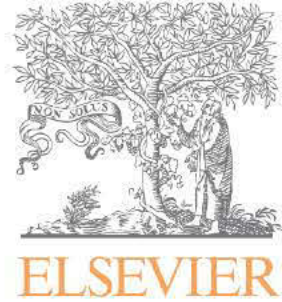




Eidgenössische Technische Hochschule Zürich
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HOW TO WRITE A WORLD CLASS PAPER

Writing a manuscript

Roel Prins

Manuscript structure

- Title
- Authors
- Abstract
- Keywords



Accurate, informative for effective indexing and searching

- Main text (IMRaD)
 - Introduction
 - Methods
 - Results
 - Discussion (Conclusion)



Each has a distinct function

- Acknowledgements
- References
- Supplementary material

Order of writing

Start writing in the following order

- Experimental
- Results
- Discussion
- Conclusions, Introduction
- Abstract, Title

What to do about



Writer's
Block?





Write first !!

Then get it right !!

Title

Should contain **few** words that **best** describe the contents

DO

Convey main findings

Be specific

Be concise

Be complete

Attract readers

DO NOT

Use unnecessary jargon

Use uncommon abbreviations

Use ambiguous terms

Mention details

Focus on one part only

Example

Investigation of the Effect of Alkali Promoters
on the Selective Oxidation of Methane
on Noble Group VIII Metal Catalysts



Potassium-Promoted Selective Oxidation of Methane
to Synthesis Gas over Pt and Rh Catalysts



Abstract

The abstract strongly influences

- the **editor's** decision to accept
- the **reader's** decision to read on

A good abstract:

- Is precise and honest
- Can stand alone
- Uses no technical jargon
- Is brief and specific
- Cites no references

Use the abstract to “sell” your article

Keywords

Important for **indexing**:

They enable your manuscript to be more easily identified and cited

Check the **Guide for Authors for journal requirements**

- Keywords should be specific
- Avoid uncommon abbreviations and general terms

Introduction

Provides **background information** and
puts work into **context**

Why was the work performed

- problems, aims, hypotheses
- significance

- What was done before (balanced literature)
- What did you do
- What did you achieve

Introduction

DO NOT

- Write an extensive review
- Cite too much your own work or work that supports your findings
- Ignore contradictory studies by competitors
- Be too specific; briefly outline the research and results
- Overuse terms like “novel”, “for the first time”

Experimental

Provide **sufficient information**
so that readers can **reproduce** the experiment

Use the **past** tense to describe the **results**

Use the **present** tense to present **explanations**

Present or past Tense

Past tense: things that happened **in the past**

Description of your experimental results.

We measured the xylene yields and after 5 h the para selectivity was 90%.

Present tense: things that are **still valid**

The properties are shown in Fig. 1.

This means that theory A is valid.

Results

The only part of eternal value

- Use figures and tables to summarize data
- Show the results of statistical analysis
- Compare “like with like”
- Do not duplicate tables, figures and text

Graphics

“Readers often look at the graphics first and many times go no further.

Therefore, one should include clear and informative graphics.”

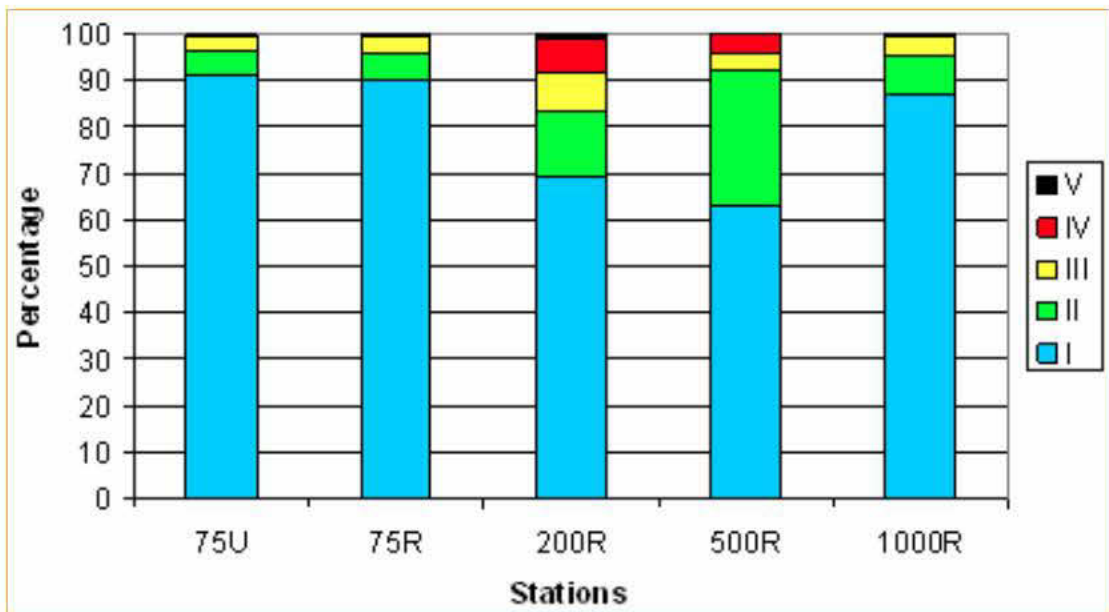
Henry Rapoport, Associate Editor *Journal of Organic Chemistry*

Graphics

Figures and tables are the most effective way to present essential data and results

BUT

- Summarize results in the text where possible
- Captions should be able to stand alone
- The data represented should be easy to interpret
- Colour should only be used when necessary



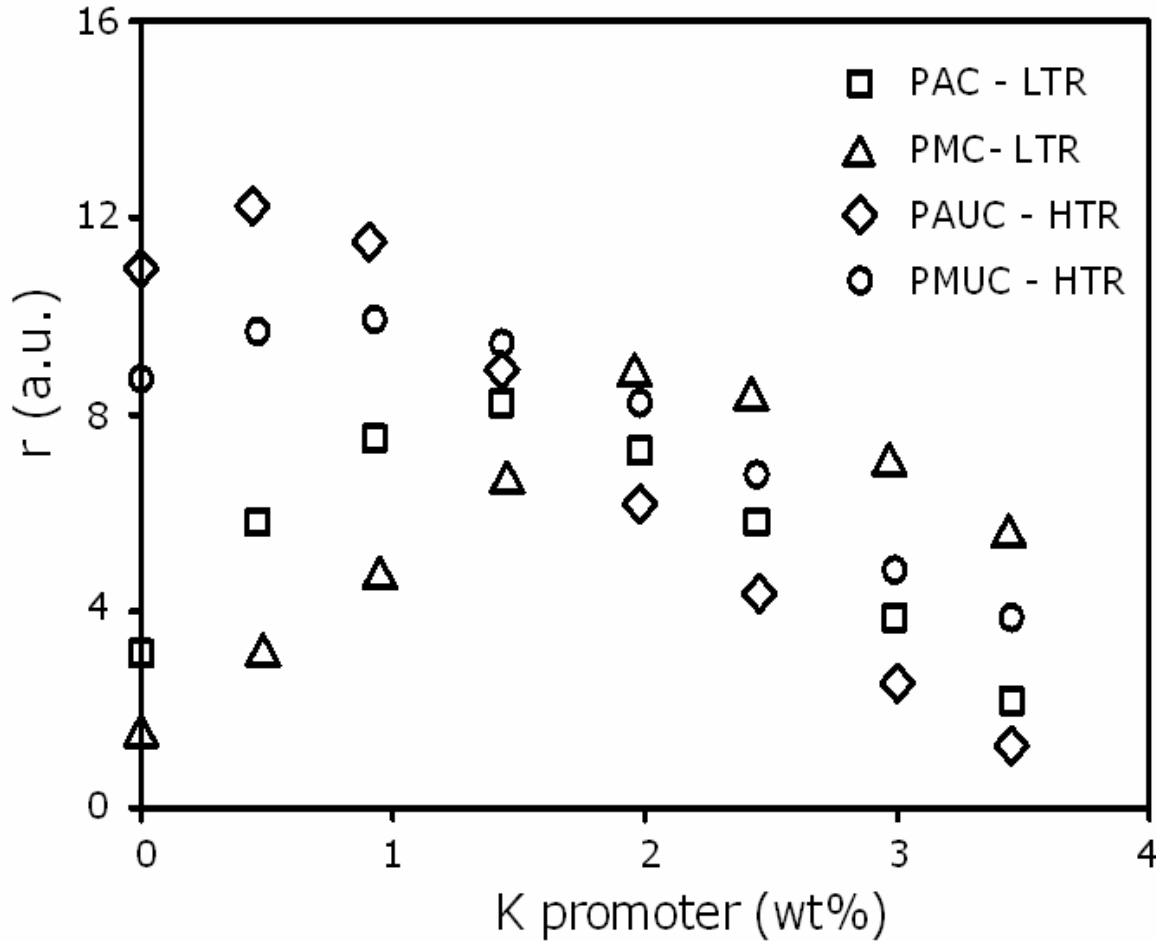
The **bar diagram** and **table** show the same information

The **table** is more precise and better for publications

A **figure or bar diagram** is better for oral presentations

ECOLOGICAL GROUP					
Station	I	II	III	IV	V
75U	91.3	5.3	3.2	0.2	0.0
75R	89.8	6.1	3.6	0.5	0.0
200R	69.3	14.2	8.6	6.8	1.1
500R	63.0	29.5	3.4	4.2	0.0
1000R	86.7	8.5	4.5	0.2	0.0

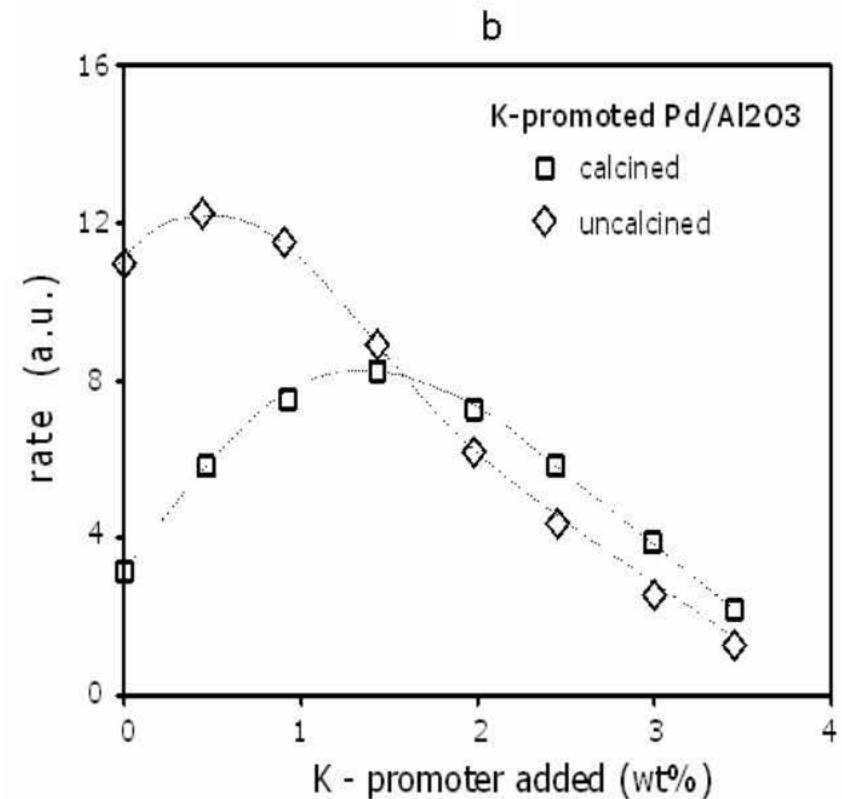
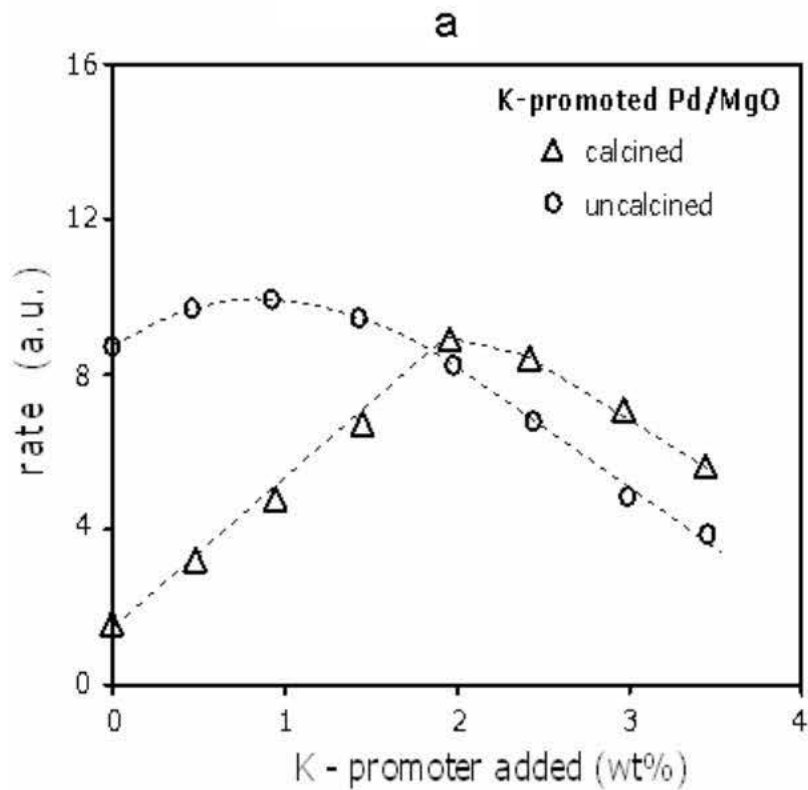
Bad



- Legend is poorly defined
- Too much data
- No trend lines

Good

- Clear legend
- Organized data
- Trend lines are present



Discussion

Describe

- How results relate to the study's aims and hypotheses
- How findings relate to those of other studies
- All possible interpretations of your findings
- Limitations of the study

Do not

- Introduce new results or terms
- Make “grand statements” that are not supported by the data, e.g. *“This will massively reduce malaria”*

Conclusion

Put your study into **CONTEXT**

- Describe principal findings
- Describe how it represents an advance in the field
- Suggest future experiments

BUT

- Avoid repetition with other sections
- Avoid being overly speculative
- Do not over-emphasize the impact of your study



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Manuscript almost ready

Roel Prins



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