearly with current.

Arcing under high-current operation could not be avoided without the use of the insulated feedthrough.

The insulated feedthrough prevented arcing, even during highcurrent operation.

3

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Avoid beginning clauses with "There are..." or "It is..." — put the subject first and plunge right in

There is clearly a need for an observable sensitive to changes in the nuclear shape and common to all isotopes.

An observable is clearly needed that is sensitive to changes in the nuclear shape and common to all isotopes.







Audience Survey Question ANSWER THE QUESTION ON THE INTERACTIVE SCREEN IN ONE MOMENT

What is the easiest way to improve the clarity of your writing?

- Use very technical jargon for accuracy
- Write shorter sentences
- Don't just say what something is; also say what it is not to avoid ambiguity
- Include a lot of qualifying phrases

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Audience Survey Question

What is the easiest way to improve the clarity of your writing?

- Use very technical jargon for accuracy
- Write shorter sentences
- Don't just say what something is; also say what it is not to avoid ambiguity
- Include a lot of qualifying phrases

^{*} If your answer differs greatly from the choices above tell us in the questions window!

^{*} If your answer differs greatly from the choices above **tell us in the questions window!**

Eliminate unnecessary words

the results tend to suggest they are both identical estimated to be about 0.75 mg such as copper, iron, and etc. bright yellow in color and elliptical in shape $\Lambda = \lambda/2\theta$, and vice versa given the fact that $\tau_{\alpha} = \sigma q_{\alpha} \int n(s) ds$ were reexamined in order to confirm the presence

it is known that nanocrystallites can form shear bands

"A phrase such as "it is interesting to note that" adds no information and only delays getting to the point of the sentence." Scientific Style and Format

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Replace wordy expressions

due to the fact that	because
in the near future	soon
a very limited number of cases	few
it appears to be indicated that	apparently
in spite of the fact that	although, despite
subsequent to	after
at the present time	now
in consequence of this fact	thus
as compared with	versus
in combination with	with

Change nouns ending in -tion, -ment, and -ance back into verbs

The most common use for Raman spectroscopy is for the observation of phonons. (13 words)

Raman spectroscopy is most commonly used to observe phonons. (9 words)

We proceeded to make an arrangement of the superconducting islands on the substrate with the STM tip. (17 words)

We arranged the supercoducting islands on the substrate using the STM tip. (12 words)

The superconducting islands were arranged on the substrate using the STM tip. (Better?)

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3. Now for proofreading (microscopic scale)

Revising concentrates on the *ideas*

Editing concentrates on language and style

Proofing concentrates on mechanics

The importance of proofreading cannot be overstated—so-called careless errors (spelling, punctuation, grammar) will make readers wonder about how carefully you did the experiment itself and question your attention to detail.

Proofreading examines the manuscript one word at a time

- Acronyms, mathematical symbols, and special characters are defined at first usage
- Format and typography are consistent and conform to manuscript preparation rules
- Technical writing conventions are observed
- Grammar and spelling are flawless



TIP 1: Proofread from a hard copy

TIP 2: Start at the bottom right-hand corner and read backwards and up

TIP 3: Proofread everything

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Maintain witless consistency throughout the text

- Terminology—always call the same things by the same names
- Typography—use of italics and boldface
- Expression of numbers
- Definitions of symbols or special characters
- Legends in figures
- Style of subheadings, captions, table titles
- Use of color



People expect a change to *mean* something!

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To recap:

- Focus on important ideas, logical structure, precise, understandable language, and "mechanical errors" —in this order
- Clarify—quantify—objectify
- Eliminate redundancies and wordy expressions
- Proofread from a hard copy



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