Wrap-up:
Scientific Article Exercise

Or: What is the difference between scientific article and webpage?

CHEM-E0105 2022-2023 ALC

Riikka Puurunen

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Installation talks, 26.10.2022
Photos Aalto University / Mikko Raskinen
Youtube record to come

Today's contents

- Reminder of intended learning outcomes
- Some recap on what you wanted to learn in the SAE // + Presemo
- Runthrough of SAE exercise items, with feedback on each item
- On "how to write without plagiarizing" and on some other student questions
- Presemo: Is this a scientific article (or a webpage)?
- How do you know if you passed SAE? What if you did not?
- Time to say goodbye

http://presemo.aalto.fi/sae

A?

SAE, Intended learning outcomes: Students…

- understand what differentiates scientific articles from other publications such as web pages,
- are able to recognize typical parts of scientific articles that report <u>original research</u> (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),
- are able to describe how the impact of a scientific journal and of an individual article is (attempted to be) assessed,
- have practiced formulating his/her own view (/comment/opinion) on a scientific article,
- be able to use a similarity detection software,
- have made peer evaluation.

SAE, Intended learning outcomes: Students…

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- have made peer evaluation.

The whole SAE
Also the wrap-up session

Video 1, your SAE

Video 3, your SAE

Video 5, your SAE

Your SAE & MyCo activities

A?

SAE connected to

Intended Learning Outcomes

After the course the student can
- adopt the code of conduct of the academic community
- set personal goals for effective learning and skills development
- communicate and collaborate in a multicultural and multidisciplinary learning environment
- identify opportunities for academic entrepreneurship and career development
- work safely in laboratory and conduct the principles of scientific research and communication

We are the university!

A? Aalto University School of Chemical Engineering

KR 2022

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A?

Gantt chart view of schedule & deadlines

Feedback & development

- SAE has received lots of positive feedback
  - … but also critical feedback
- Development items in 2022-2023
  - <u>Timing</u> a bit improved (no DL on evaluation week …)
  - <u>MyCourses</u> items implementation improved (e.g. new numbering logics)
  - <u>Instructions</u> further improved

<u>2022-2023 SAE evolving feedback file - Google Slides</u>
(almost 20 responses as of 28.10.2022)

PAGE
SAE: Lists, templates, guidelines, links, … [page]

Collection of materials needed in SAE.
Note: Student feedback responded to continuously in: Evolving feedback file (Google Slides)
[If you notice a missing item or ill-working link, please contact Riikka Puurunen (email works fine & quick)]

A?

Recap on what you wanted to learn

MyCo questions, after kick-off session 26.9.2022

- Q8: Now you are acquainted with the contents of the Scientific Article Exercise. In your opinion, what will be the most relevant part of the module for you, i.e. what are you looking forward to learning during the SAE module?

I am looking forward to learn tools for improving my skills in writing references and to understand more about the impact factor of an article.

The pattern of writing a article is somehow looks interesting to me.

I'm looking forward to using the new databases that I now have access to. Previously many of these were not available to me. Also, the reference-tool seems to be useful.

I think that to me the most important part is going to be knowing how to find and identify good quality papers.

Recognizing a good article from bad ones.

Also recognizing a good source all together,

During this module I will be looking to improve and learn these point:

To learn the ways to search for scientific articles the most efficient way

I would like to know more about assessing the relevance of an article.

 How to create and write a appealing scientific article.

 How to present my work in more comprehensive yet precise way keeping the orientation around my work.

How to not copypaste and get cancelled due to plagiarism.

 How to meet the standards of international journal's and aalto university.

 Above all learn a new skill which will be a value addition to my professional personality.

In this module, I believe learning how to formulate a view for a specific scientific article and perform peer evaluation is essential. I mainly want to learn peer evaluation methods as it's crucial for a quality of a scientific article as these days peer-reviewed articles are the most trustable ones.

How to find articles is the most relevant part for me. Because I often use to find some references, and I used just using some Chinese websites to search. But when I came here I cannot use those websites, luckily this part told me different media to find articles.

How to time-efficiently search for most impactful (great) articles and reviews from whatever field and scan the most meaningful and best stuff from them effectively to benefit my own research and projects.

A?

I think the peer evaluation will be interesting. We have not had much of it during the BSc courses, so I'm looking forward to see how it works.

I'm looking forward to being able to find more reliable sources for articles, than just Google Scholar.

- understanding what differentiates scientific articles from other publications such as web pages

- being able to describe how the impact of a scientific journal and of an individual article is assessed

Mostly I'm looking forward to learning to use different scientific sites to look for relevant information for my writings.

How to write scientific article based on the results derived from literature review and experiments

All of those are important.
able to recognize typical parts of scientific articles that report original research (IMRaD) and find the conclusion of an article

have made peer evaluation.

Peer review of articles, because you see other people's views on scientific articles, and you might get new ideas how to assess and view an article.

I hope to improve my consistency when referencing articles since I feel like I sort of struggled with that when writing my bachelors thesis.

I don't remember how turnitin is used, I'm not sure if I have used it before, so it would be useful to learn it.

Maybe the most important thing in the module for me would be to learn how to cite articles in a way that is expected in my studies here.

How to use Aalto's on-campus resource finder is very useful.

I am looking forward to knowing how to extract reference information from a text. Sometimes there is a lot of information provided and I do not know which is the issue, journal, publisher, or volume. Sometimes I feel that I may confuse the issue with volume, and the journal with the publisher. I would like a clear way to differentiate these.

To be honest, not sure if I will learn enough vs. the time required from me. Maybe the most useful part of this module will be the collection of useful journals.

Seem quite repetitive to the contents of candidates thesis.

How to search and read scientific articles efficienctly

Can not say. This feels a bit pointless for a masters student.

A?

Presemo, individual (start of kick-off)

- Did you learn something new? (Yes/no/maybe)
- Did you learn what you expected to learn? (Yes/no/maybe)
- What has been the most valuable learning so far in the SAE?

http://presemo.aalto.fi/sae

Recap of SAE exercises, with feedback

FILE
Scientific Article Exercise (SAE): Introduction and instructions [file]
PDF document

- **Item 1.1 had to be changed to Google Sheets, as the OU Wiki got corrupted. Thank you for your understanding and collaboration.**
- It was not the first time OU Wiki got corrupted → in future editions, Google Sheets will be used
- Also in future: registration item to SAE should be made (targeted communication was now difficult to make; mass course needs efficient means)

I'm looking forward to being able to find more reliable sources for articles, than just Google Scholar.

A?

CHEM-E0105 2022-2023

Scientific Article Exercise (SAE): Introduction and instructions

Riikka Puurunen (Prof.), 24.9.2022

Introduction

Planned time allocation and points

MyCourses items, instructions
  First deadline (DL 1)
    1.1 Find a unique article and register it for your unique code [OU wiki]
    1.2 Return a by-publisher-formatted pdf of your article [Assignment]
  Second deadline (DL 2)
    2.1 Return your SAE report for peer evaluation [Workshop]
    Part 1 - Return your SAE report
    2.1 Return your SAE report for peer evaluation [Workshop]
    Part 2 - Make peer evaluation (note: done under DL 3!)
    2.2 Return your SAE report for similarity check [Turnitin]
    2.3 Reference formatting: Enter your bibliographic entry into the collective summary [URL]
    2.4.1 Co-creation, article statistics: add your row in the collective summary table [URL]
    2.4.2 Co-creation, figures: add your pick in the collection [URL]
    2.4.3 Co-creation, tables: add your pick in the collection [URL]
  Third deadline (DL 3)
    3.1 Return your Turnitin report pdf [Assignment]
    3.2 Peer evaluation in Item 2.1, Part 2

ASSIGNMENT

1.2 Return a by-publisher-formatted pdf of your article [Assignment] DL Oct 3

Pdf always to be found; "version of record"

- Most could find a suitable article & returned pdf
- Typical problems
  - Review article
  - Article in a medical journal
  - Article in press
- With feedback & time, almost all found an article. Teachers selected an article for just a few students.
  - 1 point subtracted for late submission
  - Partial points given, if submission not suitable at the first submission

https://doi.org/10.1016/j.apcatb.2022.122046

CHEM-E0105 - Academic Learning Community, Lecture, 1.9.2022-28.4.2023

Dashboard / My own courses / chem-e0105 - ... / Sections / scientific ar... / 2.1 return yo...

2.1 Return your SAE report for peer evaluation [Workshop] DL Oct 12

Submissions opened: Thursday, 6 October 2022, 7:00 AM
Submissions closed: Sunday, 16 October 2022, 11:59 PM
Assessments close: Thursday, 27 October 2022, 11:59 PM

Assessment phase

Setup phase	Submission phase	**Assessment phase**	Grading evaluation phase
Switch to the setup phase	Switch to the submission phase	**Current phase**	Switch to the evaluation phase
✓ Set the workshop description	✓ Provide instructions for assessment	ⓘ Assessment deadline: Thursday, 27 October 2022, 11:59 PM (today)	✓ Calculate submission gra... expected: 164 calculated: 0
✓ Provide instructions for submission	✓ Allocate submissions expected: 164 submitted: 139 to allocate: 0	ⓘ Time restrictions do not apply to you	✓ Calculate assessment gra... expected: 164 calculated: 0
✓ Edit assessment form	ⓘ There is at least one author who has not yet submitted their work	✓ Switch to the next phase	✓ Provide a conclusion of the activity
	ⓘ Open for submissions from Thursday, 6 October 2022, 7:00 AM (21 days ago)		
	ⓘ Submissions deadline: Sunday, 16 October 2022, 11:59 PM (11 days ago)		
	ⓘ Time restrictions do not apply to you		

- All who submitted SAE, also made the peer evaluation
- Through the peer evaluation, many learned more?
- Now you know how the MyCo Workshop tools
- Also learned with DL 2 (?): sometimes deadlines can be negotiated with teachers – and sometimes not.
  (That a student did not do something by a DL, is not yet a reason to extend it.)

From SAE introduction and instructions

2.1 Return your SAE report for peer evaluation [Workshop]
Part 2 - Make peer evaluation (note: done under DL 3!)

Once the deadline passes and the students have returned their exercises, the Workshop will be progressed to the peer evaluation stage, where each student gets three other SAE reports to peer-evaluate.

By default, the numerical grade received for the SAE report will be the average of the peer evaluations obtained. If there is significant spread between the evaluations, and student's passing of the module is endangered, teachers may (upon their own initiative or upon request by student) make a re-evaluation. The teacher-made re-evaluation will override the earlier peer evaluations; points can increase or decrease.

- If re-evaluation would be needed, contact teacher
- (I don't think anyone needs it?)

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TURNITIN ASSIGNMENT 2

2.2 Return your SAE report for similarity check [Turnitin] DL Oct 12

- 4 points for submission of your SAE as instructed
  - DL was extended and guidance given, if needed
  - One point subtracted if the your code was missing (naming instructions was in Item 2.1 - should perhaps be repeated in Item 2.2, for clarity).
- (Another point could have been extracted, if "SAE-report" was not in the name. Next time)
- Similarity percentages were all high, as should. In a real report you write yourself, the percentage should never be this high.

Return your SAE report in the Workshop MyCourses for evaluation.
- All reports should be returned in a pdf format.
- All reports should be named so that the filename starts with your unique code and contains "SAE-report" in the name. You may add optional text, as you like. Example: A001_SAE-report_...<add-text-here-if-you-like>....pdf.

Similarity	Grade
65%	4/4
66%	4/4
--	
--	
71%	4/4
70%	4/4
61%	4/4
70%	4/4
87%	4/4
63%	3/4

A?

Item 2.3

🔒 Restricted Not available unless: You are a(n) *Student*

URL
2.3 Reference formatting: Enter your bibliographic entry into the collective summary [URL] DL Oct 12

Corrected file:

https://drive.google.com/fi

RhP
13.10.2022

Notes
• Lots of points lost for small details, which don't affect contents, really
• Some points also lost for important things:
  × "et al." not used in bibliographic entries
  × Volume and page or article numbers are essential.

<access rights as of 13.10.2022: anyone with the link can view>

CHEM-E0105 ALC 2022-2023,
Scientific article exercise reference formatting collective summary (G Docs)

Initiated by Riikka Puurunen, 20.9.2022

How will this file be used?

those who got full points received this mark : 8pt

Instruction for students:
1. Find your article code (A001, A002, etc) and fill in the title the missing part "Article

0pt

eb, A.,
s for

8pt

K

2pt

bold

ol. 64

0pt

no
omme

5-956.

6 pt

A?

SAE wrap-up, Puurunen 31.10.2022

Bibliographic entry: Good example

Instructions, e.g. video 3

What <u>is</u> 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.

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

A? * CASSI abbreviations used; search tool: https://cassi.cas.org/search.jsp

A160 van Velthoven et. al., 2015

van Velthoven, J.L.J., Gootjes, L., van Es, D.S., Noordover, B.A.J. and Meuldijk, J., Poly(hydroxy urethane)s based on renewable diglycerol dicarbonate, *Eur. Polym. J.* **70** (2015) 125-135. https://doi.org/10.1016/j.eurpolymj.2015.07.011

8p+

A?

Less good examples
(from last 2021-2022)

- In SAE, for simplicity, all mistakes equal treated (-2 pt)
- In reality, problems with commas, italics etc. are mere superficial things
- Forgetting e.g. volume or pages is more severe

A12 Koryak et al., 2002

Koryak, M., Stafford, L.J., Reilly, R.J., Magnuson, M.P., Impacts of Steel Mill Slag Leachate on the Water Quality of a Small Pennsylvania Stream, J. Freshwater Ecol. 17 (2002) 461–465.

https://doi.org/10.1080/02705060.2002.9663921

"and" missing

ital

2pt

A81 Yuting et al. 2021

Yuting, H., Huimin, L., Xue, L., Jun, W., Tiancheng, P., Wei, D., Hongping, L., Jing, D., Hui, W. and Guofeng, G., Insight into the reversible behavior of Lewis-Brønsted basic poly(ionic liquid)s in one-pot two-step chemical fixation of CO_2 to linear carbonates, *Green Chem.* (2021).

https://doi-org.libproxy.aalto.fi/10.1039/D1GC02539B

I would not include this

volume?

pages?

4pt

A?

URL

2.4.1 Co-creation, article statistics: add your row in the collective summary table
[URL] DL Oct 12

What is an average scientific article like?

Presemo (B.x)

- Pages
- Figures
- Tables
- Cited references
- Impact factor
- JUFO class

http://presemo.aalto.fi/sae

A?

Statistics from info as students provided

2022-2023 ALC-SAE-article-statistics - Google Sheets

Abbreviated journal name	No. of pages	No. of figures	No. of tables	No. of cited references	Times cited (Web of Science)	Journal Impact Factor	JUFO level
Average	10.2	7.3	2.3	40.4	69.3	910.6	1.6
Stdev	4.0	3.2	2.5	18.1	428.3	3397.3	0.7
Min	1	1	0	0	0	0	0
Max	27	19	14	92	4615	24319	3
Median	10	7	2	39	5	5.6305	2

There are some impossible values included…

http://presemo.aalto.fi/sae

A?

Statistics from info as students provided

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There are some impossible values included…

http://presemo.aalto.fi/sae

Article statistics, after removal of outliers

2022-2023 ALC-SAE-article-statistics - Google Sheets

"Average scientific article reporting original research"

Abbreviated journal name	No. of pages	No. of figures	No. of tables	No. of cited references	Times cited (Web of Science)	Journal Impact Factor	JUFO level
Average	10.3	7.3	2.4	41.6	69.9	7.7	1.6
Stdev	3.9	3.2	2.5	17.1	430.1	8.1	0.7
Min	3	1	0	8	0	0.66	0
Max	27	19	14	92	4615	69.50	3
Median	10	7	2	39.5	5.5	5.264	2

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Removal of outliers - was it ethical?

Outliers in red - mistakes responsible for these were
sought and the numbers deleted from table

Abbreviated journal name	No. of pages	No. of figures	No. of tables	No. of cited references	Times cited (Web of Science)	Journal Impact Factor	JUFO level
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Average	10.3	7.3	2.4	41.6	69.9	7.7	1.6
Stdev	3.9	3.2	2.5	17.1	430.1	8.1	0.7
Min	3	1	0	8	0	0.66	0
Max	27	19	14	92	4615	69.50	3
Median	10	7	2	39.5	5.5	5.264	2

Presemo (D.1):
Yes/no/I don't know

You can justify your answer. Write:

Yes, because...
No, because...

http://presemo.aalto.fi/sae

Is removal of outliers ethical? RLP's view (Remember FFP: Fabrication, falsification, plagiarism)

- Yes, if justified. Here, the removed points were all clearly erroneous.
- But: If you try to hide info of removing outliers or removing them was not justified, you breach the ethics code (--> falsification).

Intended Learning Outcomes

After the course the student can
- adopt the code of conduct of the academic community
- set personal goals for effective learning and skills development
- communicate and collaborate in a multicultural and multidisciplinary learning environment
- identify opportunities for academic entrepreneurship and career development
- work safely in laboratory and conduct the principles of scientific research and communication

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School of Chemical
Engineering

KR 2022

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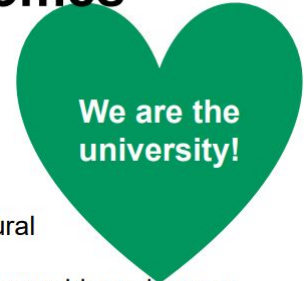
RLP's advice for scientific work: "absolute honesty" ("raivorehellisyys")

2022-2023 ALC-SAE-figure-summary - Google Slides

URL
2.4.2 Co-creation, figures: add your pick in the collection [URL] DL Oct 12

- (Surprisingly difficult to keep things in the aimed numerical order…)
- Next pages:
  - example of a nice figure, with lots of positive things to note
  - Example of a figure, with both positive and negative things to note
  - (Note: picking these figures is no criticism to the student who did the exercise! This is constructive criticism, aimed for all students of the ALC course to pay attention to certain things in figures.)

A?

A009, Halli et al, 2019
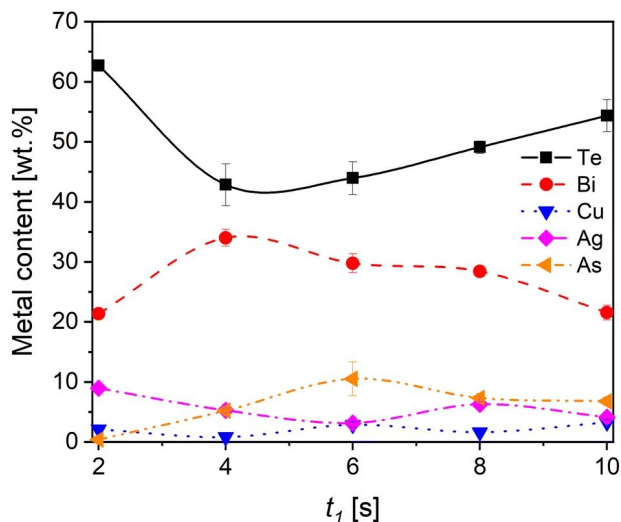
Fig 2. Quantitative SEM–EDS results of the electrode surface metal deposits after EDRR experiments at $E_1 = -500$ mV and $E_2 = +150$ mV versus SCE, $t_1 = 2$–10 s and $n = 100$. N.B. Pt electrode background signal is excluded from the results

Teacher remarks, 28.10.2022 (RLP)

- This is a very nice example of a scatter graph (i.e., scatter plot, scatter chart)
- Texts are large enough
- Data sets can be clearly distinguished (also if seen in grayscale): varied markers, varied colours, varied line types
- Error bars included
- Figure caption seems self-explanatory i.e. "standalone" (can be understood without referring to the text)

Halli, P., Wilson, B.P., Hailemariam, T. *et al.* Electrochemical recovery of tellurium from metallurgical industrial waste. *J Appl Electrochem* **50**, 1–14 (2020). https://doi.org/10.1007/s10800-019-01363-6

A?

A014, Xiong et al., 2022
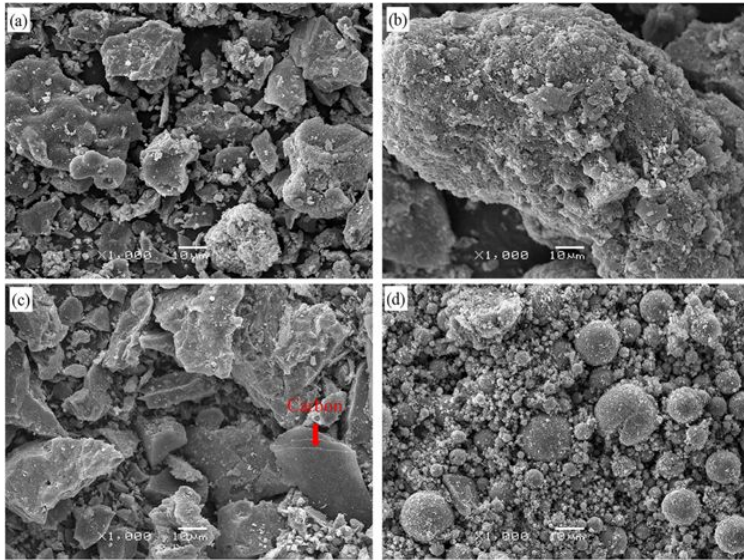
Fig. 2 Micro-morphologies of **a** dust A, **b** dust B, **c** dust C, and **d** dust D

Teacher remarks 28.10.2022 (RLP)

- Figure consisting of several panels; each panel has its own label (a-d): good, they have to be labeled individually
- All microscope images (?) have a scale bar: good; this is a must
- Texts are small, scale bars are difficult to find
- The red note is difficult to read in panel (c)
- Figure caption is not self-explanatory (seems not very useful, frankly…). One has to read the text to understand what his is about; it is not "standalone".

A?

Xiong et al., *J. Sustain. Metall*. **8** (2022) 1065-1077.
https://doi.org/10.1007/s40831-022-00546-4

Example from a picture (from a technical journal)

Kauppalehti

TIISTAI 4.10.2022   N:o 189

- Nice picture :) Prof. Serna, CMET
- This figure caption is a nice example of a caption that does not at all follow the principles of standalone figure captions of scientific writing.
- Different types of documents have different writing rules

Kemisti. Vuonna 2015 Aalto-yliopistossa aloittanut apulaisprofessori Rodrigo Serna työskenteli aikaisemmin Saksassa kemianjätti BASF:ssa.   KUVA: MEERI UTTI

Translation of figure caption:
"Chemist. Assistant professor Rodrigo Serna started at Aalto University in 2015. He worked earlier in Germany at the chemistry gigant company BASF."

URL

2.4.3 Co-creation, tables: add your pick in the collection [URL] DL Oct 12

A001, Xing et al., 2021

Table 2 Comparison of fumaric acid fermentation profile under different glucose contents

Glucose (g/L)	Highest titer of fumaric acid in fermentation broth (g/L)	Content of fumaric acid in solid precipitate (g)	Space-time productivity of fumaric acid (g/L h)	Yield of fumaric acid from glucose (g/g)	Highest production of ethanol (g/L)
60	25.9 ± 0.78	2.29 ± 0.13	0.44	0.25	9.9 ± 0.30
70	26.9 ± 0.81	7.45 ± 0.22	0.49	0.23	9.6 ± 0.48
80	28.2 ± 0.95	31.27 ± 0.67	0.64	0.27	7.8 ± 0.23
90	31.7 ± 0.90	41.24 ± 0.87	0.76	0.31	9.3 ± 0.47
100	33.6 ± 1.01	34.91 ± 0.69	0.75	0.25	9.1 ± 0.46

Teacher remarks, 28.10.2022

- Nice, simple, clear & informative example of a table
- Data organized in columns
- (No point at the end of the table caption)

Xing, H., Liu, H., Zhang, Y., Yu, Y., Huang, X., Xiao, Q., Deng, L. and Wang, F., Capability enhancement of fumaric acid production by *Rhizopus arrhizus* through carbon-nitrogen sources coordination, *Appl. Biochem. Biotechnol.* **193** (2021) 1231-1237.
https://doi.org/10.1007/s12010-020-03461-0

A?

Table construction hints, by RLP

References

- **What is the logical order for your contents?**
  - **left to right?**
  - **top down?**
- Organize data to be compared in columns
- If you cite references, often a good place for them is the right-most column
  - You can include your data, too, citing "this work"
- One item per cell
- You can use "headings" inside a table, too

121301-8   Riikka L. Puurunen   J. Appl. Phys. **97**, 121301 (2005)

TABLE III. Overview of ALD processes based on two reactants (Source: ISI Web of Science, status in February 2005). Description of the ligands in Fig. 4.

Z	Material	Reactant A^a	Reactant B	Refs.
5 Boron				
	B_2O_3	BBr_3	H_2O	85
	BN	BCl_3	NH_3	158
		BBr_3	NH_3	159
	$B_xP_yO_z$	$B(OMe)_3$	$POCl_3$	88 and 89
6 Carbon				
	C^b	CF_x	H^c	160
		CCl_3	H^c	161
12 Magnesium				
	MgO	$MgCp_2$	H_2O	162–166
		$Mg(thd)_2$	H_2O_2	167
		$Mg(thd)_2$	O_3	168
	MgTe	Mg	Te	169 and 170
13 Aluminum				
	Al_2O_3	$AlCl_3$	H_2O	76, 77, 83, 90, 91, 91, and 171–184
		$AlCl_3$	O_2	185 and 186
		$AlCl_3$	ROH^d	173, 181, and 187
		$AlCl_3$	$Al(OEt)_3$	188
		$AlCl_3$	$Al(O^iPr)_3$	188 and 189
		$AlBr_3$	H_2O	92

Item 3.1

ASSIGNMENT
3.1 Return your Turnitin similarity report pdf [Assignment] DL Oct 25

Submissions open from Thursday, 6 October 2022.

(Related to Item 2.2.) Note: Do not return a *receipt* from Turnitin, but the *similarity report*.

(Example from 2021-2022)

I don't remember how turnitin is used, I'm not sure if I have used it before, so it would be useful to learn it.

Part 1: Technical summary

Bibliographic entry for a reference list, numeric style:

Ozturk, M., Dincer, I., Investigation of Hydrogen and Methane Production from Flue Gas Released from the Steel Industry, *Energy & Fuels* **35** (15) (2021) 12718-12724. https://doi.org/10.1021/acs.energyfuels.1c00228

Author affiliations:

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Merve Ozturk −Mechanical Engineering Department, Yildiz Technical University, Istanbul 34349, Turkey; orcid.org/ 0000-0002-4414-0916; Email: merveoz@yildiz.edu.tr

tory, Ontario
nada;
nical

What in your view is stated the main res

Many conclusions were made from Aspen
process energetic and exergetic efficiencie
lowered from 2.63 kmol/h to 1.42 kmol/h w

**Is the funding source of the work declar
Acknowledgements section.) If yes, whi**

No funding sources were declared. Only n
interests".

The student's own free-form comments

- I chose the article because it is rela
  closely. The Hydrogen economy of
  steel production. There isn't yet ma
  scarce, so I ended up with this artic
- The article was little disappointment to me because it only considered very well-defined
  process system and didn't give many varieties or ideas for future development. The
  simulation was well made and had interesting idea but would like to see better
  integration to steel plant or propositions how it could be done.

Now you know how to use Turnitin, also in other courses and assignments.

- Copy-pasted text, and headings that are the same in all reports: lots of similarity matches found
- Own words: almost no matches, as should

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A?

Item 3.2 (2.1 Part - peer evaluation)

2.1 Return your SAE report for peer evaluation [Workshop] DL Oct 12 ⓘ

Submissions opened: Thursday, 6 October 2022, 7:00 AM
Submissions closed: Sunday, 16 October 2022, 11:59 PM
Assessments closed: Thursday, 27 October 2022, 11:59 PM

Grading evaluation phase

Setup phase Switch to the setup phase ⓘ	Submission phase Switch to the submission phase ⓘ	Assessment phase Switch to the assessment phase ⓘ	**Grading evaluation phase** **Current phase** ⓘ	Closed Close workshop ⓘ
✔ Set the workshop description ✔ Provide instructions for submission ✔ Edit assessment form	✔ Provide instructions for assessment ✔ Allocate submissions expected: 165 submitted: 139 to allocate: 0 ⓘ There is at least one author who has not yet submitted their work ⓘ Open for submissions from Thursday, 6 October 2022, 7:00 AM (22 days ago) ⓘ Submissions deadline: Sunday, 16 October 2022, 11:59 PM (12 days ago) ⓘ Time restrictions do not apply to you	ⓘ Assessment deadline: Thursday, 27 October 2022, 11:59 PM (yesterday) ⓘ Time restrictions do not apply to you	⌐ Calculate submission grades expected: 165 calculated: 139 ⌐ Calculate assessment grades expected: 165 calculated: 139 ✘ Provide a conclusion of the activity ⌐ Switch to the next phase	

Grading evaluation method ⓘ [Comparison with the best assessment ▾]

▾ Grading evaluation settings

Comparison of assessments   ⓘ   [very lax ▾]

Re-calculate grades

> **Points for peer evaluation**
> - Everyone got 18 to 20 points for doing the peer evaluation
> - How exactly the MyCo algorithm works, remains a mystery

SAE wrap-up, Puurunen 31.10.2022

On some student questions

"How to write without plagiarizing"

How to not copypaste and get cancelled due to plagiarism.

The CCC method by Reetta Karinen:
Collect, Compare, Conclude

- Search multiple sources
- Read them all, and compare info
- Write your text on the basis of your thoughts and your notes, not looking at the original texts directly when you write

Specific advice, RLP:

- never copy-paste and modify
- Place direct quotes in quotation marks ("like this")
- When you paraphrase from a source, cite the source (e.g. like this [1])

A?

Riikka Puurunen
@rlpuu

This.

Maybe I will use this as an example to students, explaining why one should never "copy-paste and modify"?

Cause if you did - the results can look great (even too great?), but you did not write by yourself, but you -- well, copy-pasted and modified.

Käännä twiitti

How Things Are Manufactured @fastworkers6 · 14. lokak.
This is how artists reuse their prior art

0:29   2,8 milj. näyttöä

10.17 ap. · 15. lokak. 2022 · Twitter Web App

https://twitter.com/rlpuu/status/1581182548151259137?s=20&t=9f_OpywUWqdOrHgd5dTz3g

https://twitter.com/fastworkers6/status/1580740467729133568?s=20&t=9f_OpywUWqdOrHgd5dTz3g

A?

Further student questions

1. How do you know if an article is relevant?
2. How do you know if a name is the journal or publisher?

http://presemo.aalto.fi/sae
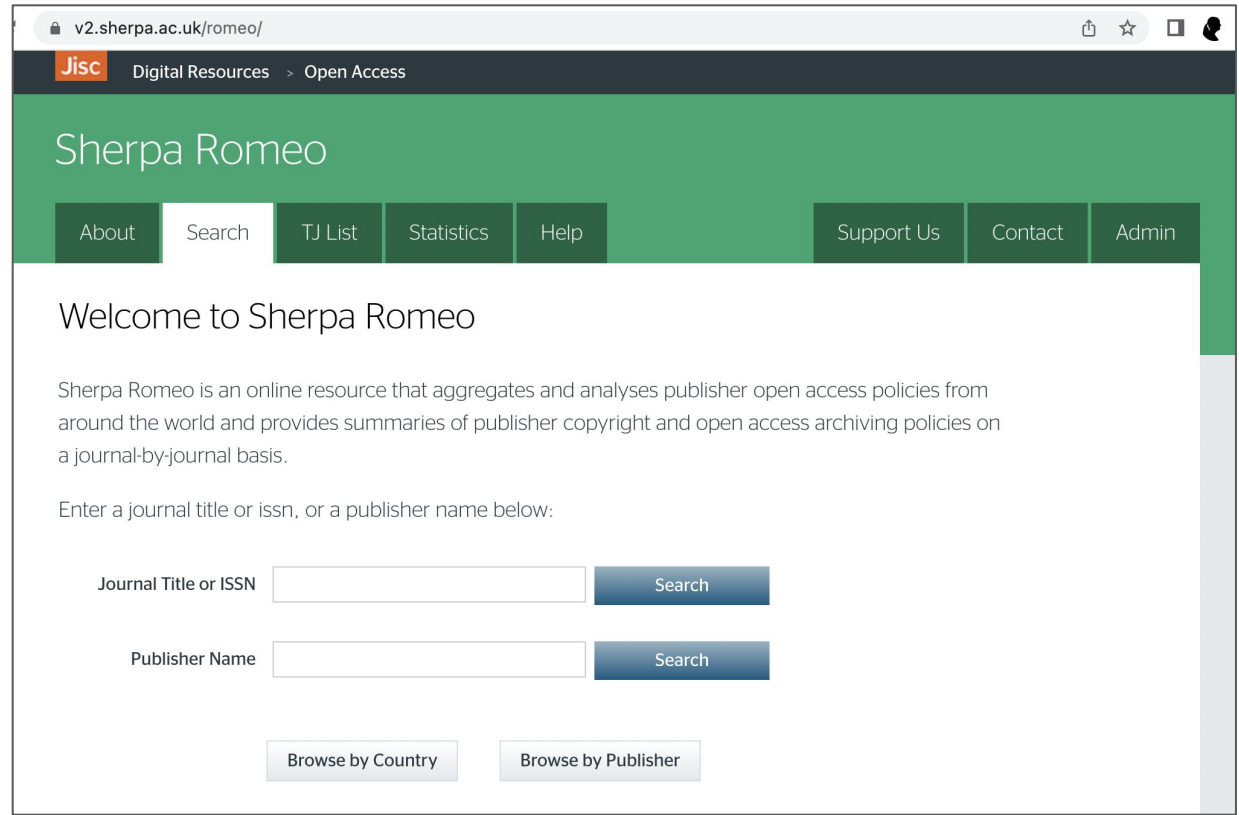
I would like to know more about assessing the relevance of an article.

I am looking forward to knowing how to extract reference information from a text. Sometimes there is a lot of information provided and I do not know which is the issue, journal, publisher, or volume. Sometimes I feel that I may confuse the issue with volume, and the journal with the publisher. I would like a clear way to differentiate these.

Journal names or publisher?

Sherpa Romeo is a useful site

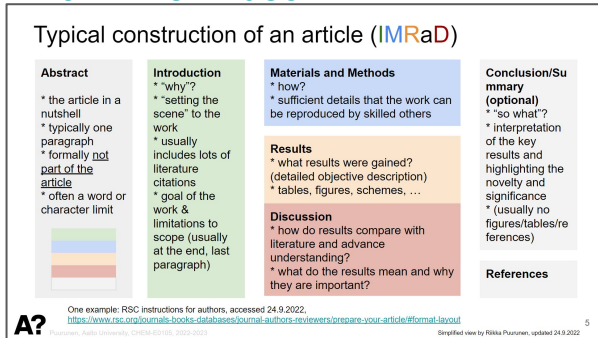# Can one teach writing scientific articles?

- One can give all kinds of advice
- But like cycling, writing is a skill: one can learn only by doing it.
- There is no "one correct style" of writing, even of scientific texts
  … but there are many conventions to be aware of.
- Ask and listen to feedback.
- Use Writing Clinic!
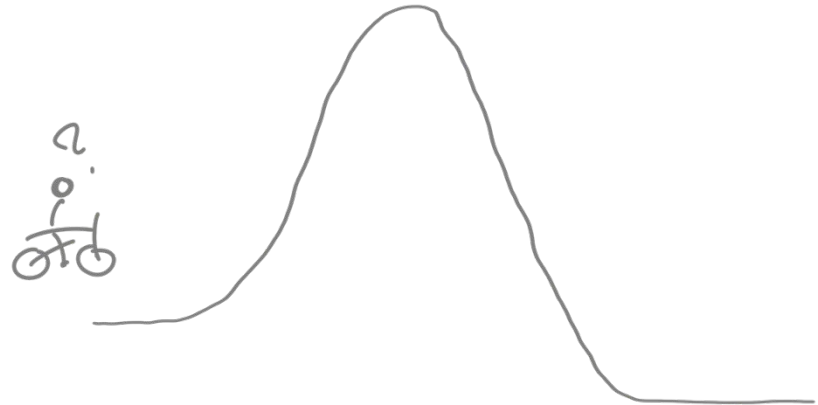
Some hints, to get started with writing

How to write scientific article based on the results derived from literature review and experiments

From Brief Video 1

Typical construction of an article (IMRaD)

Abstract	Introduction	Materials and Methods	Conclusion/Summary (optional)
* the article in a nutshell * typically one paragraph * formally <u>not part of the article</u> * often a word or character limit	* "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)	* how? * sufficient details that the work can be reproduced by skilled others **Results** * what results were gained? (detailed objective description) * tables, figures, schemes, … **Discussion** * how do results compare with literature and advance understanding? * what do the results mean and why they are important?	* "so what"? * interpretation of the key results and highlighting the novelty and significance * (usually no figures/tables/references) **References**

One example: RSC instructions for authors, accessed 24.9.2022, https://www.rsc.org/journals-books-databases/journal-authors-reviewers/prepare-your-article/#format-layout

Puurunen, Aalto University, CHEM-E0185, 2021-2023

Simplified view by Riikka Puurunen, updated 24.9.2022

5

- Plan the structure well: IMRaD ~always works
  - Use further headings to divide M, R, D in suitable sections
- Aim to write "complex things in a simple way"
  - Use simple sentence structure
  - Use consistent terminology
- Make paragraph the unit of composition
  - Use topic sentences in the beginning of a paragraph
  - Recognize the higher weight of first and last words/sentence
- Write with numbers, instead of (or in addition to adjectives)
- Design your figures to convey a clear message
- Plan your tables carefully

Presemo
Is this a scientific article?
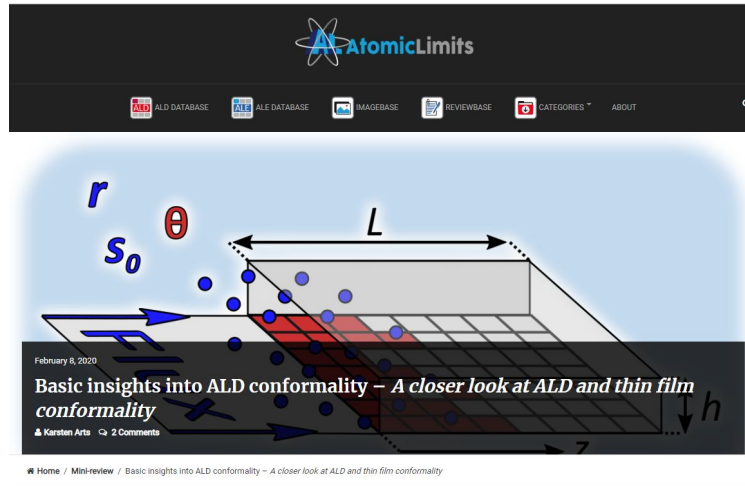
Please cite as:

K. Arts, W.M.M. Kessels and H.C.M Knoops. Basic insights into ALD conformality – A closer look at ALD and thin film conformality. 2020, 1. AtomicLimits.

https://www.atomiclimits.com/2020/02/08/basic-insights-into-ald-conformality-a-closer-look-at-ald-and-thin-film-conformality/, accessed at 28.10.2022

https://doi.org/10.26434/chemrxiv.12320855.v1

Citation

Vancouver

Liu J, Saedy S, Verma R, Ommen JRvan, Nolan M. Atomic Layer Deposition of CeOx Nanoclusters on TiO2. ChemRxiv. Cambridge: Cambridge Open Engage; 2020; This content is a preprint and has not been peer-reviewed.

Copy To Clipboard

Close

A?

Materials Science

Atomic Layer Deposition of CeOx Nanoclusters on TiO2

Working Paper

Ji Liu, Saeed Saedy, Rakshita Verma, J. Ruud van Ommen, Michael Nolan — Tyndall National Institute

Abstract

Titanium dioxide has a band-gap in the ultra violet region and there have been many efforts to shift light absorption to the visible region. In this regard, surface modification with metal oxide clusters has been used to promote band-gap reduction. CeOx-modified TiO2 materials have exhibited enhanced catalytic activity in water gas shift, but the deposition process used is not well-understood or suitable for powder materials. Atomic layer deposition (ALD) has been used for deposition of cerium oxide on TiO2. The experimentally reported growth rates using typical Ce metal precursors such as β-diketonates and cyclopentadienyls are low, with reported growth rates of ca. 0.2-0.4 Å/cycle. In this paper, we have performed density functional theory calculations to reveal the reaction mechanism of the metal precursor pulse together with experimental studies of ALD of CeOx using two Ce precursors, Ce(TMHD)4 and Ce(MeCp)3. The nature and stability of hydroxyl groups on anatase and rutile TiO2 surfaces are determined and used as starting substrates. Adsorption of the cerium precursors on the hydroxylated TiO2 surfaces reduces the coverage of surface hydroxyls. Computed activation barriers for ligand elimination in Ce(MeCp)3 indicate that ligand elimination is not possible on anatase (101) and rutile (100) surface, but it is possible on anatase (001) and rutile (110). The ligand elimination in Ce(TMHD)4 is via breaking the Ce-O bond and hydrogen transfer from hydroxyl groups. For this precursor, the ligand elimination on the majority surface facets of anatase and rutile TiO2 are endothermic and not favourable. It is difficult to deposit Ce atom onto hydroxylated TiO2 surface using Ce(TMHD)4 as precursor. Attempts for deposit cerium oxide on TiO2 nanoparticles that expose the anatase (101) surface show at best a low deposition rate and this can be explained by the non-favorable ligand elimination reactions at this surface.

Download

Author's competing interest statement
No conflict of interest

Keywords
ALD   ceria   tio2   DFT   mechanism   thermogravimetry

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https://plasma.oxinst.com/media-centre/wp/ald-for-quantum-devices

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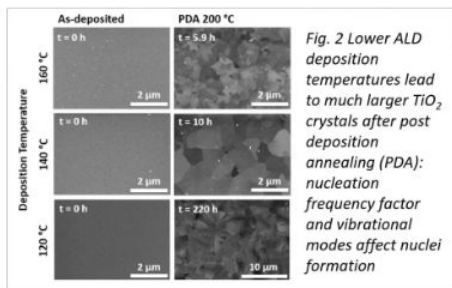
ATOMIC LAYER DEPOSITION
INTERNATIONAL JOURNAL

Articles   For Authors ⌄   For Reviewers   About ⌄   Editorial Board   Contact Us

Contents 2022

Show Journal Cover

Fig. 2 Lower ALD deposition temperatures lead to much larger TiO$_2$ crystals after post deposition annealing (PDA): nucleation frequency factor and vibrational modes affect nuclei formation

October 13, 2022, Vol. 1, pp. 1–24

Transformation kinetics for low temperature post-deposition crystallization of TiO2 thin films prepared via atomic layer deposition from TDMAT and water

Jamie P. Wooding, Shawn A. Gregory, Amalie Atassi, Guillaume Freychet, Kyriaki Kalaitzidou, Mark D. Losego

Background: We report on the fundamental crystallization kinetics of atomic layer deposited (ALD) TiO2 thin films undergoing a post-deposition anneal (PDA) at low temperatures to probe differences in the as-deposited film microstructure. Methods: The system of study is ALD TiO2 thin films prepared from tetrakis(dimethylamino)titanium(IV) (TDMAT) and water at 120 °C, 140 °C and 160 °C followed by ex situ low temperature annealing at temperatures ranging from 140 °C to 220 °C. All as-deposited TiO2 thin films are amorphous by X-ray diffraction (XRD). Post-deposition annealing (PDA) produces large grain anatase crystals, confirmed by XRD and top-view scanning electron microscopy (SEM). A detailed SEM study is performed to...

👍 1 Like   Show 0 comments ▼   Write a comment ▼   PDF ⬇   ↪ Share

A?

Scientific articles? ("Papers"?)

- Arts et al.: blog post
- Liu et al.: preprint
- Dineen et al.: white paper
- Wooding et al: in "wannabe journal"

- What are characteristics of scientific articles (the kinds you are expected to cite e.g. in your thesis?)
- Why is the "date accessed" not part of a citation to a scientific article, but it must be used when citing a webpage?

http://presemo.aalto.fi/sae

How to recognize a scientific article?

An article published in a scientific journal is a scientific article, depending on publication type

- Peer review is the criterion(e.g. editorials are not "scientific articles", although they can be cited)

Use databases. For example:

- Web of Science
- CASSI journal search
- JUFO class search

From Brief Video 1

There are <u>many types </u>of scientific articles

- Articles ("original research")*
- Letters
- Reviews**
- Perspectives
- Essays
- Comments & Responses to comments
- Corrections (Erratums, Corrigendums)
- Retractions
- Editorials
- …

"*Chemistry of Materials* publishes six types of manuscripts: Articles, Reviews, Comments, Perspectives, and Methods/Protocols."

https://publish.acs.org/publish/author_guidelines?coden=cmatex#manuscript_types, accessed 29.9.2020

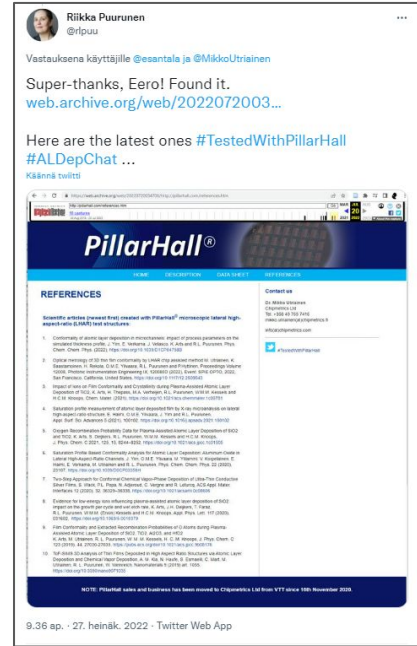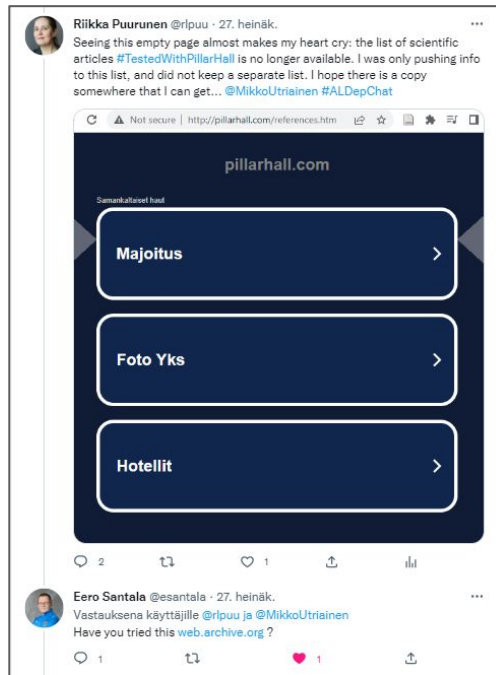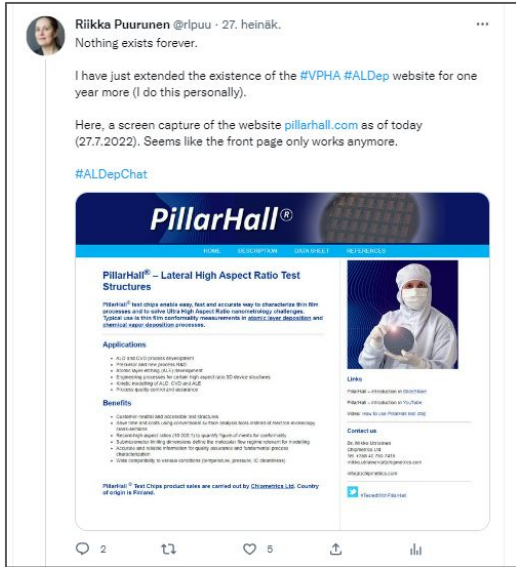* Also called "primary research"
** Summarise research on a particular topic ("secondary analysis of primary research")

A? Puurunen, Aalto University, CHEM-E0105, 2022-2023

3

Nothing is "forever"... Webpage contents change (and that's why you need to add the date accessed)

… the pillarhall.com webpage was brought back, too, gratefully.

How do you know if you passed SAE? What if you did not pass?

Check in MyCo gradebook if passed

- Teacher view on the points (before all points were in); all who gave a serious try, passed.
- As of 31.10.2022, Item 3.1 points missing → will come this week?
- SAE Round A was current round

Required for passing

- 60 points
- Participating in peer evaluation

SAE Pass/Fail: "Yes" means you passed

A?

Σ Round A - Fall 2022 total	SAE Pass/Fail
✓ 82.27	Yes
✓ 82.61	Yes
-	Yes
✓ 81.87	Yes
✗ 7.00	No
✓ 81.40	Yes
-	-
✓ 71.16	Yes
✓ 74.14	Yes
✓ 80.73	Yes
✓ 75.63	Yes
✓ 82.21	Yes
-	Yes
✓ 80.64	Yes
✓ 83.21	Yes
✓ 82.60	Yes
✓ 77.61	Yes

In the spring 2023, there will be Round B

- Join Round B if you did not pass now
- In exceptional cases, if something went wrong e.g. with technicalities in this Round A and you think you should have passed but did not, contact teacher.
  - Note: No individual arrangements will be made for students who did not pass just because they did not follow instructions. (Teachers reminded, extended deadlines, and offered guidance/help when needed.)

GROUP CHOICE

Optional registration for the SAE module, Round B (April-May 2023)

Round B will be organized in April-May 2023. You can already register to it if you want to. Teachers will communicate later when and how it is done. If you register now, you can be sure to get direct info in April 2023 - otherwise, info of SAE Round B will be just shared in a general announcement.

This group choice is starting from October 31, 2022, at 10:00, until the end of March 2023.

A?

Questions/feedback?

- Live now or
- in Presemo?

  (Or later, by email)

http://presemo.aalto.fi/sae

A?

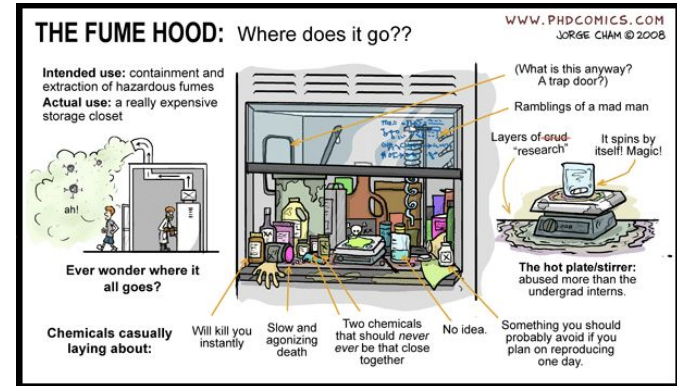# Time for goodbye…

Thank you for participating in the SAE

I hope that you learned valuable things related to scientific articles – and other things!

Good luck for your studies at Aalto CHEM!

Feedback most welcome to help develop the SAE module

Off-topic reminder: always close the fume hood! It makes sense, and saves electricity

https://phdcomics.com/comics/archive.php?comicid=1023, accessed 28.10.2022

Installation talks, 26.10.2022
Photos Aalto University / Mikko Raskinen
Youtube record to come

A?