

# On scientific writing - supporting materials

2021-2022 Toolkit for doctoral studies

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Updated 7.12.2021

# Questions? Enter in presemo (anonymous)

<http://presemo.aalto.fi/toolkitpuurunen>

Any other questions that you would like to ask the teachers today? (Chat)

Send

Any questions that you would like to ask the teachers today related to writing scientific articles? (Chat)

Send



# Riikka Puurunen: background and “credentials”

- M.Sc. Chemical Engineering 1998 (TKK, HUT)
- Doctor of Science 2002 (TKK, HUT)
- Postdoc at IMEC, Belgium 2003-2004
- Researcher at VTT Technical Research Centre of Finland 2004-2017
- Professor at Aalto University (associate, non-tenured → tenured) 2017-
- Supervised 5 doctoral theses to completion
- Authored or co-authored 77 scientific articles (WoS, 7.12.2021), including 3 highly cited review articles, one essay and one “response to comment”
- Most cited article: 1820 times (several >100 citations)
- Total citations: 5116
- Hirsch-index: 28 (WoS)
- Has refereed for many journals, guest editor for a special issue to be (Topics in Catalysis, Springer)
- Invention disclosures, patent applications/patents, one start-up from my work (Chipmetrics Oy)

# CHEM-E0105 Academic Learning Community

## Scientific Article Exercise (SAE), Intended learning outcomes

- **understand what differentiates scientific articles from other publications such as web pages**
- be able to recognize typical parts of a scientific articles that report original research (IMRaD) and find the conclusion of an article
- know how to formulate citation in a given format (we practice the format of Aalto CHEM instructions)
- be able to describe how the impact of a scientific journal and of an individual article is (attempted to be) assessed
- have practiced formulating your own view (/comment/opinion) on a scientific article
- be able to use a plagiarism detection software
- have practiced skills of peer evaluation

**A?** MyCourses SCHOOLS MY RECENT COURSES CORONAVIRUS INFO SERVICE LINKS ALLWELL? (EN)

CHEM-E0105 - Academic Learning Community, Lecture, 20.9.2021-29.4.2022

Grades

Sections

- » Course description
- » Materials
- » Zoom link for Teaching Sessions
- » Orientation week
- » Sessions 1 & 2: Aalto Talent Expo
- » **Scientific Article Exercise (SAE) module**
- » ~~Communication Skills module~~
- » Thesis Review module
- » Entrepreneurial Mindset module
- » Academic Advising: Feedback
- » Quizzes
- » Other assignments

Dashboard

Site home

Calendar

## CHEM-E0105 - Academic Learning Community, Lecture, 20.9.2021-29.4.2022

Dashboard / My own courses / chem-e0105 - ... / Sections / scientific ar...

### Scientific Article Exercise (SAE) module

SAE module (total effort 22 h, corresponding to 0.8 ECTS) starts on Mon Oct 11, 2021. Welcome!

Planned deadlines (DLs):

- 1st batch of DLs: Mon Oct 18
- 2nd batch of DLs: Thu Oct 28
- 3rd batch of DLs: Mon Nov 8

List of some recommended journals from Aalto CHEM majors [here](#)

**Restricted** Not available unless: The activity **Start here: Choose your major!** is marked complete


**Session 3: Scientific Article Exercise (SAE)**

Date: Monday, October 11th, 2021

Time: 8:30-10:00 am

<https://mycourses.aalto.fi/course/view.php?id=33599&section=5>

## SAE: Getting started

 [Six short video lectures related to scientific articles, SAE module \[page\]](#)

<https://mycourses.aalto.fi/mod/page/view.php?id=765298>

- Six (6) short video lectures, < 10 min each
- Slides:
  - Short basic part (in video lecture)
  - Often, **lots of extra materials that RLP keeps on updating**
- Pdf “frozen”, Google Slides evolving (shared with all Aalto GDrive users)

Six short video lectures related to scientific articles, SAE module [page]

*Note, RLP 30.9.2021: all slidesets and videos have now been updated for 2021-2022.*

### 1 How does one construct a scientific article? The IMRaD structure

- Video in Panopto: <https://aalto.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=2ada5a33-9972-4824-af4b-adab00e2bb77>
- Link to Slides in pdf
- Link to Evolving Google Slides slideset (anyone at Aalto University can view; aalto.fi address must be activated for GDrive use)

### 2 How does one publish a scientific article? Peer review, and more

- Video in Panopto: <https://aalto.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=6d19f667-b39d-453d-80e3-adad007e37d1>
- Link to Slides in pdf
- Link to Evolving Google Slides slideset (anyone at Aalto University can view; aalto.fi address must be activated for GDrive use)

### 3 What's in a citation? (And what's not?)

- Video in Panopto: <https://aalto.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=f925ba03-dd2c-4dd4-8de7-adb300c00340>
- Link to Slides in pdf
- Link to Evolving Google Slides slideset (anyone at Aalto University can view; aalto.fi address must be activated for GDrive use)

### 4 How to create reference lists effectively?

- Video in Panopto: <https://aalto.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=140c0135-2ad6-4d54-ade8-adb300c65e9a>
- Link to Slides in pdf
- Link to Evolving Google Slides slideset (anyone at Aalto University can view; aalto.fi address must be activated for GDrive use)

### 5 “Impact is everything” — How is impact of journals and articles evaluated?

- Video in Panopto: <https://aalto.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=cfa71032-52e1-46d2-9586-adb300d0e520>
- Links to Slides in pdf
- Link to Evolving Google Slides slideset (anyone at Aalto University can view; aalto.fi address must be activated for GDrive use)

### 6 Quickest way to get (in)famous as a scientist? On scientific misconduct

- Video in Panopto: <https://aalto.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=d8bca9b9-6dbd-4fc7-820e-adb300dc4127>
- Link to Slides in pdf
- Link to Evolving Google Slides slideset (anyone at Aalto University can view; aalto.fi address must be activated for GDrive use)

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# Six short SAE videos: Content picks

1. [How does one construct a scientific article? The IMRaD structure](#)
2. [How does one publish a scientific article? Peer review, and more](#)
3. [What's in a citation? \(And what's not?\)](#)
4. [How to create reference lists effectively?](#)
5. ["Impact is everything" — How is impact of journals and articles evaluated?](#)
6. [Quickest way to get \(in\)famous as a scientist? On scientific misconduct](#)

## Typical construction of an article (IMRaD)

<b>Abstract</b> * the article in a nutshell * formally <u>not</u> part of the article	<b>Introduction</b> * "why?" * "setting the scene" to the work * usually includes lots of literature citations * goal of the work & limitations to scope (usually at the end, last paragraph)	<b>Materials and Methods</b> * how? * sufficient details that the work can be reproduced by skilled others	<b>Conclusion/Summary (optional)</b> * "so what?" * interpretation of the key results and highlighting the novelty and significance * (usually no figures/tables/references)
		<b>Results</b> * what results were gained? (detailed objective description) * tables, figures, schemes, ...	
		<b>Discussion</b> * how do results compare with literature? * what do the results mean and why they are important?	<b>References</b>

One example: PCCP Instructions for authors, accessed 30.9.2020, <https://www.rsc.org/journals-books-databases/journal-authors-reviewers/prepare-your-article/format-layout>

Small text: Simplified view by Rikku Pyyonen, 30.10.2020

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## Core of the modern scientific process: Peer review

[https://en.wikipedia.org/wiki/Peer\\_review](https://en.wikipedia.org/wiki/Peer_review)

1. Journal editor(s) judge whether the topic of a manuscript is in principle suitable for the scope of the journal. (If not → "desk rejection")
2. Manuscript is sent out to other scientists from the field (=peers) for evaluation
  - o Peers (referees/reviewers) give a recommendation of publishing/not publishing the manuscript
  - o Often, list of simple questions is answered, and free-formed feedback given to authors
  - o Always checked, if authors back up claims with evidence
3. Editor decides: accept, major revision, minor revision, reject
4. If major/minor revision, authors may make improvements and resubmit
  - o The editor(s)/peers review the work again
  - o There may be many rounds of peer review and revisions
5. Final decision by the editor: accept / reject

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## What is in the bibliographic entry of a journal citation? (Following Aalto CHEM guidelines)

Langmuir, I., *The adsorption of gases on plane surfaces of glass, mica and platinum*, *J. Amer. Chem. Soc.* 40 (1918) 1361–1402.

Cremers, V., Puurunen, R.L. and Dendooven, J., *Conformality in atomic layer deposition: Current status overview of analysis and modelling*, *Appl. Phys. Rev.* 6 (2019) 021302.

**Authors**, **Title**, *Abbreviated journal name*, volume (year)  
page-to-page (or article number)

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## Recommended: reference management system

- "Writing is rewriting" → the order in which you cite, will change in revisions
- Having to reorder references manually for each revision
  - o Needs great care!
  - o Feels (is!) a waste of time
- Reference management software can help, BUT...
- ...NOTE: your own organization can make a big difference

[https://en.wikipedia.org/wiki/Comparison\\_of\\_reference\\_management\\_software](https://en.wikipedia.org/wiki/Comparison_of_reference_management_software)  
<https://libguides.aalto.fi/c.php?g=410074&a=2929304>

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## International: Journal Impact Factor (JIF, IF)

[https://en.wikipedia.org/wiki/Impact\\_factor](https://en.wikipedia.org/wiki/Impact_factor), accessed 29.9.2020:

"The impact factor (IF) or journal impact factor (JIF) of an academic journal is a scientometric index that reflects the yearly average number of citations that articles published in the last two years in a given journal received. It is frequently used as a proxy for the relative importance of a journal within its field; journals with higher impact factors are often deemed to be more important than those with lower ones."

$$IF_y = \frac{\text{Citations}_y}{\text{Publications}_{y-1} + \text{Publications}_{y-2}}$$

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## Fabrication, falsification, plagiarism (FFP)

FFP: three types of scientific misconduct, internationally recognized. [https://en.wikipedia.org/wiki/Scientific\\_misconduct](https://en.wikipedia.org/wiki/Scientific_misconduct), accessed 29.9.2020:

- "Fabrication is making up results and recording or reporting them. ..."
- "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."
- "Plagiarism is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit. ..."

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# Some questions from ALC SAE, 2020-2021, before kick-off

- Can we make changes in Preprints before final publication?

No, but you can publish an update

- How can we cite an article that has no open access?

Simply: as usual!  
(Open access has no influence on citing articles, just on the ease of accessing them.)



- Thesis supervision Riikka Puurunen 2018-
- Grades
- Sections
  - Home page
  - Turnitin Submissions
  - (Meeting notes - WIP)
  - Bachelor's thesis info
  - Master's thesis info
  - Doctoral thesis info
  - Writing Guidance
  - Feedback
  - Links: Puurunen & Catalysis group
- Dashboard
- Site home
- Calendar



Dashboard / My own courses / thesis superv... / Sections / doctoral thes...

## Doctoral thesis info

Website (new, 2020): Being a doctoral student at Aalto

Aalto doctoral study & thesis practicalities - Prof. Puurunen's evolving file

I have (in 2017) started drafting instruction files for different levels of studies/theses - find link to doctoral level file here. The files are "living" (and certainly not final) and I update them when I encounter relevant new information. They are made with Google Slides and everyone at Aalto University should be able to view them and leave comments. Panopto recording taken in the AaltoCatalysis+ event March 26: 26. maaliskuuta 2019 at 16:37:13 Puurunen Doctoral study practicalities.

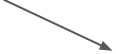
Scientific Article Exercise (SAE) module materials, Puurunen, CHEM-E0105 ALC 2020-2021

Writing guidance by Puurunen - evolving file

<https://mycourses.aalto.fi/course/view.php?id=22761&section=5>

[Writing guidance by Puurunen](#) - evolving file, ok to have a look (not finished, maybe never will be...)

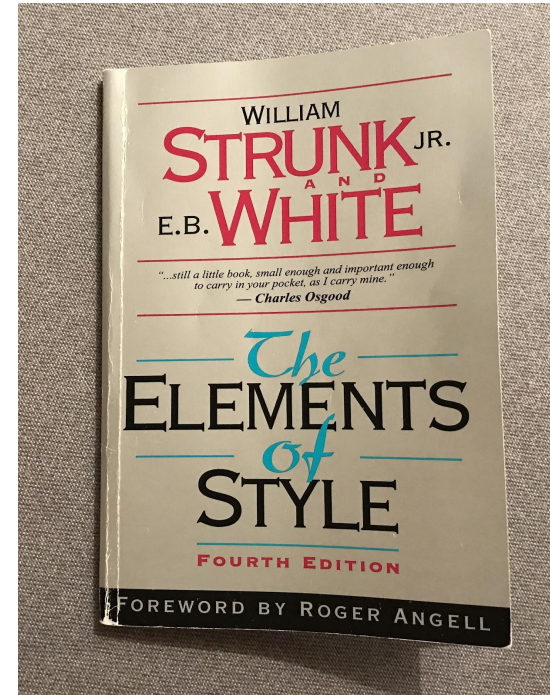
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# Strunk & White: The Elements of Style

*(p.23) “A sentence should contain no unnecessary words, a paragraph no unnecessary sentences, for the same reason that a drawing should have no unnecessary lines and a machine no unnecessary parts.”*

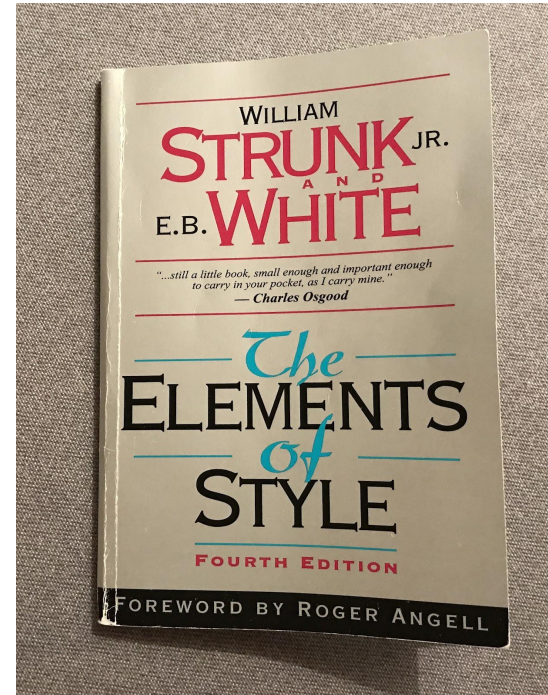
- A classic, compact reference for all who write in English. Keep it for your career
- Recommended e.g. by the editor-in-chief of J. Vac. Sci. Technol. A, Stephen King, and New York Times
- All doctoral students in Puurunen’s group should have a copy → ask for one, or buy it yourself (the paperback is cheap)



# Strunk & White: The Elements of Style

## II. ELEMENTARY PRINCIPLES OF COMPOSITION

13. Make the paragraph the unit of composition.



Attitude to spread:  
*“Write of complex things in  
simple language”*

(from S.M. George lab, Boulder, Colorado, USA)

or:

*KISS - keep it simple and short\**

\* RLP learned originally as postdoc at IMEC as: “keep it simple, stupid”...

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# You learn to write - by writing

- Many revision rounds is unavoidable
- The main purpose of the first version is ... to exist
- A typical article has a “standardized” structure, IMRaD -- good to think of what belongs where
- One can start writing from any section
- Starting by drafting an outline can be a very good idea
  - (Essay) **Whitesides’ Group: Writing a Paper**, G.M. Whitesides, Adv. Mater. 16 (2004) 1375-1377.  
<https://doi.org/10.1002/adma.200400767>

Editorials on scientific writing (and more): [Editorials-on-scientific-writing\\_RLP-evolving-file](#)

# Writing clinic - it's free, use it!

<https://mycourses.aalto.fi/course/view.php?id=405>

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**Writing Clinic**

Sections

- » Writing Clinic
- » Materials: Recommended links (Includes e-books)
- » Courses supporting writing and research

Dashboard / Courses / Language Centre / Writing Clinic Syllabus

## Writing Clinic

**Academic writing is demanding for everyone!**

**What does the Writing Clinic do?**

Writing your **thesis, dissertation or journal article in English** adds an extra challenge for non-native writers. We want to facilitate your writing process and help you improve as a writer; to provide individual writing tutoring to help you learn how to plan, organise, write and revise academic papers. This is **not** a language-checking service, and neither is it available to exchange or visiting students (schools' decree).

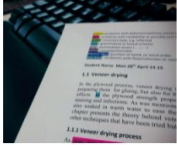
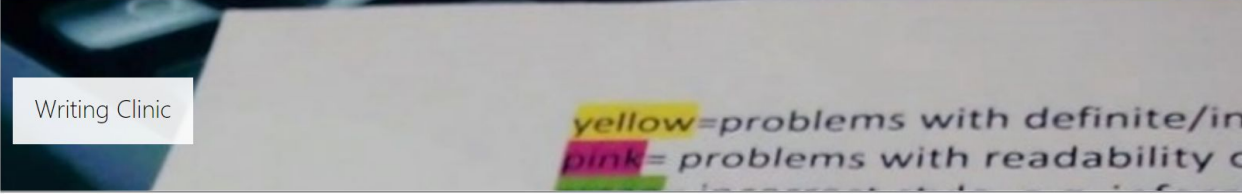
**How long and how are consultations arranged?**

First consultations/appointments are **by default 60 minutes** long and are in normal circumstances arranged in Otaniemi, or via Zoom/Skype, or Teams if needed\*. Longer appointments can also easily be made with the same consultant, but **only after** the first appointment of 60 minutes has already taken place.

**\*Please note that in unusual situations, such as the current COVID-19 epidemic, all consultations might be shifted to online meetings. Please contact your consultant to ask which platform or app they will be using.**

**Who can use the service?**

This service is offered to the schools of **ARTS, BIZ, CHEM, ELEC, ENG & SCI**, primarily to **Master's and doctoral students**, as well as academic faculty with some restrictions ( i.e., not offered to faculty members of SCI).



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# *Good luck for your journey as an author!*

- One can always learn more; one will never be fully ready as an author.
- There are some “rules” that you should know.
- In the end, everyone will have their own style.