

Concise Scientific Writing/ The Ethics of Authorship

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A written document
MUST ALWAYS BE
more meticulous
than an oral
presentation!

Perspective

- American Chemical Society Journal Guidelines
12 years of service as an Associate Editor for the Journal of Natural Products
- Prescreening of manuscripts:
 - Appropriateness within the scope of the journal
 - High journal standards for English writing, including syntax and grammar
 - Concise scientific writing emphasizing clarity, accuracy, and precision
 - Adherence to the “Instructions for Authors Guidelines”

Journal Selection

- List of appropriate journals
- Select the one with the highest “Status”
- Study the “Instructions for Authors”
- Decide on publication format: Full paper, Note, (Rapid) Communication, Letter, Review

Participation and agreement from all co-authors regarding selection of the journal and the publication format

Manuscript Construction

- Title Page
 - Title
 - Authors/Affiliations
- Abstract
- Manuscript Body
- Supporting Information

Title

- Create the title after the text is written.
- The title serves to attract the potential audience and to aid retrieval and indexing
- The title should be concise.
 - “The Isolation and Structure Elucidation of Novel Cembranoids from *Sinularia polydactyla* and their Cytotoxic Properties”
 - “Cytotoxic Cembranoids from *Sinularia polydactyla*”

Abstract

- The abstract allows the reader to determine the nature and scope of the paper and helps technical editors identify key features for indexing and retrieval.
 - Follow Word Limits: Concise summary of findings, not a long-winded discussion-like paragraph
- DO NOT NEGLECT the importance of creating a quality abstract.

The abstract is your one opportunity to catch your readers' full attention!

Manuscript Body (JNP)

- Introduction (untitled)
 - Concise background relevant to the study
 - What were the objectives of the study and why are the results of this study important?
- Results, Discussion, Conclusions (untitled)
 - Results should present textual points describing the interpreted data
 - Discussion places the results of the study within the context of the present knowledge in the field
- Experimental Section

Manuscript Body (JNP)

- Associated Content Description (Supporting Information)
 - SI should meet the SAME HIGH STANDARDS as the main publication
- Corresponding Author Information
- Acknowledgements
- References
- Chemical Structures, Tables & Figures
- TOC Graphic

The Review Process

- Online submission of manuscript
 - Journal Publishing Agreement
- Office of the Editor-in-Chief prescreens manuscripts (1st stage) and routes them to Associate Editors
- Associate Editors prescreen manuscripts (2nd stage) and send them for review
- Selection of reviewers is based on manuscript content and reviewer areas of expertise

Prescreening

- Failure to comply with prescreening criteria may lead to rejection of a manuscript without review
- Editor has the option to return a manuscript to the authors for revision prior to review
- Well-written and Editor-approved manuscripts will be sent for review without delay

Peer Review

- Scientific manuscripts often have content from multiple disciplines
- Specialized content must be reviewed by peers specializing in each discipline
- Manuscripts are sent to peer reviewers selected by the Associate Editor
- Two to three reviewers per manuscript

Reviewer Competence Areas (JNP)

- **Discipline of Expertise (24):** e.g. biochemistry, molecular biology, microbiology, etc.
- **Organism Type (6):** e.g. marine, microbial, plant, etc.
- **Physicochemical (11):** e.g. molecular modeling, X-ray crystallography, electronic circular dichroism, etc.
- **Separation/Analytical Methods (12):** e.g. GC, HPLC, ion exchange chromatography, etc.
- **Biosynthesis (4):** e.g. alkaloids, terpenoids, etc.
- **Chemical Synthesis (6):** e.g. aromatic compounds, polyketides, etc.
- **Compound Areas (103):** e.g. alkaloids, antibiotics, saponins, lipids, carotenoids, vitamins, etc.
- **Bioassays/Biological (50):** e.g. antimicrobial, cytotoxicity, enzyme-inhibition, pharmacology, CNS, receptor binding assays, etc.

Reviewer Responsibilities

- Appropriateness within the scope of the journal
- Technical and scientific quality of the manuscript
 - Experimental design and experimental details
 - Adequate controls, sampling, data handling, data interpretation, and statistical analyses
- Clarity of presentation
 - Clear Standard English writing, objective presentation
 - Clarity and necessity of figures, tables, chemical structures, data analyses, and methods
- Professionalism
 - Plagiarism, previous or concurrent submission of similar content, conflicts of interest

Reviewer Recommendations

- Accept (as is)
- Minor revision
- Major revision
- Reconsider after Major Revision
- Reject and resubmit
- Reject

Co-authors are the first-line reviewers!

Co-authors must provide similar recommendations to the corresponding author after their review of the final manuscript draft (prior to submission)!

Editor Response to Reviewer Recommendation

- Editor's assessment of the reviewers' recommendations
 - Accept
 - Minor revision
 - Major revision
 - Reconsider after major revision
 - Reject and resubmit
 - Reject
- Authors revise the manuscript based on the reviewers' and Editor's recommendations and then resubmit

A Philosophy of “Accepted”

- Quality of the scientific content is approved and judged to be suitable for the journal
- Objective of Co-Authors, Reviewers, and Editors is to improve a manuscript so it can reach the highest degree of quality possible
- Comments and notes are best oriented towards constructive criticism and improving or strengthening the manuscript

Editing of the Revised Manuscript

- Associate Editor edits the manuscript for:
 - Compliance with reviewer-requested revisions
 - Compliance with journal formatting guidelines
 - Proper presentation of chemical structures!!!!
 - Clarity of content presentation
 - Proper use of English syntax and grammar
 - Concise writing style
 - Scientific accuracy and quality

The MOST TIME CONSUMING step in the process for an ACS Journal Editor!!!

Final Revisions Prior to Publication

- Authors make final changes based on the Associate Editor's edited version
 - Addition of new content at this stage?
- Accepted, edited manuscript
 - ACS editorial office
 - Set of proofs created by the Proofs Editor
 - Authors' opportunity to make final corrections (minor)
 - ASAP publication online
 - “Off of my back – Amen!”

Authorship Resources

- International Committee of Medical Journal Editors: Defining the Role of Authors and Contributors (<http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>)
- Responsible Conduct of Research – Biomed: Authorship Online Course
 - Required completion for every funded researcher, graduate students, and post-docs working on externally funded projects
 - (<http://www.research.olemiss.edu/RCR-instructions>)

Authorship Resources

- Office of Research Integrity: Authorship and Publication
 - (<http://ori.hhs.gov/publicationsauthorship>)
 - (<http://ori.hhs.gov/Chapter-9-Authorship-and-Publication-Authorship>)
- National Academy of Sciences of the USA: Authorship and the Allocation of Credit
 - “Responsible Authorship of Papers in PNAS” Nicholas Cozzarelli, Editor-in-Chief (<http://www.pnas.org/content/101/29/10495.full>)
 - “On Being a Scientist” Excerpt (<http://www.ncbi.nlm.nih.gov/books/NBK214562/>)
- ACS Publications: Ethical Guidelines to Publication of Chemical Research

(<http://pubs.acs.org/page/policy/ethics/index.html>)

Authorship: ICMJE Criteria

- All individuals designated as authors should meet ALL four criteria:
 - “Substantial contributions to conception or design of the work; or the acquisition, analysis, or interpretation of data”
 - “Drafting the article or revising it critically for important intellectual content”
 - “Final approval of the version to be published”
 - “Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved”
- Individuals who do not meet all four criteria should be recognized in the acknowledgements

Author Responsibilities

- Accountable for the parts of the work the author has contributed
- Ability to identify which co-authors are responsible for which parts of the work
- All authors should participate in the review, drafting, and final approval of the manuscript
 - BEFORE SUBMISSION
 - Before final publication (proofs stage)

ACS Ethical Guidelines: Authorship

- “An administrative relationship to the investigation does not of itself qualify a person for co-authorship (but occasionally it may be appropriate to acknowledge major administrative assistance).”
- “Deceased persons who meet the criterion for inclusion as co-authors should be so included, with a footnote reporting date of death.”
- “The submitting author should have sent each living co-author a draft copy of the manuscript and have obtained the co-author’s assent to co-authorship of it.”

Unethical Authorship Practices

- **Authorship by Authority:** institutional or authority figures use their status to require that they be included as an author
- **Gift or Honorary Authorship:** inclusion of prominent individuals to increase the apparent prestige of the work
- **Political or Courtesy Authorship:** inclusion of individuals as authors to avoid confrontations or hurt feelings and to preserve social or professional relationships
- **Ghost Authorship:** an individual who wrote or contributed to the publication is NOT included as an author (to disguise industry affiliations or other conflicts of interest)

Non-Author Contribution Examples

- Obtaining of research funding or employment funding
- Superior or supervisory position without direct contributions to the project or publication
- Provision of research resources
 - Lab or research space
 - Research equipment: e.g. NMR, X-ray, MS, microscopes, HPLC, specialized computers or software, etc.

These contributions qualify an individual to be mentioned in the Acknowledgements

**An Individual's Scientific
Integrity is Essential to
ALL OF SCIENCE**

Scientific Integrity

- Research Misconduct
 - Fabrication
 - Falsification
 - Plagiarism
- Conflicts of Interest
- Unethical Inclusion of Authors
- Excessive Fragmentation of Publishable Content
- Inappropriate Acknowledgement (without permission)

Plagiarism

- The uncredited use (either intentional or unintentional) of someone else's words or ideas as your own.
- self-plagiarism = plagiarism
 - Online submission of a manuscript signs over copyright to the journal
 - Co-submission of a publication to multiple journals is unethical and can be grounds for being banned from publishing in the journal for up to five years or more.
 - When you publish, you relinquish ownership of the words you've used to the publishing journal

Plagiarism Detection

- Plagiarism is now unlikely to go undetected and leads to a major loss of credibility.
- Objective of software-based detection
 - to protect the integrity of the researcher, the journal, and scientific community as a whole
- “ACS Publications uses CrossCheck's **iThenticate** software to screen submitted manuscripts for similarity to published material.”

Press Release: “ACS Implements CrossCheck Plagiarism Screening”
<http://www.acs.org/content/acs/en/pressroom/newsreleases/2013/october/acs-implements-crosscheck-plagiarism-screening.html> 30

Pointers for Manuscript Content

- Appropriate Referencing
- Appropriate Terminology
- Chemical Structure Depictions
- Words & Phrases to Avoid
- Proper Usage of Articles
- Hyphenation
- Numbers

References: Credible Sources

- Critically evaluate EVERY source of information
- All publications do not contain correct content:
 - “just because it is published doesn’t make it correct”
- Internet sources are not definitive authorities and require critical assessment to determine content quality
 - Wikipedia [USER CREATED] & Google Scholar can be excellent starting resources
 - All potentially useful information CANNOT be found on the internet

References: Credible Sources

- University/Institutional libraries and database resources have access to more comprehensive content than Google or the internet, in general
 - Literature databases archive peer-reviewed scientific content
 - Examples: SciFinder Scholar, Medline, etc.

Importance of Appropriate Terminology

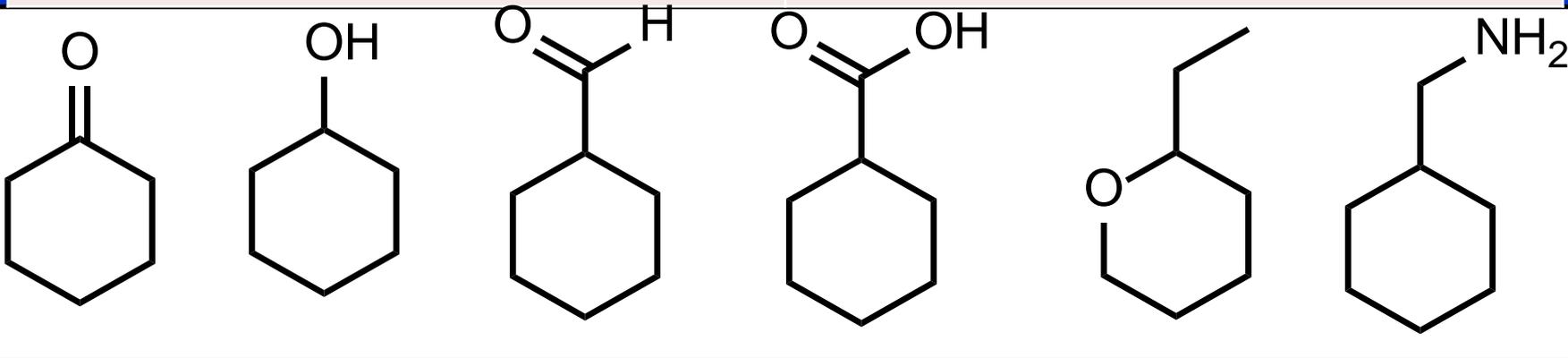
- Be sure to use terminology appropriate to the field in which you are publishing, especially if it is not your field of primary expertise
 - Consult with experts and colleagues in areas outside of your discipline
 - Abide by the rules and regulations for the discipline to which you plan to contribute
 - If you are unsure or find conflicting information, seek additional credible authorities for confirmation

Ex: Chemical Terminology

- “Hydroxyl/ methoxyl” vs. “hydroxy/ methoxy”
 - Hydroxyl/methoxyl is ancient terminology for radical forms in terms of nomenclature
- “chiral carbon” vs. “stereogenic carbon”
 - The molecule is chiral, the center is stereogenic
- “relative and absolute stereochemistry” vs. “relative and absolute configuration”
 - Stereochemistry is the field of study, while configuration describes 3D arrangements of e.g. stereogenic centers
- “Spectral properties” vs. “spectroscopic/ spectrometric properties”
 - Spectral = unreal, unearthly, ghost-like, man-made

Chemical Terminology

Compound Class	Functional Group
ketone	carbonyl (ketocarbonyl)
aldehyde	formyl
alcohol	hydroxy
carboxylic acid	hydroxycarbonyl
ether	ethereal
amine	amino

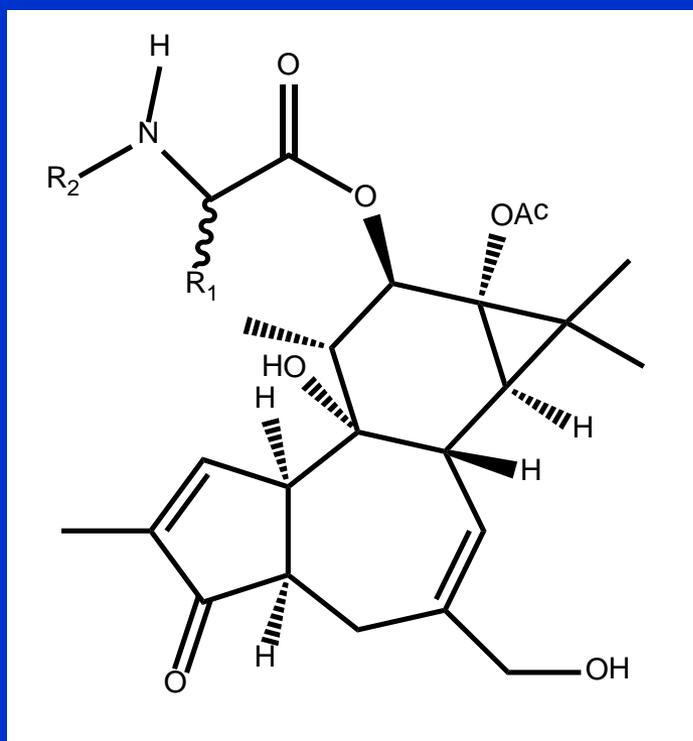
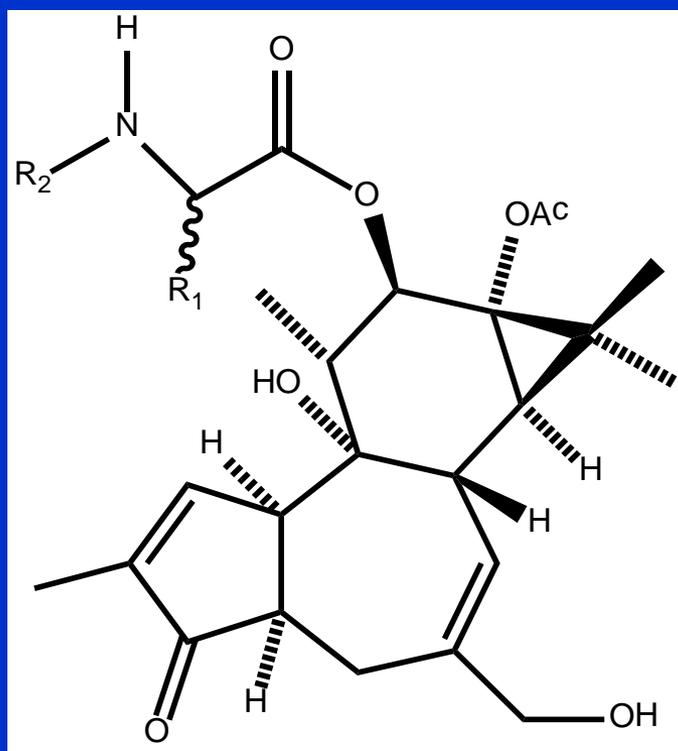


Ketone/ 2° Alcohol/ Aldehyde/ Carboxylic Acid/ Ether/ Amine/

Carbonyl Hydroxy Formyl Hydroxycarbonyl Ethereal Amino

Chemical Structures: 3D Representations

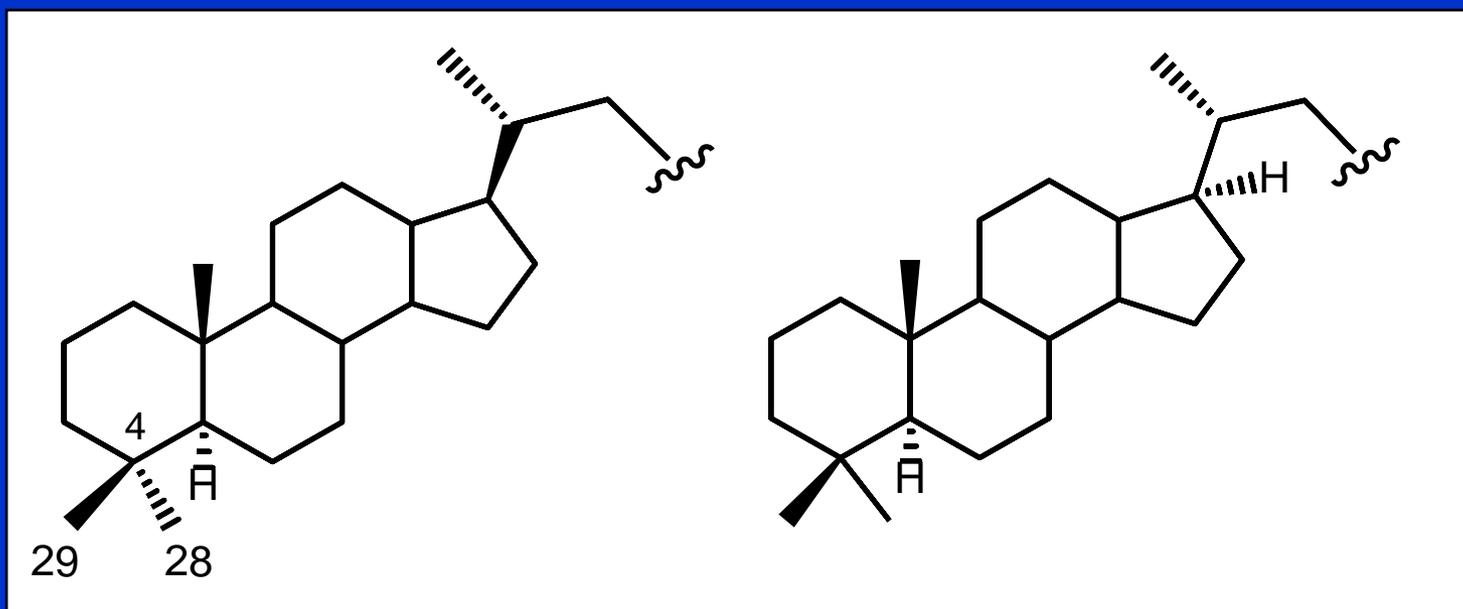
J. Brecher, Pure Appl. Chem., 2006, 78, 1897-1970



J. Nat. Prod. 2010, 73, 447-451

Configurational Descriptors

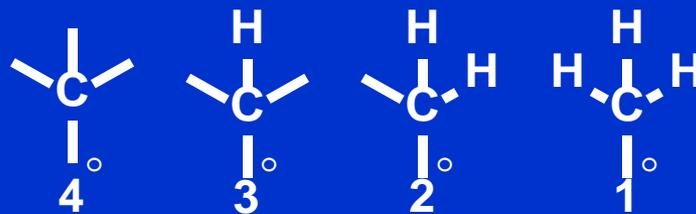
- Do not connect two stereogenic centers with a solid or dashed wedge. Show hydrogens when necessary.



C-4 is NOT a stereogenic center.
Stereodescriptor use is appropriate for discussing
diastereotopicity/ enantiotopicity of ligands.

Classification of Carbon Atoms

1. The organic chemistry method:

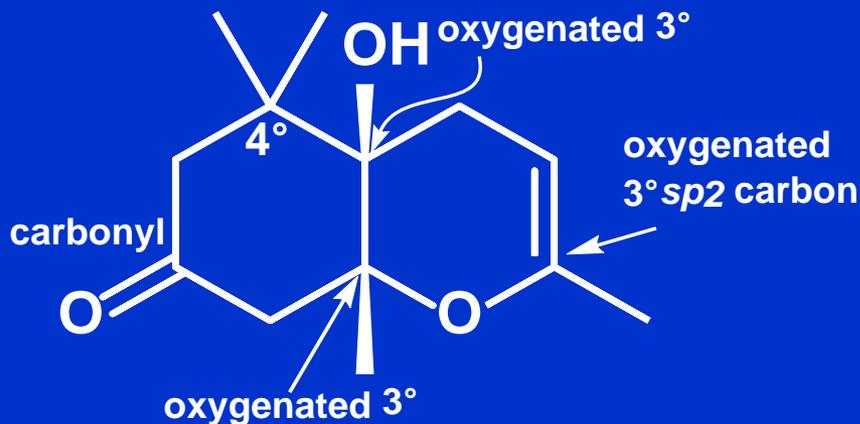
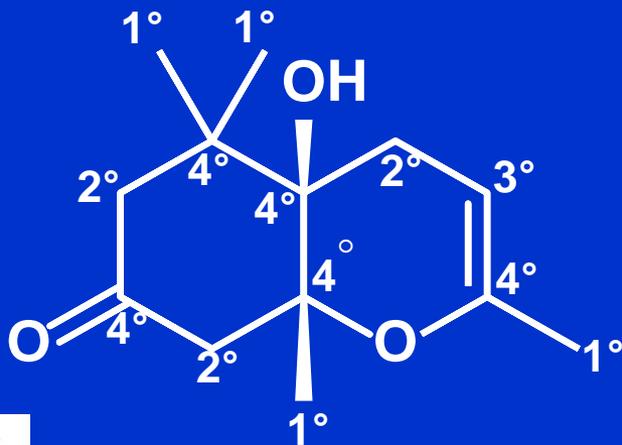


2. The DEPT135 method : The 1D NMR method classifying carbons according to the number of attached hydrogens

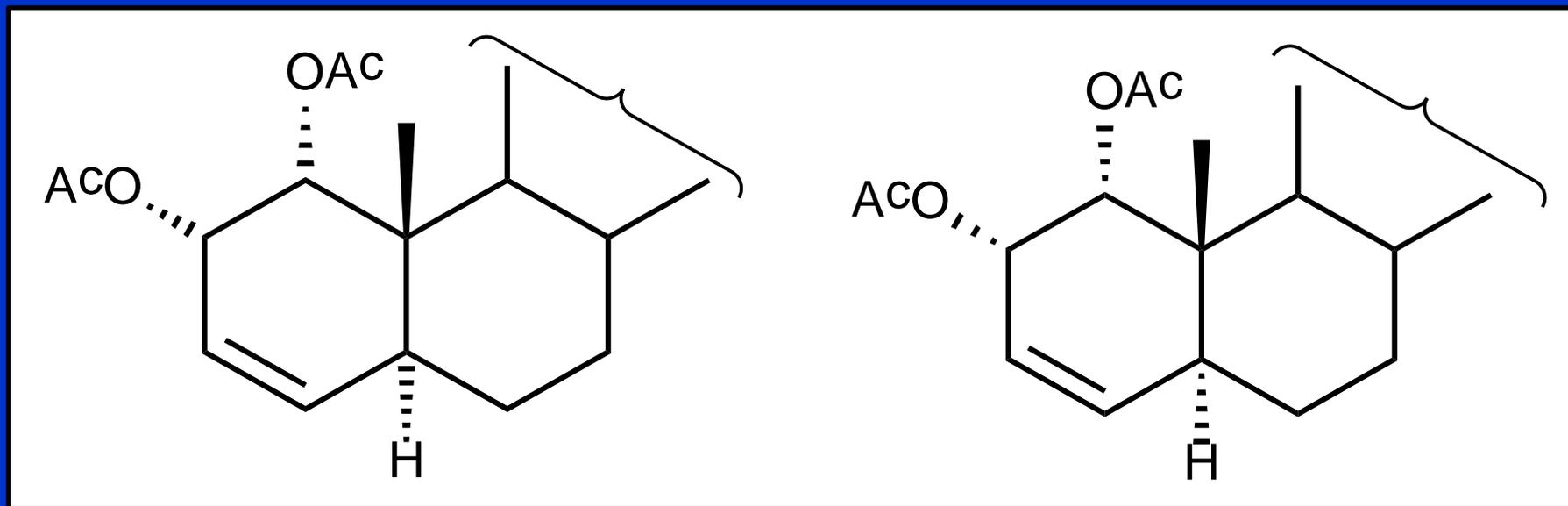
a. Carbons devoid of hydrogens do not show up

b. Carbons with three hydrogens appear as normal (+)

c. Carbons with two hydrogens appear inverted (-)



InChI: The IUPAC International Chemical Identifier



The α -configuration of the OAc group?
The carbon center possesses configuration.
The substituent possesses orientation: e.g. α/β

Words & Phrases To Avoid

- Avoid slang and jargon.
 - E.g. “The NMR was recorded.”
 - E.g. “The sample was rotovaped.”
- Be brief. Verbosity obscures your message and annoys your readers.
- Omit empty phrases:
 - As already stated...
 - It is interesting to note that...
 - It is worth mentioning at this point...
 - To the best of our knowledge, this is the first report of...
 - “--- **2**, the new triterpenoid so far never reported ----”??

Words & Phrases To Avoid

- Write economically to avoid redundancy!
- Use single words instead of phrases:
 - “are in agreement” vs. “agree”
 - “has been shown to be” vs. “is”
 - “for the reason that” vs. “because”
 - “in consequence of this fact” vs. “therefore” or “consequently”
 - “reported in the literature” vs. “reported”
 - “very important” vs. “important”

Words & Phrases To Avoid

- Omit excess words:
 - “There are seven steps that must be completed.” vs. “Seven steps must be completed.”
 - “This is a problem that is...” vs. “This problem is...”
 - “careful consideration of the data” vs. “consideration of the data”
 - “Straight chain” vs. “chain”
 - “Lactone ring” vs. “lactone”
 - “Previously unreported/reported compound” vs “new/known”
- Anthropomorphism – attributing human characteristics (especially feelings or traits) to non-humans or inanimate objects
 - “The reaction afforded the desired product” vs. “afforded the target product”

Words & Phrases To Avoid

- Apologizing: “Unfortunately, the reaction failed.” vs. “However, the reaction failed.”
- Time references: “recently, it was demonstrated” vs. “it was demonstrated”; “current literature states” vs. “literature states”
- Possessives: “The compound’s NMR data” vs. “the NMR data of the compound”
- Contradictions:
 - “almost identical” vs. “similar”
 - “open ring” vs. “acyclic” or “seco”

Proper Use of Articles: a/ an/ the

- Article - an adjective that modifies a noun
 - “the” - definite article
 - “a/an” - indefinite articles
- Examples:
 - “Let’ s read book” vs. “Let’ s read (the) book” (a specific book), or “Let’ s read (a) book” (any book)
 - “American sycamore is tree that grows in southern region of North American continent.”
 - “**The** American sycamore is **a** tree that grows in **the** southern region of **the** North American continent.”

Proper Use of Articles: a/ an

- “a” or “an” depends on the sound that begins the next word:
 - Use “a” before an aspirated “h”
 - A house, a hog
 - Use “an” before the vowel sounds of a, e, i, o, and a “soft” or “short” u, and y.
 - An A, an E, an I, an O, a U.
 - an apple, an egg, an idiot, an orphan
 - an hour, an unintended consequence
 - an yttrium compound, an ylide

Proper Use of Articles: a/ an

- Choose the proper article according to the pronunciation of the words or abbreviations they precede:
 - A nuclear magnetic resonance spectrometer
 - An NMR spectrometer, a MeOH solution
- Choose the proper article to precede acronyms according to the pronunciation of the first letter.
 - a B.S. degree: an M.S. degree/ a masters degree

Hyphenation

- Hyphens are sometimes used:
 - when letters are doubled
 - when more than one prefix is present
 - when the unhyphenated form does not convey the intended meaning
- Examples:
 - anti-inflammatory but antimicrobial
 - bi-univalent, mid-infrared, un-ionized

If unsure, consult a Style Guide or Dictionary

Numbers

- Spell out the words for numbers 1-9
 - One, two, three, etc.
- Use numerals for numbers of 10+
 - 10, 11, 123, 10,000, etc.
- Spell out the words for numbers that start a sentence, regardless of the number.
 - “11 aliquots were transferred.” vs “Eleven aliquots were transferred.”
- Note the use of the Oxford/Harvard comma
 - Be consistent if you choose to use it.

Five C's of Effective Writing

1. Correct
2. Clear
3. Consistent
4. Concise
5. Coherent

Keep it simple

Use as few
words as
possible

Thank You

“May your words be few
and meaningful”