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Academic and Scientific Collaboration

LECTURE

THE ROAD TO A GOOD RESEARCH PAPER

Dr. Stevan Armaković
AIDASCO Board President

Assistant Professor
University of Novi Sad, Faculty of Sciences, Department of Physics

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Tip of the iceberg



Optoelectronic properties of curved carbon systems

Stevan Armaković^{a,*}, Sanja J. Armaković^b, Slawomir Koziel^{c,d}

^a University of Novi Sad, Faculty of Sciences, Department of Physics, Trg Dositeja Obradovića 4, 21000, Novi Sad, Serbia

^b University of Novi Sad, Faculty of Sciences, Department of Chemistry, Biochemistry and Environmental Protection, Trg Dositeja Obradovića 3, 21000, Novi Sad, Serbia

^c School of Science and Engineering, Reykjavik University, 101 Reykjavik, Iceland

^d Faculty of Electronics, Telecommunications and Informatics, Gdansk University of Technology, 80-233 Gdansk, Poland

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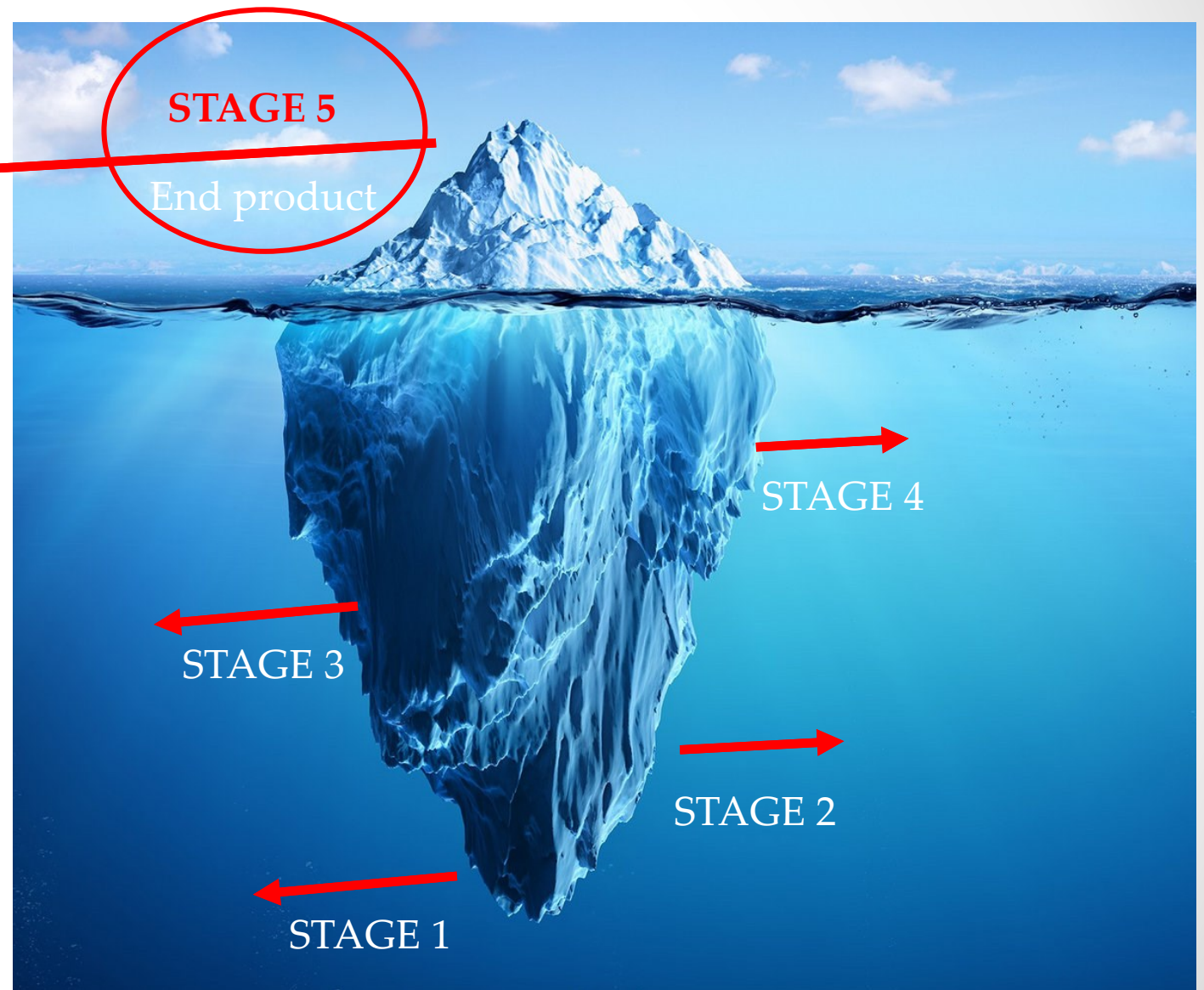
1. Introduction

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The first curved organic molecule, corannulene, was discovered in 1966 by Barth and Lawton [5,6], but the interest in its physicochemical properties ended soon. However, discovery of fullerenes and nanotubes triggered the interest in curved structures and the number of papers related to these structures dramatically

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Buckybowls possess an entire set of interesting properties and some of them include specific charge distribution, bowl-to-bowl inversion (b2b-i) and benzylic carbons [12]. Due to bowl-shaped structure, the more negative charge is located on its concave side. As a result, these structures feature two surfaces with considerably different adsorption properties [13,14]. B2b-i of buckybowls means that they practically oscillate between two bowl-shaped ground states via a flat transition state. What is even more important is that this phenomenon occurs with certain frequency and that b2b-i energy is directly related to the bowl-depth [15–18]. Some buckybowls, such as sumanene, possess benzylic carbon atoms due to which various functionalization procedures are readily available



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E-mail address: stevan.armacovic@df.uns.ac.rs (S. Armaković).

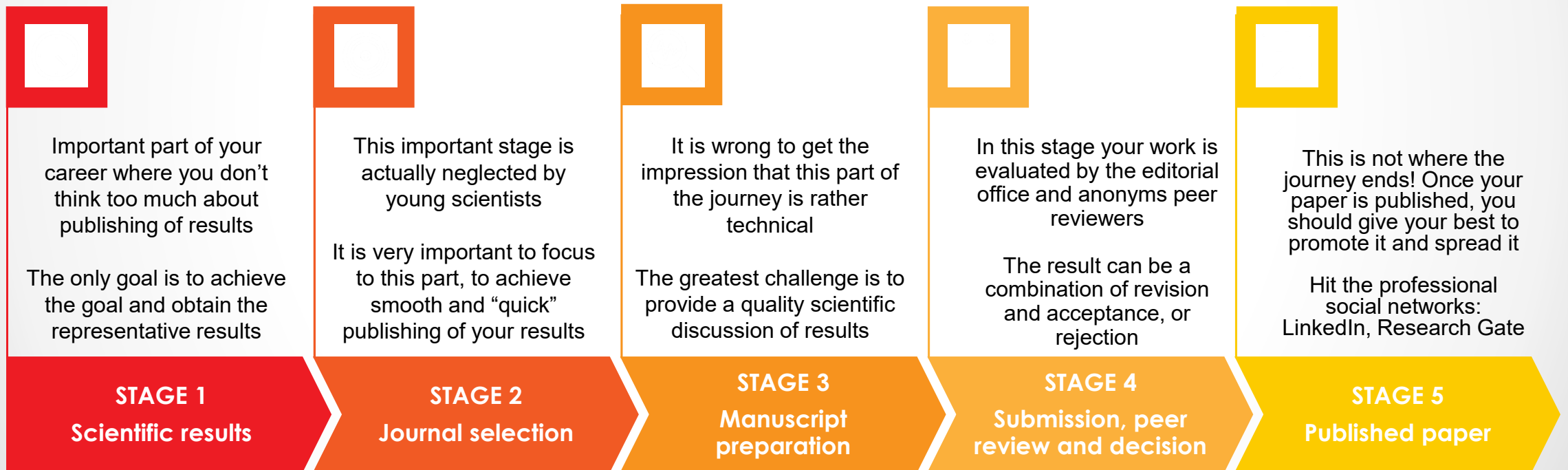
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MOTIVATION AND AIMS

Development of new scientific and technological achievements is not possible without publishing of the scientific results

This lecture aims to introduce students and young researchers to some of the essential steps leading to the good research paper



The structure of this lecture

Part 1:

Journal metrics

Understand terms such as:

- * Impact factor
- * Quartile ranking
- * CiteScore

Part 2:

Manuscript Submission

Submission to a scientific journal:

- * Editorial office
- * Peer Review
- * Revision

Part 3:

Manuscript structure

Structure of a manuscript:

- * Main elements
- * Citing
- * Formatting

Part 1:

Journal metrics

Understand terms such as:

- * Impact factor
- * Quartile ranking
- * CiteScore,
- * etc

PART 1: BASIC JOURNAL METRICS

Impact factor

- One of the oldest (dating from 1992) and the most popular journal parameter
- Based on the citations
- Provided by the Journal Citation Reports (Clarivate)

CiteScore

- One of the youngest journal parameters (introduced in 2016.)
- Based on citations
- Calculated by Scopus (Elsevier)

Quartile rankings

- Division of journals in quartiles in covered sub-fields, with respect to the value of selected journal parameter
- JRS, JCR, SCOPUS,

It is important to remember the following:

To get the right picture about the scientific journal, it is always the best solution to take into account different journal parameters, not just one!

Impact factor

- Impact factor is a number which tells how many times, on average, the articles published in one journal one or two years ago have been cited.
- It is calculated by dividing the number of citations in the selected year by the total number of articles published in the two previous years.

EXAMPLE

Papers published in *Journal of Some Research* in 2011. received 250 citations for papers published in 2010. and 240 citations for papers published in 2009. Total number of papers published in this journal in 2009. and 2010. is 100.

$$\text{impact factor} = \frac{\text{number of citations in 2011 for paper published in 2009 and 2010}}{\text{total number of publications published in 2009 and 2010}} = \frac{250 + 240}{100} = \frac{490}{100} = 4.900$$

CiteScore

- CiteScore for 2020 is obtained by dividing the number of citations received in 2017-2020 by the number peer-reviewed documents indexed in Scopus and published in those same four years. For calculations of CiteScore, only 5 peer-reviewed document types are considered: articles, reviews, conference papers, data papers, and book chapters

$$\text{CiteScore for 2020} = \frac{\text{number of citations received in 2017 - 2020 range}}{\text{total number of publications published in 2017 - 2020 range}}$$

- Previously, the CiteScore was calculated in the almost the same way as impact factor, but by taking into account the total number of publications published in previous three years, not two.

$$\text{CiteScore for 2015} = \frac{\text{number of citations received in 2015}}{\text{total number of publications published in 2012 - 2014 range}}$$

Quartile ranking

Journal ranking in quartiles with respect to the selected parameter (SJR, impact factor, CiteScore, etc).

by SCImago

- Quartile ranking according to the value of SJR in covered sub-fields

by JCR

- Quartile ranking according to the value of impact factor in covered sub-fields

by SCOPUS

- Quartile ranking according to the value of CiteScore in covered sub-fields

Q1 – top 25% of journals

Q2 – journals ranked from 25% to 50%

Q3 – journals ranked from 50% to 75%

Q4 – journals ranked from 75% to 100%

The tricky question

What is a good value of impact factor (or some other journal metric parameter)?

If a journal has any value of impact factor, it means:

- It is run by legitimate editorial board
- It is covered by relevant databases,
- It is regularly checked by relevant entities
- It's papers are cited by other studies
- IT HAS A SCIENTIFIC RELEVANCE

Journal	Impact factor
CA-A Cancer Journal For Clinicians	508.702
Lancet	79.321
Nature	49.962
Science	47.728

- There are near 13000 journals with impact factor
- An average value of impact factor is between 2.0 and 3.0

Always take into account more parameters

Journal 1

- Impact factor = 1.5
- Quartile ranking = Q1

Journal 2

- Impact factor = 3.5
- Quartile ranking = Q3

- It could be that **Journal 1** covers less popular (sub)field(s), so it receives lower number of citations
- It could be that **Journal 2** has much more issues per year, so it reaches more readers
- etc

Where to find journal metrics?

SCOPUS

- CiteScore and related parameters
- Not free
- Reviewers have free access

CLARIVATE

- Impact factor and related parameters
- Not free

SCImago

- SJR and related parameters
- FREE (using the data from SCOPUS, which is not free)
- Many other parameters, country ranking, etc

All are great sources, definitely should be taken into account when choosing the right journals

Where to find journal metrics?

<https://impactfactors.online>

Impact factors for the last 5 years, latest CiteScore, CiteScore Quartile ranking +
find journals by covered sub-fields, graphical representation
and (soon to come) report printing in PDF

FREE, NO ADS



Visit and follow on social networks

For practice

<https://impactfactors.online>

- Identify 1 journal with impact factor, which covers the “Spectroscopy” sub-field.
- Identify 2 journals characterized by Q3 CiteScore ranking, who are also having an impact factor.
- Identify 3 journals covering sub-fields according to your preference.
- Which journals received more citations in 2020: “Journal of Molecular Modeling” or “Journal of Molecular Liquids”
- Analyze the impact factor for the last five years for the “Journal of Molecular Liquids”. What are your conclusions?



Visit and follow on social networks

FINALLY

Once you identify the journal that has decent journal metrics and covers appropriate sub-fields, you can visit its official website presentation and find the following:

- Detailed SCOPE
- Guide for authors document

Detailed scope will tell you what type of manuscripts editorial office expects to receive

Guide for authors will give you all necessary information how to technically prepare your manuscript and how to format it

Remember: There are almost 13000 journals with impact factor! It is impossible to visit each and every website. You have to filter your selection 😊

<https://impactfactors.online>

Part 2: Manuscript Submission

Submission to a scientific
journal:

- * Editorial office
- * Peer Review
- * Revision

Manuscript submission



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The first curved organic molecule, corannulene, was discovered in 1966 by Barth and Lawton [5,6], but the interest in its physicochemical properties ended soon. However, discovery of fullerenes and nanotubes triggered the interest in curved structures and the number of papers related to these structures dramatically

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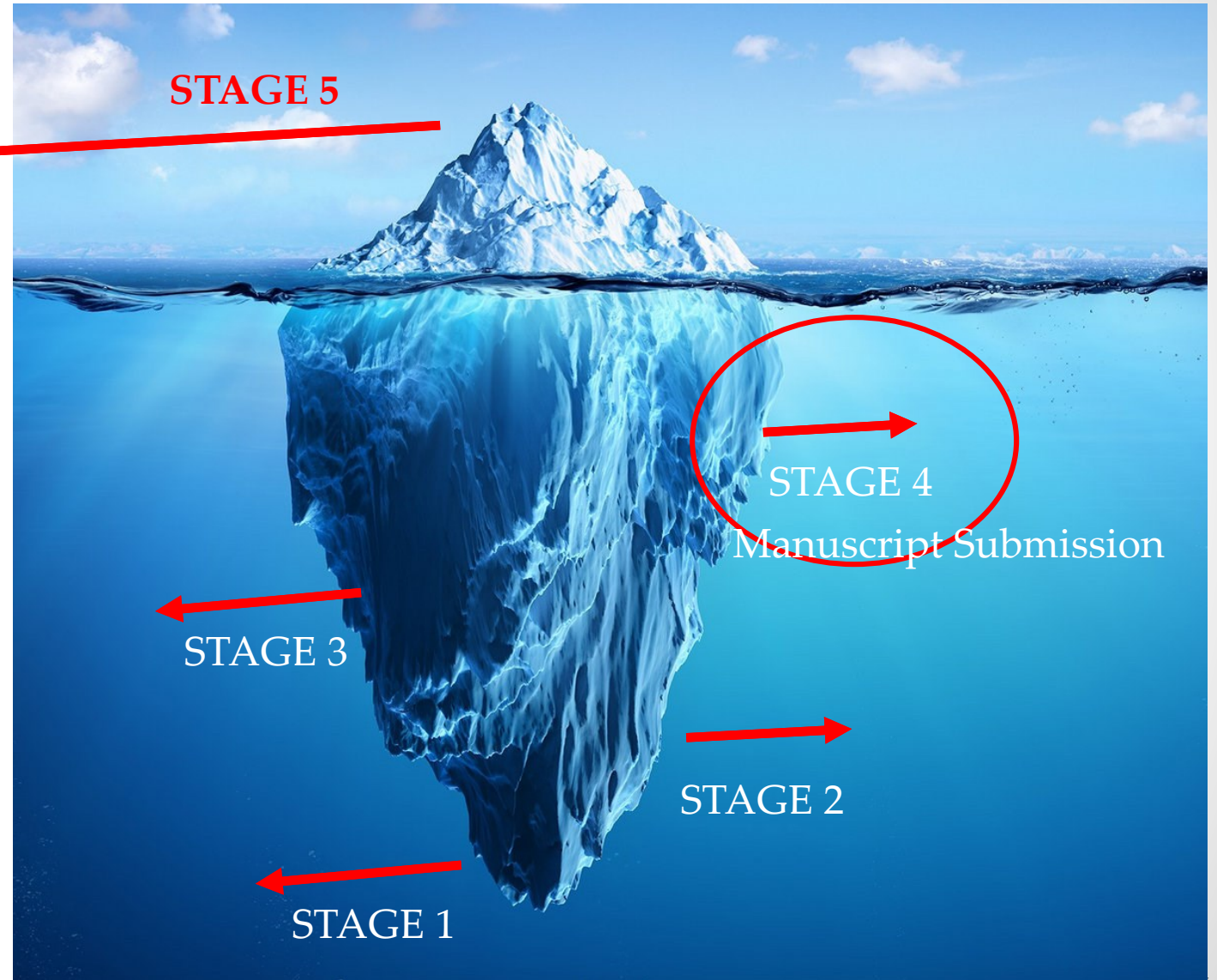
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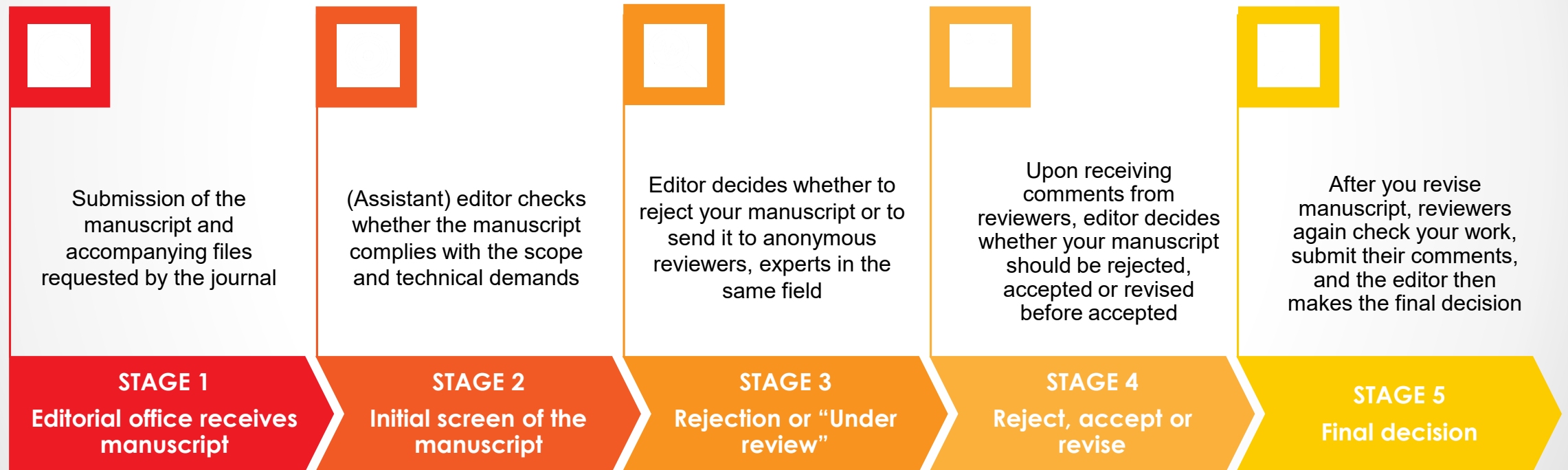
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Manuscript submission



Main elements of manuscript submission

Manuscript

The main file, the one for which you worked hardest 😊
Blood, sweat and tears

Cover Letter

- Besides cover letter, the following may be requested: **Novelty statement, Authors statement and Conflict of interest statement**

- Introduce the editor with your submission
- Unlike cover letter accompanying job application, it shouldn't focus on applicant's credentials
- If there is anything specific editor should know, write here
- Explain the novelty and importance of your work

Graphical Abstract

Summarize your work in one small and simple image 😊

Figures

- Tables & Schemes

Technical prerequisites, file type, resolution, dimensions, etc

Other files

For example, molecular structures, crystal structures, supplementary files, etc

Part 3:

Manuscript Structure

Structure of a manuscript:

- * Main elements
- * Citing
- * Formatting

Structure of a manuscript

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^a University of Novi Sad, Faculty of Sciences, Department of Physics, Trg Dositeja Obradovića 4, 21000, Novi Sad, Serbia
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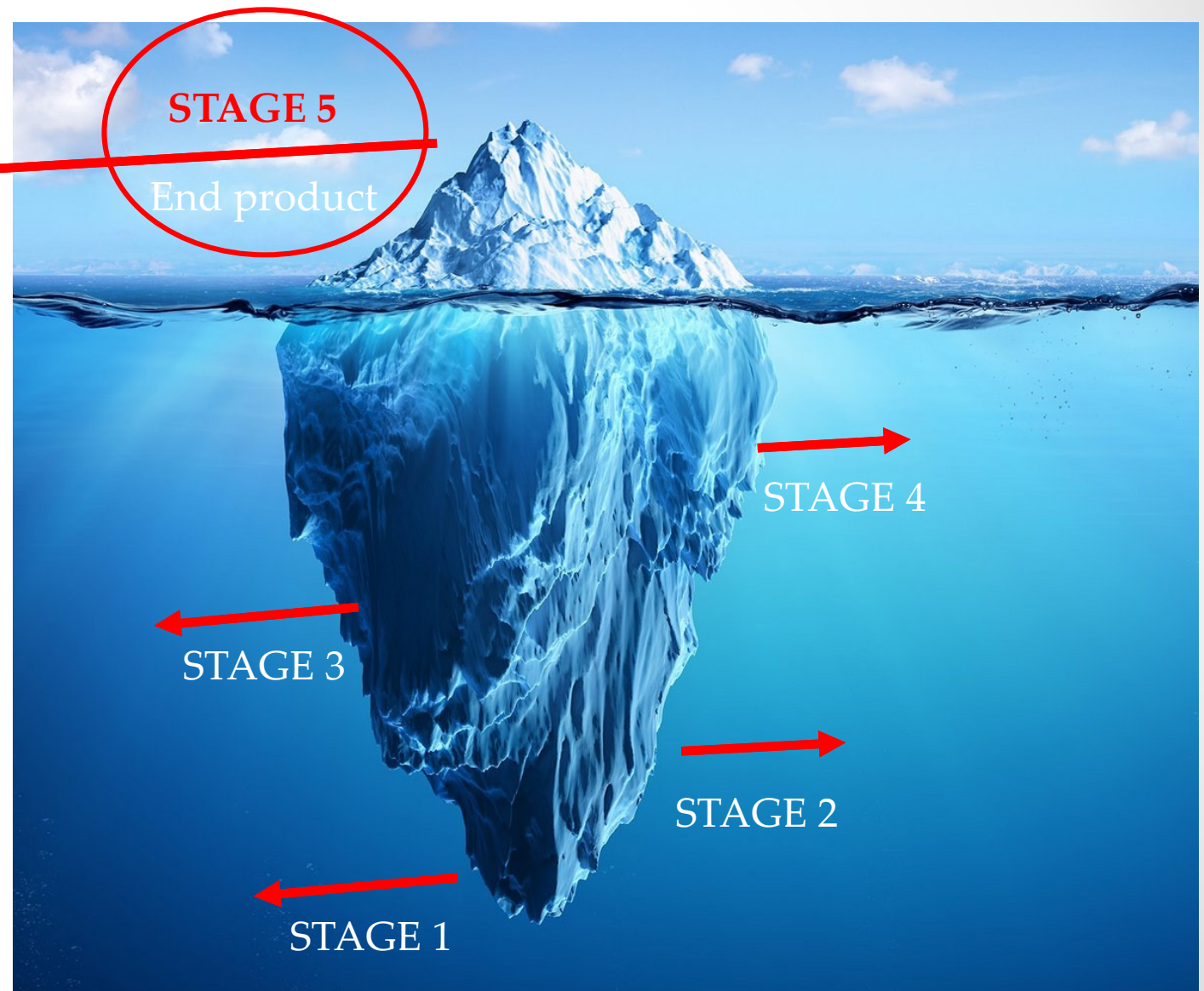
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- Clear and concise
- Informative, but not too long

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Stevan Armaković^{a,*}, Sanja J. Armaković^b, Slawomir Koziel^{c,d}



Affiliations

Authors

^a University of Novi Sad, Faculty of Sciences, Department of Physics, Trg Dositeja Obradovića 4, 21000, Novi Sad, Serbia

^b University of Novi Sad, Faculty of Sciences, Department of Chemistry, Biochemistry and Environmental Protection, Trg Dositeja Obradovića 3, 21000, Novi Sad, Serbia

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ABSTRACT

- Short info about your work (usually 150-250 words)
- What has been done, what has been investigated...
- What research tools have been applied
- Should contain “some” results, a sentence or two about main finding(s) (for example in a form of trend)
- When readers read your abstract, they should have an idea what you have done

Other elements

Introduction

- Introduce the readers with your work
- Explain why is your topic important
- Present the current state in the field
- Mention the methods you have chosen for research

Materials and methods

- Experimental
- Theoretical/Computational

- Explain how you got (measured/calculated) your results
- Make your results reproducible by others

Results and discussion

- Present your results
- Use words and space wisely, use graphs and tables wisely
- **Complement your statements and findings with other studies**

Conclusions

- Present your results
- Use words and space wisely, use graphs and tables wisely
- **Complement your statements with other studies**

Acknowledgement

- Mention all organizations thanks to which you had resources to perform your research

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Stevan Armaković

Website: <https://armakovic.com>

LinkedIn: <https://www.linkedin.com/in/stevanarmakovic/>

Twitter: @armakov

Facebook: <https://www.facebook.com/stevan.armakovic>

Comments & Questions session

Please write your questions to moderator