

# How to Write an Effective Chemistry Research Paper (Part 2)

## Author

Enago Academy

## Post Url

<https://www.enago.com/academy/writing-in-chemistry-part-2/>

In this article, we describe the scientific conventions and writing styles followed in Chemistry papers.

## Beginning a Sentence

Avoid starting a sentence with a symbol or numerical value.

### Example

? 0.5 g of NaOH was added to 5 ml of DW, and the solution was heated.

?? After addition of 0.5 g of NaOH to 5 ml of DW, the solution was heated.

## Pedagogical Phrases

Avoid including phrases which address the process of learning and not the science of the experiment.

### Example

This experiment helped us learn about...

or

The goal of this experiment was to learn about...

Although such sentences are preferred in Original Articles, scientific reports/communication should ideally focus only on the data and results.

## Illogical Constructions

Check that a modifier phrase or the pronoun “it” actually refers to the intended subject.

## Tip 1!

**To avoid dangling modifiers and unclear antecedents, think about the subject.**

### Example

? Being coated with grease, I cleaned the flask before adding reagents.

*Was I coated with grease or the flask?*

*The flask was coated with grease, and so,*

?? Because the flask was coated with grease, it was cleaned before adding reagents.

## Personal Pronouns

Because scientific experiments demonstrate facts that do not depend on the observer, reports should avoid using the first and second person (I/we/our/us).

### Example

? I filtered the solution and noticed production of a yellow powder.

?? Filtration of the solution, yielded a yellow powder.

However, when referring to your own results or conclusions, it is better to use the first or second person.

### Example

While AB et al. report X value, the authors' data indicates Y value.

or

AB et al. report X value, but our data yield Y value.

## Active Voice

*When possible*, replace passive voice with active voice for clarity.

### Example

? Passive: There was some solid that did not dissolve.

?? Active: Some solid did not dissolve.

## Personification

Do not personify compounds and equipments.

### Example

? The spectrum shows two bands of equal intensity.

?? Two bands of equal intensity appear in the spectrum.

## Plural Nouns

Usage of verbs when mentioning amount of chemical reagent and terms like data (singular: datum) and spectra (spectrum) is often confused.

A quantity used is a singular subject, even when that quantity is in a plural form of units.

### Example

? While the solution boiled, 5.0 g of KBr were added.

?? While the solution boiled, 5.0 g of KBr was added.

## Verb Tense and “Verbing” a Noun

Usually the [journal guidelines](#) specify the tense to be followed in each section of the manuscript.

## Tip 2!

**Use past tense to describe a procedure:**

***Hydrochloric acid was added to the flask slowly in order to prevent decomposition of the product.***

**Use present tense to describe a scientific fact:**

***Hydrochloric acid is a caustic substance that must be used with caution.***

“Verbing” a noun, i.e., turning a noun into a verb makes the sentence unclear and should be avoided.

### Example

? X complexes to Y

?? X forms complexes with Y

## Abbreviations, Formulae, and Numerals

Define abbreviations for chemical compounds or ligands at the first instance. However, standard organic abbreviations (e.g., Me = methyl, Pr = *iso*-propyl) can be used. Use chemical formulae for standard compounds but not when the name is shorter or more precise.

### Example

- NaOH (aq) for sodium hydroxide
- Caffeine for  $C_8H_{10}N_4O_2$

Long compound names can be numbered if repeated many times. The number should be bold or underlined, defined when first presented and appear in parenthesis when used as an adjective.

### Example

Investigations into 8-hydroxyquinoline (**1**) and 4-iodo-8-hydroxyquinoline (**2**) are described. Recrystallization of **1** and **2**...

Use a leading zero for values less than unity and avoid values with many zero (use scientific notation instead) for decimals.

### Example

? .15 mm, ?? 0.15 mm

? 0.000024 mM, ??  $2.3 \times 10^{-4}$  mM

## Chemical Names

The names of chemicals are not capitalized, unless they are trade names (e.g., "Tylenol").

### Example

? The reaction of Cobalt (II) was...

?? The reaction of cobalt (II) was...

## Terms and Expressions

Use terms like "*synthesizing*" new compounds and "*preparing*" solutions, avoid terms like "products were *created*." With/Using/By/On—avoid using these interchangeably, as they might be incorrect in some cases

### Example

Spectra are measured "*with/using*" and not "*on*" a spectrometer.

## Tip 3!

### Spectrometers, colorimeters, etc. should be referred to as “instruments” not “machines.”

The intransitive verb “*react*” is the most used term in chemistry papers. It should not have an object and should not have a passive voice. Chemical reagents react with each other, they are not reacted.

#### Example

? A and B were reacted to produce C and D.

?? The reaction of A and B, potassium hydroxide and hydrochloric acid, produced C and D.

A hypothesis can be “*tested*”; however, for most laboratory work, the terms “measured,” “investigated,” “determined,” “calculated,” and “obtained” are better.

#### Example

? The absorbance of the solution was tested using...

?? The absorbance of the solution was measured using...

**Reference: [www.chemistry.kenyon.edu/getzler/08F-CourseFiles/BriefGuideWritingChemistry](http://www.chemistry.kenyon.edu/getzler/08F-CourseFiles/BriefGuideWritingChemistry)**

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