Strategic and Effective Writing of Scientific Publication

Institute of Industrial Science,
The University of Tokyo
epi.iis.u-tokyo.ac.jp

Muhammad Aziz

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EPlab
AZIZ LABORATORY
Energy & Process Integration
The University of Tokyo

東京大学
THE UNIVERSITY OF TOKYO

Introduction

Muhammad Aziz, Dr. Eng.
Associate Professor

Affiliations in The University of Tokyo:
- **Principal Investigator** Energy and Process Integration Laboratory, Institute of Industrial Science
- Department of Mechanical Engineering, Faculty of Engineering
- Organization for Programs on Environmental Sciences, Graduate School of Arts and Sciences

Affiliations at others institutions:
- Senior visiting researcher, RIKEN, Japan
- Adjunct Professor, Universitas Negeri Malang, Indonesia

Listed in the top 2% scientist in the field of Energy, Stanford University, 2020
Homepage : epi.iis.u-tokyo.ac.jp
h-index : 53 (google scholar), 45 (Scopus)
Publication : Journals : 275, Books and Chapters: 25

Journal Editors

Applied Energy (IF 11.7)	Scientific Reports (IF 4.6)	Carbon Resources Conversion (IF 6.0)
Energies (IF 3.2)	Sustainability (IF 2.592)	Applied Sciences (IF 2.8)

Research Areas

Energy systems, Process design, Power generation, Carbon capture and storage, Hydrogen production, Renewable Energy, Energy conservation, Energy and exergy analysis, Exergy recovery, Electric vehicle, Batteries, Smart grid

The University of Tokyo

東京大学
THE UNIVERSITY OF TOKYO

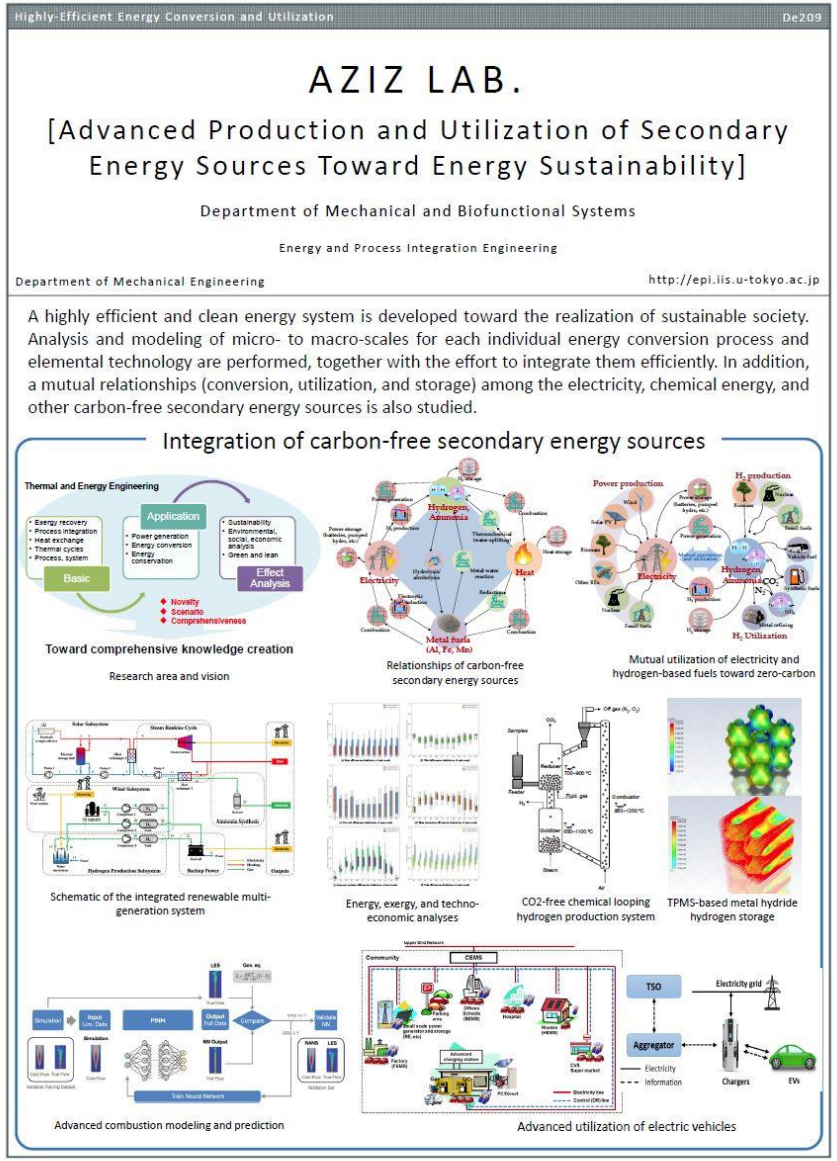
- Global World Ranking: **QS 32th, THE 29th**
- Established in 1877 (First Imperial university)
- Academic faculty staff 3,817
- Others: Research assistant 35; Teachers at affiliated schools 41; Administrative staff 1,524; Technical staff 543; Medical staff 1,978
- Total students 27,453 (about 2,100 are foreign students)
- Five main campuses: Hongo, Komaba, Kashiwa, Shirokane, Nakano
- Nobel laurates: 16 have been affiliated with Todai (11 alumni, 4 long-term academic members), 10 are officially listed as Tokyo's Nobel Laurates by university, 5 astronauts
- Quarter system
- University bonds (20 billion JPY)

Academic Staff	Male	Female	Total
Professors	1,176	100	1,276
Associate Professors	815	107	922
Lecturers	236	50	286
Research Associates	1,090	243	1,333

Aziz Lab: Energy and Process Integration

東京大学 THE UNIVERSITY OF TOKYO

Website: **epi.iis.u-tokyo.ac.jp**



Principal Investigator / Lab. Head

Muhammad Aziz, Dr. Eng. Associate Professor

Researchers, etc. 研究員等

Po-Chih Kuo	JSPS Research Fellow	
Firman Bagja Juangsa	Visiting Researcher	Bandung Institute of Technology
Muhammad Haris Mahyuddin	Visiting Researcher	Bandung Institute of Technology
Muhammad Penta Helios	Visiting Researcher	National Research and Innovation Agency (BRIN, Indonesia)

Students 学生

D3	Wen Du	温渡	China
D3	Zhuang Sun	孙状	China
D2	Hafif Dafiqurrohman		Indonesia
D2	Jinyue Cui	崔金月	China
D1	Luthfan Adhy Lesmana		Indonesia
D1	Chen Xiangxiang	陳 翔翔	China
D1	Jaeyeon Kim	金 哉延	Republic of Korea
M2	Jeremiah Belva		Indonesia
M2	Rahmat Waluyo		Indonesia
M2	Kazuki Ohira	大平和季	Japan
M1	Mohamed ElKholy		Egypt

Internship/Visiting Students 研究実習生

D3	Chenxi Lu	Wuhan University of Technology	China
D3	Sirui Wu	Tsinghua University	China
D3	Tingyu Xiao	Chongqing University	China
D2	Mohamed Nasser Nafea	Egypt-Japan University of Science and Technology	Egypt
D2	Abraham Castro Garcia	Tokyo Institute of Technology	Japan
D1	Muhammad Usman	Tokyo Institute of Technology	Japan
B4	Fidiyarsi Matari	Universitas Indonesia	Indonesia

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The University of Tokyo
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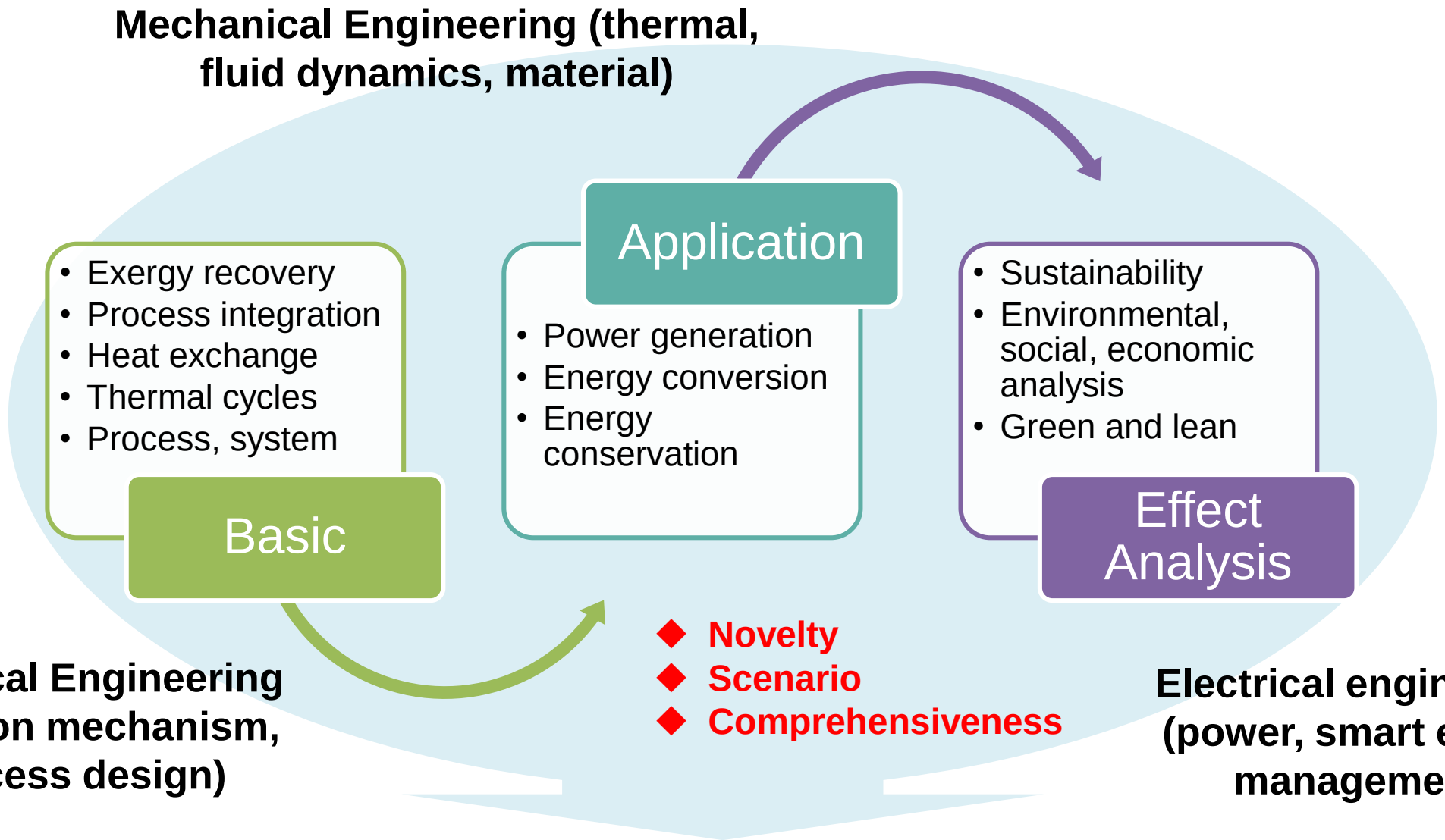
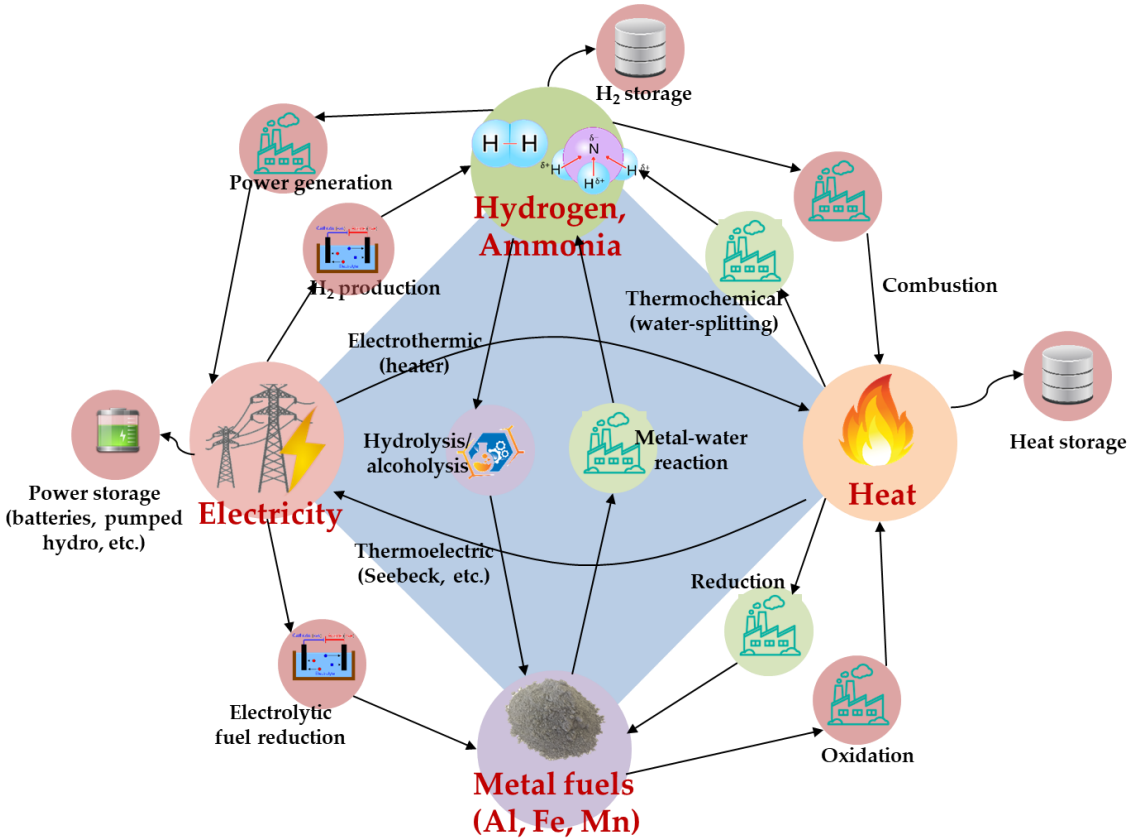
Research Development

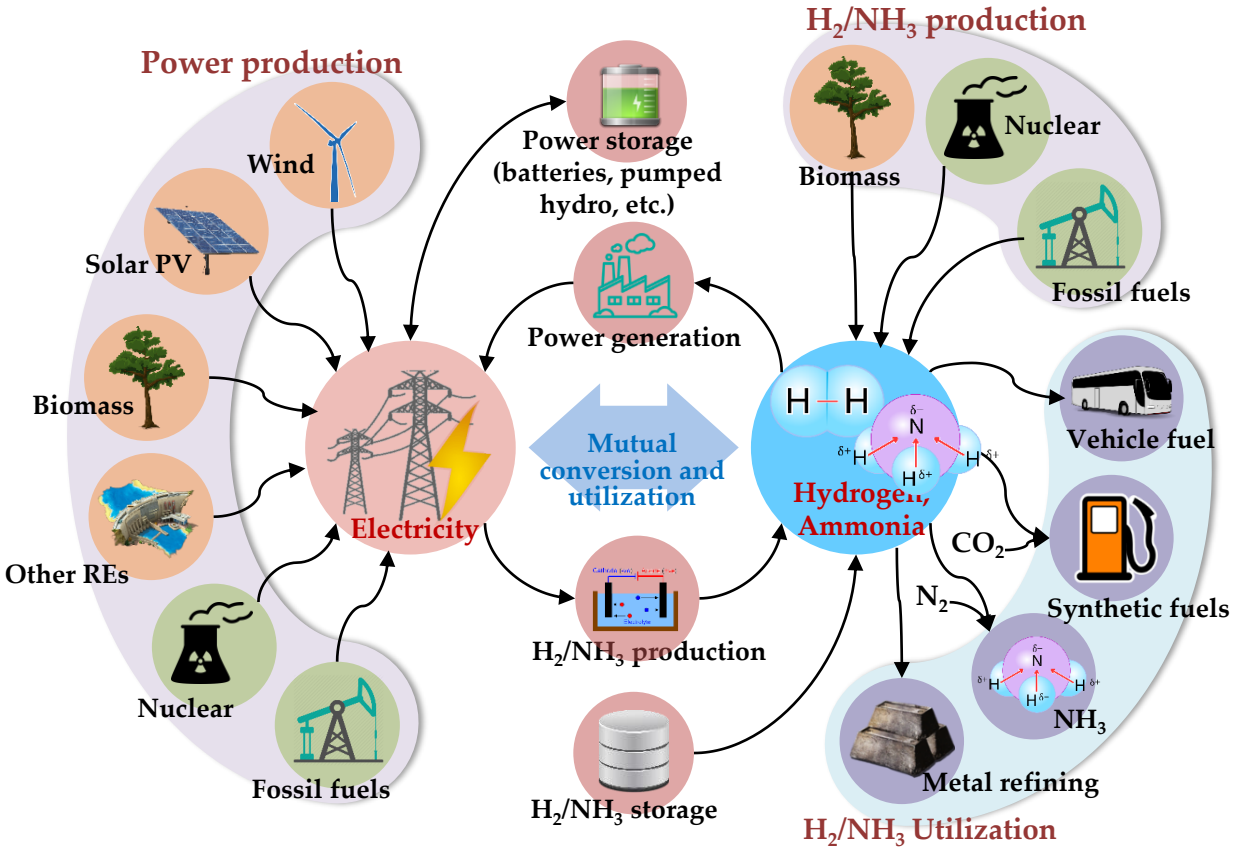


Toward comprehensive knowledge creation

Mutual Conversion of Primary and Secondary Energy Resources



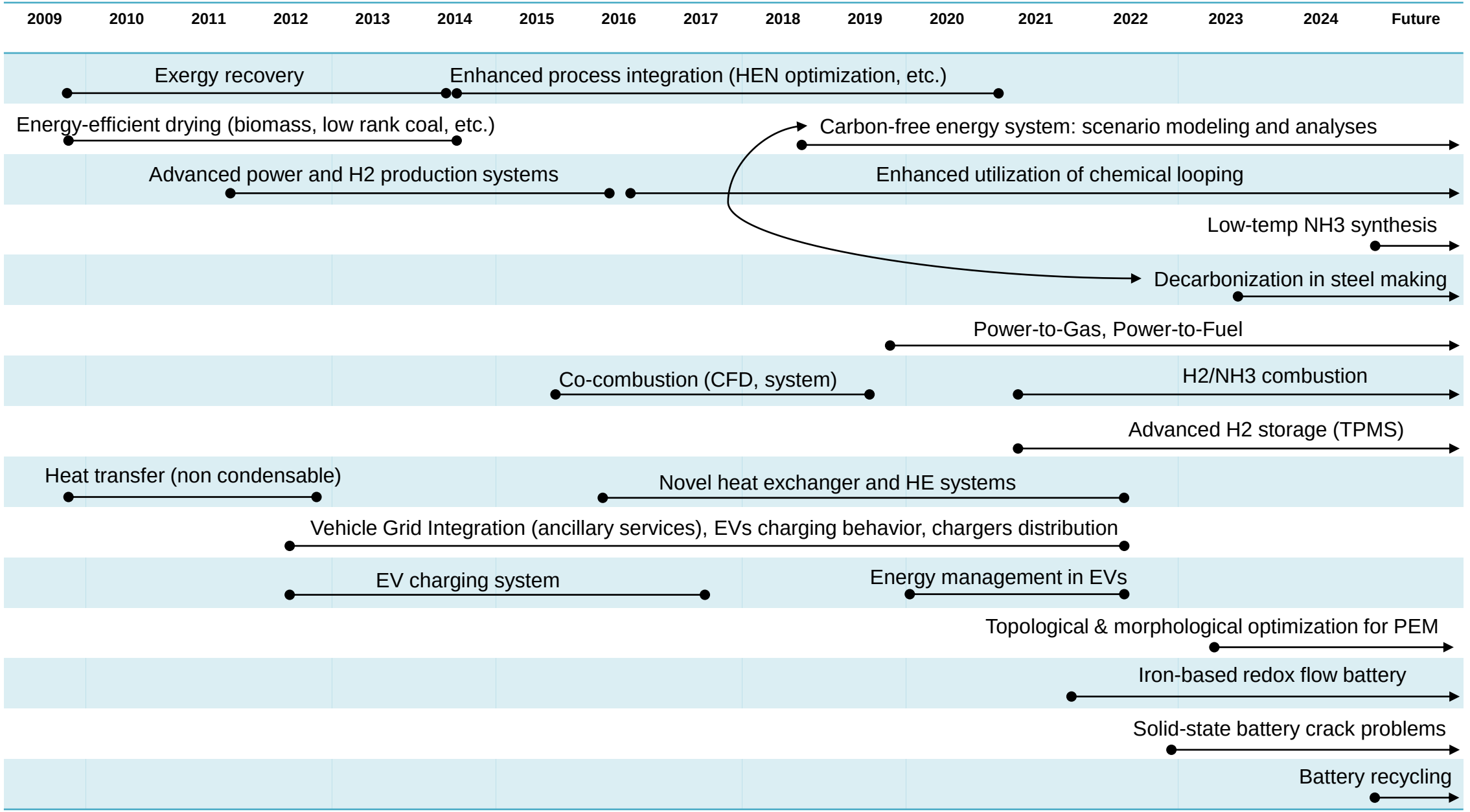
Mutual conversion of secondary energy sources



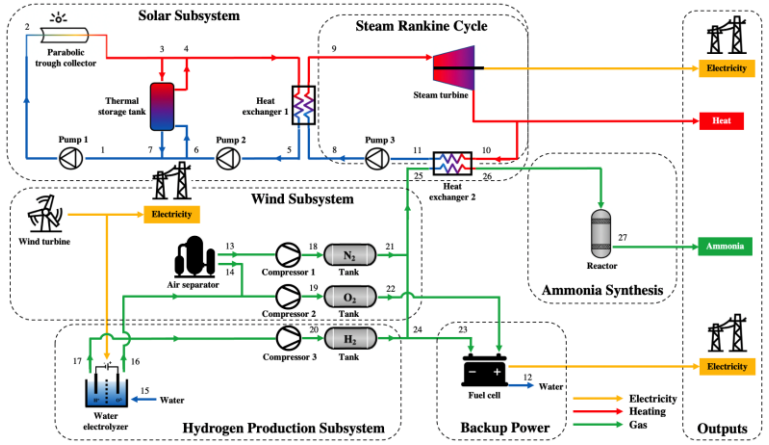
Mutual conversion, storage, and utilization

Constructing highly efficient and clean energy systems with the aim of realizing a sustainable society. Modeling and analysis for micro to macro-scale phenomena within each energy conversion process and elemental technology are conducted, as well as their integration and systematization.

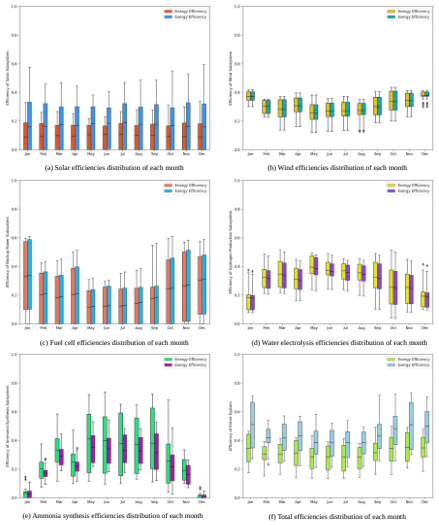
Research Roadmap



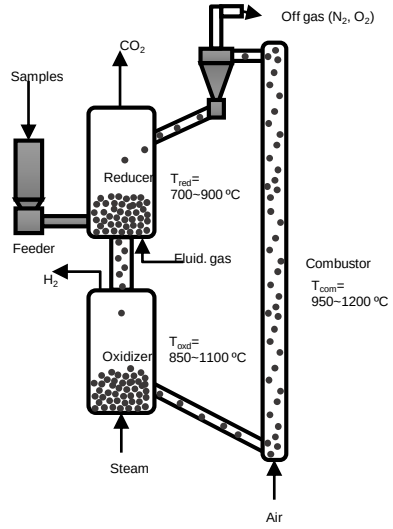
Research Topics in the Lab



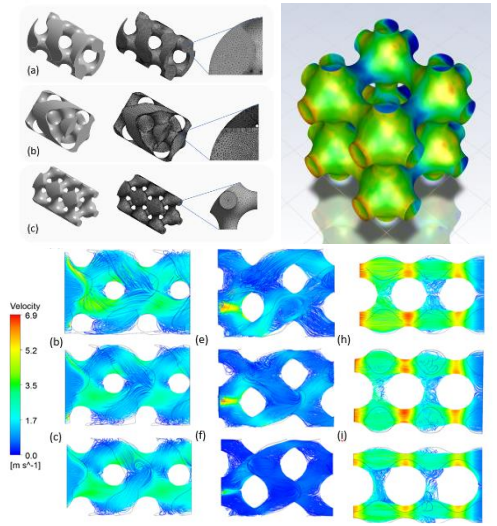
Schematic of the integrated renewable multi-generation system



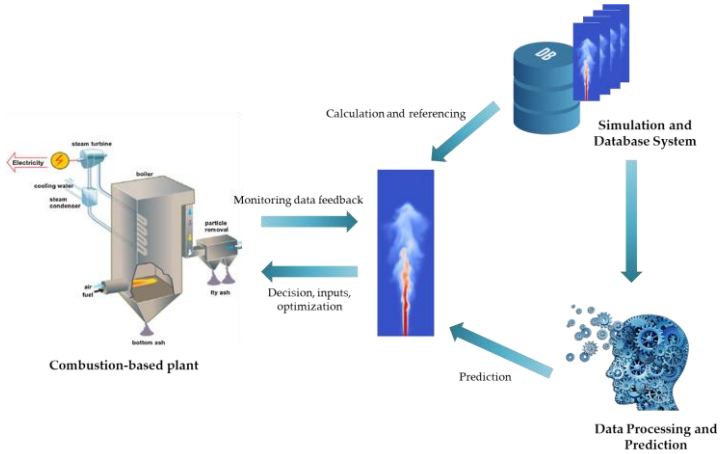
Energy, exergy, and techno-economic analyses



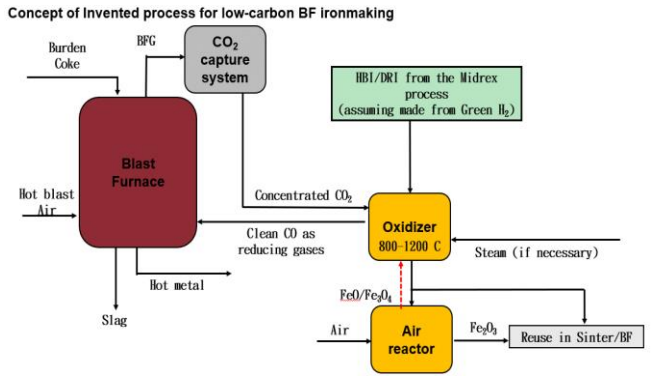
CO_2-free chemical looping hydrogen production system



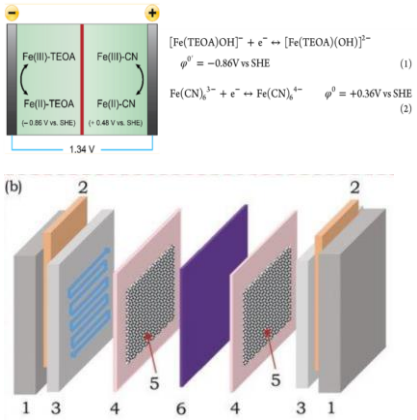
TPMS-based metal hydride hydrogen storage



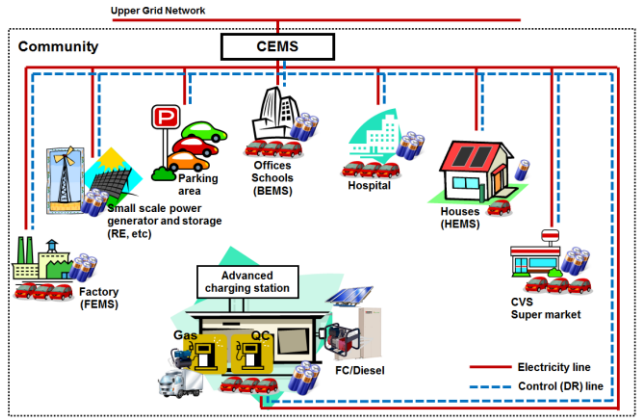
Advanced combustion modeling and prediction



Decarbonization in iron and steel making

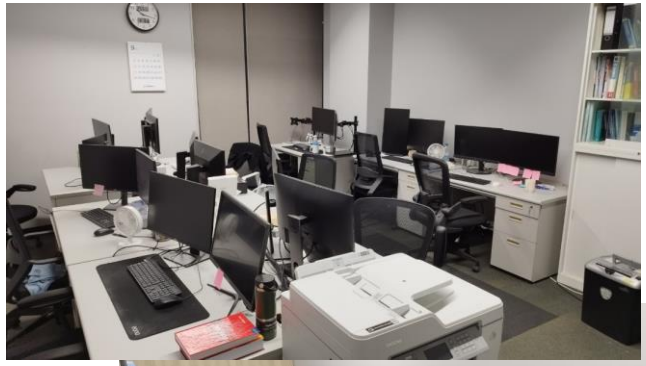


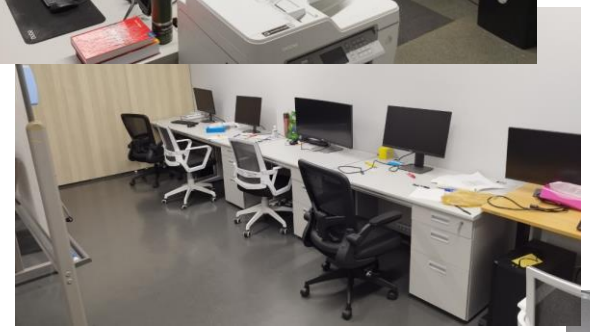
High density iron redox flow battery

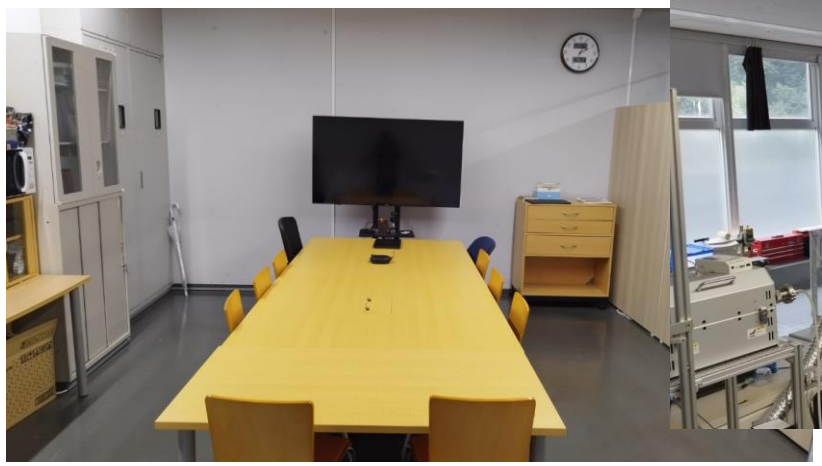


Advanced utilization of EVs for ancillary services

Lab Glances







Research Facilities

XRD

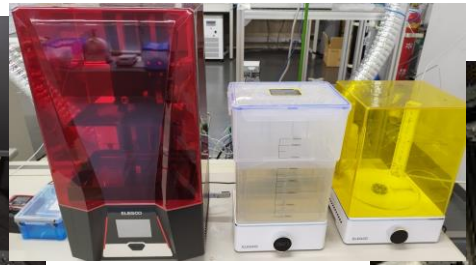

TG/DTA

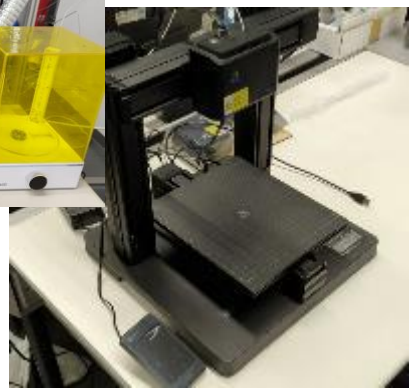

Gas chromatography

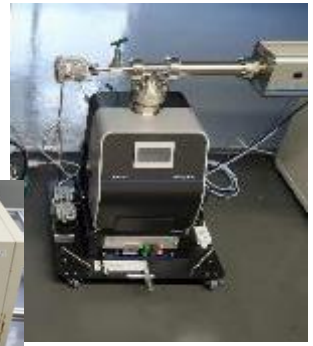

H2 combustor

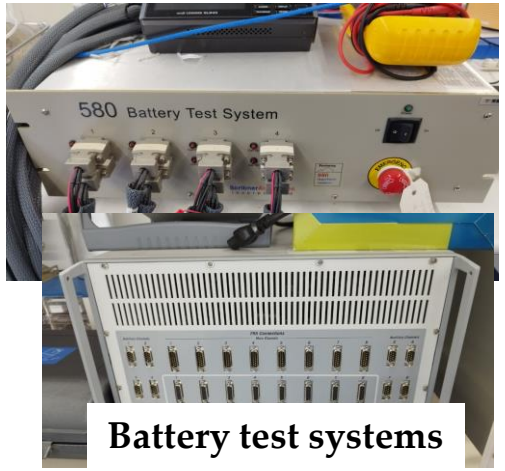

Gas analyzer


FT-IR

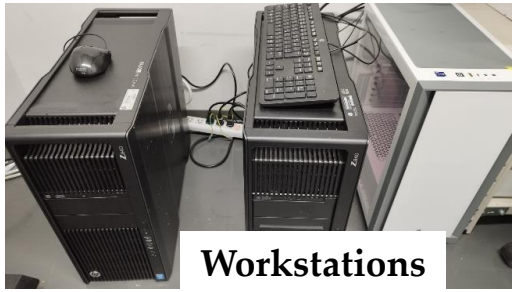

3D Printers, Engraver

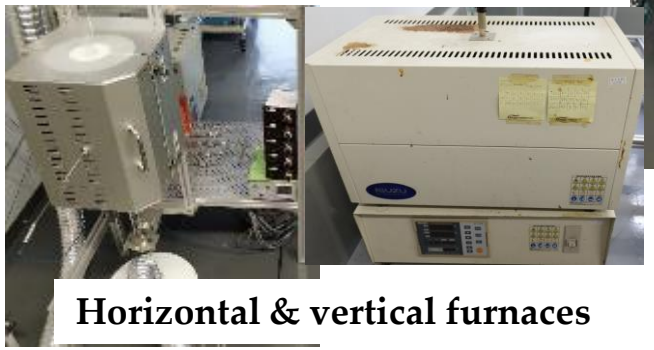



Mass Spectrometry



Battery test systems


Workstations


Horizontal & vertical furnaces

Others
- H2 combustor
- High-speed camera
- Gas analyzer
- UV-VIS
- Workstation
- Potentiostat/galvanostat
- Sunlight simulator
- Plasma generator
- Furnaces
- Etc.

Softwares
- ASPEN Plus
- HYSIS
- Matlab
- Ansys Fluent
- Quantum Espresso
- VASP

Collaboration Map

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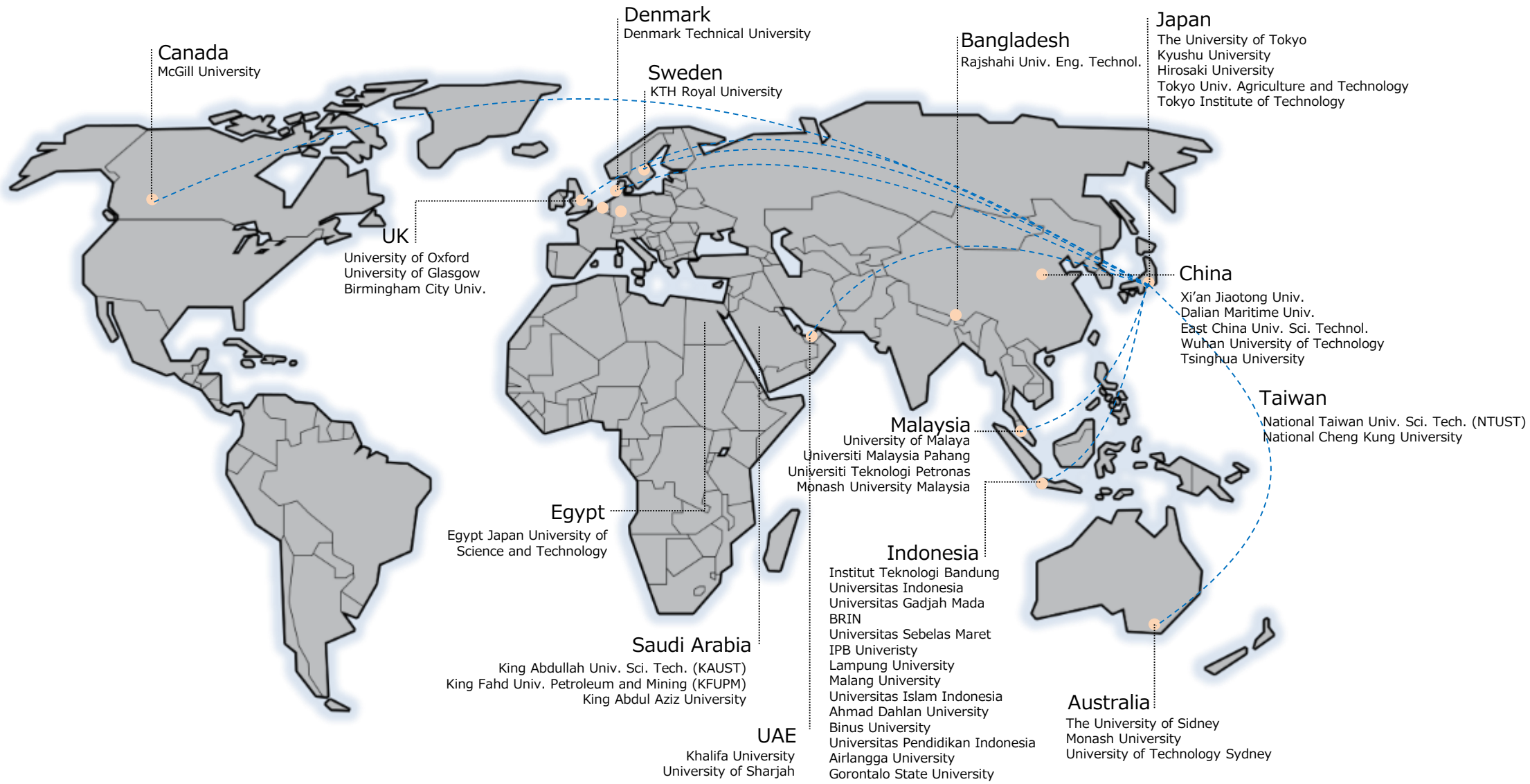


University of Tokyo Ranking (2024)

東京大学
THE UNIVERSITY OF TOKYO

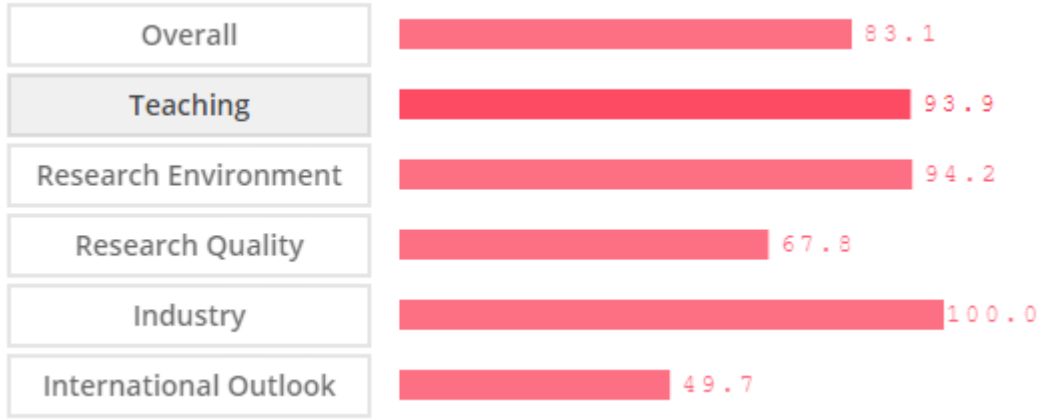
#28	#6	#22
QS World University Rankings	QS WUR Ranking By Subject	QS Sustainability Ranking

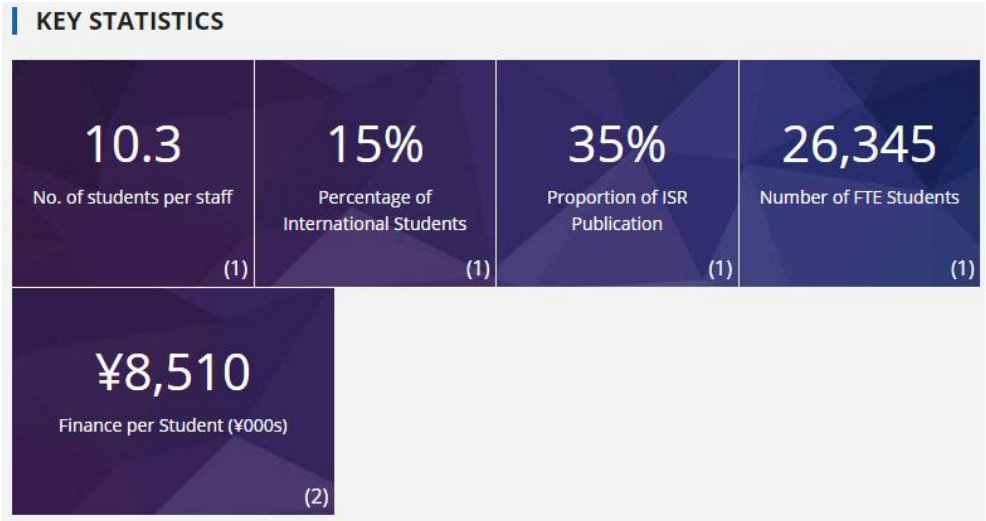
Overall	Academic Reputation	Employer Reputation	Faculty Student Ratio	Citations per Faculty	International Faculty Ratio	International Students Ratio
84.3	100	99.8	90.4	70	10.3	29.2

International Research Network	Employment Outcomes	Sustainability
70	99.8	99.7

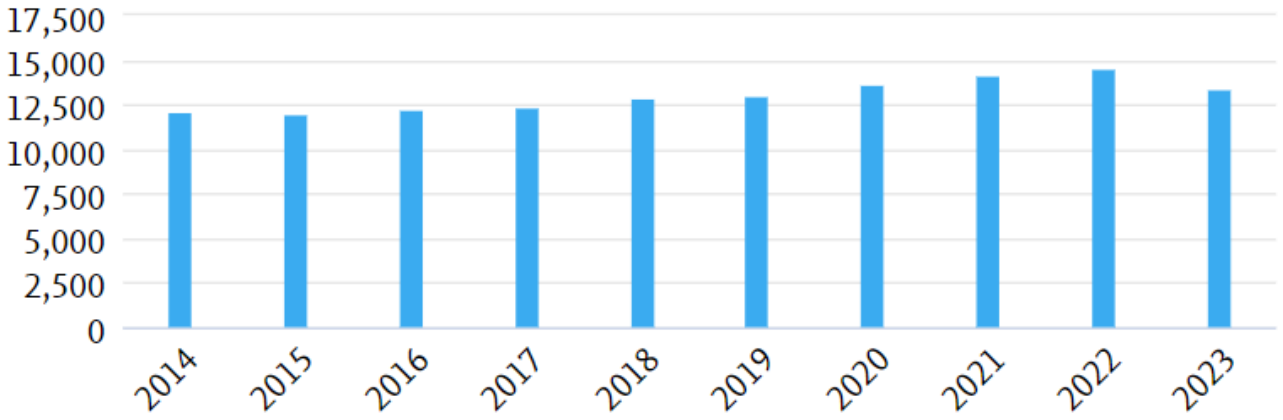
Total students	International students	Total faculty staff
28,045	4,384	4,561
UG students 50%	UG students 11%	Domestic staff 93%
PG students 50%	PG students 89%	Int'l staff 7%

THE Ranking #29

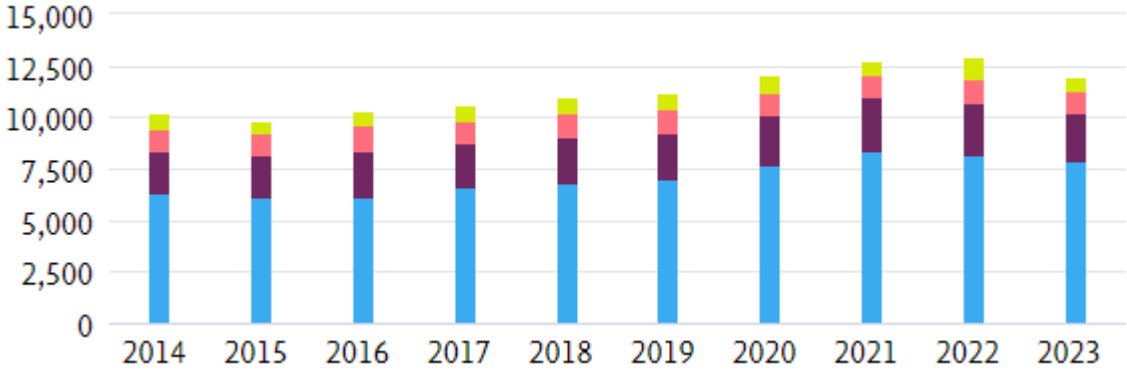




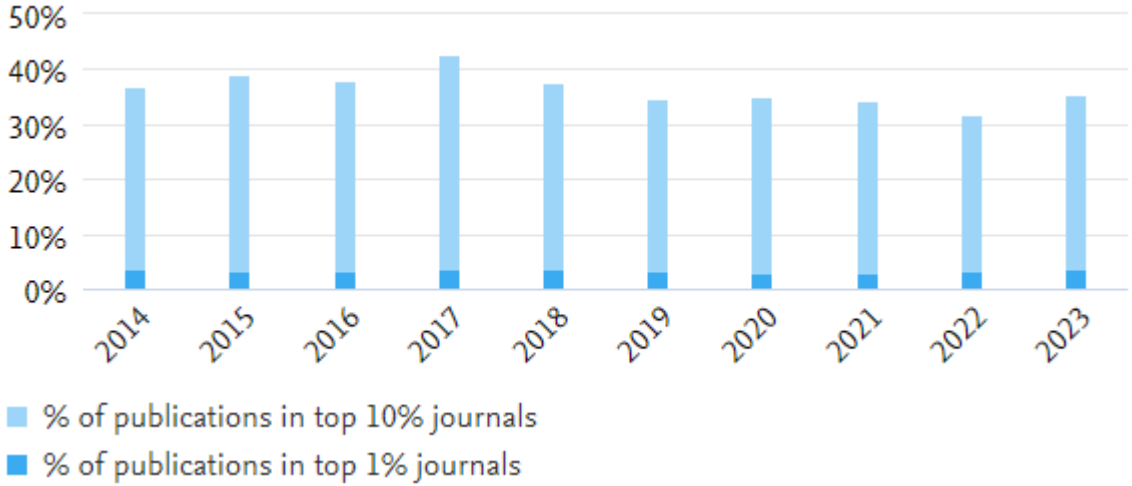
Publications by Utokyo (SciVal)



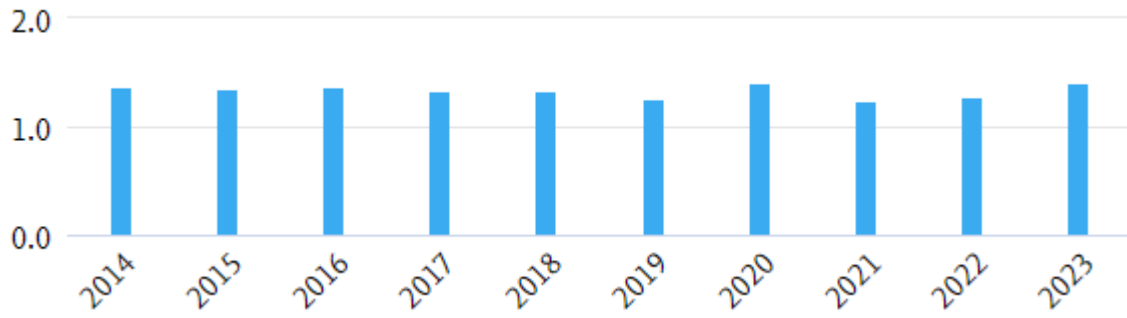
Scholarly Output



Share of publication per journal quartiles

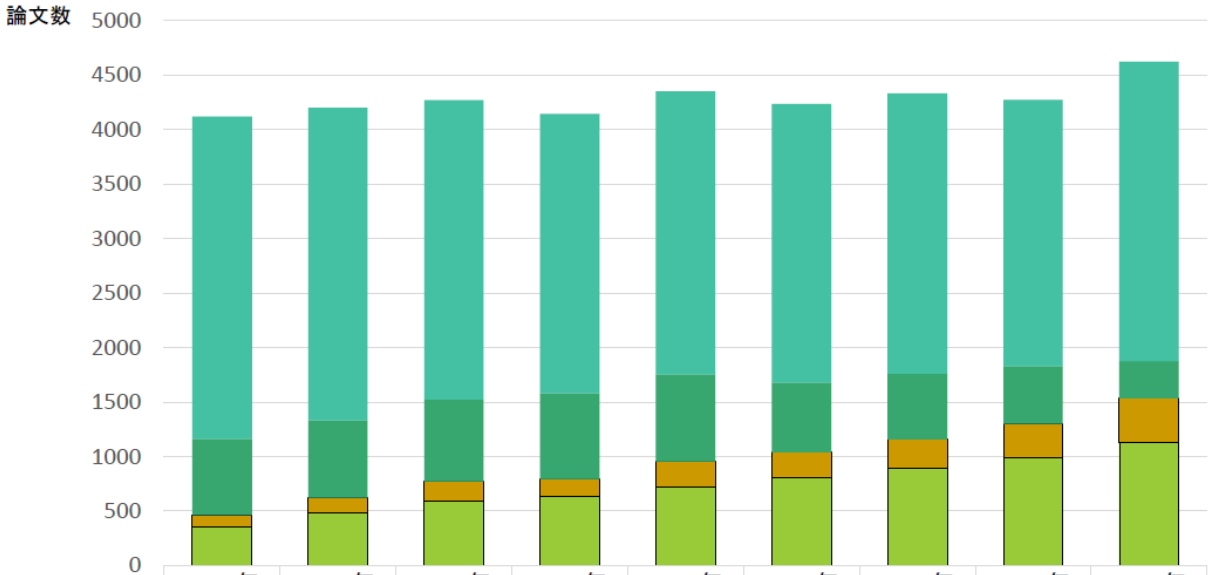


Publications in top journal percentiles



FWCI

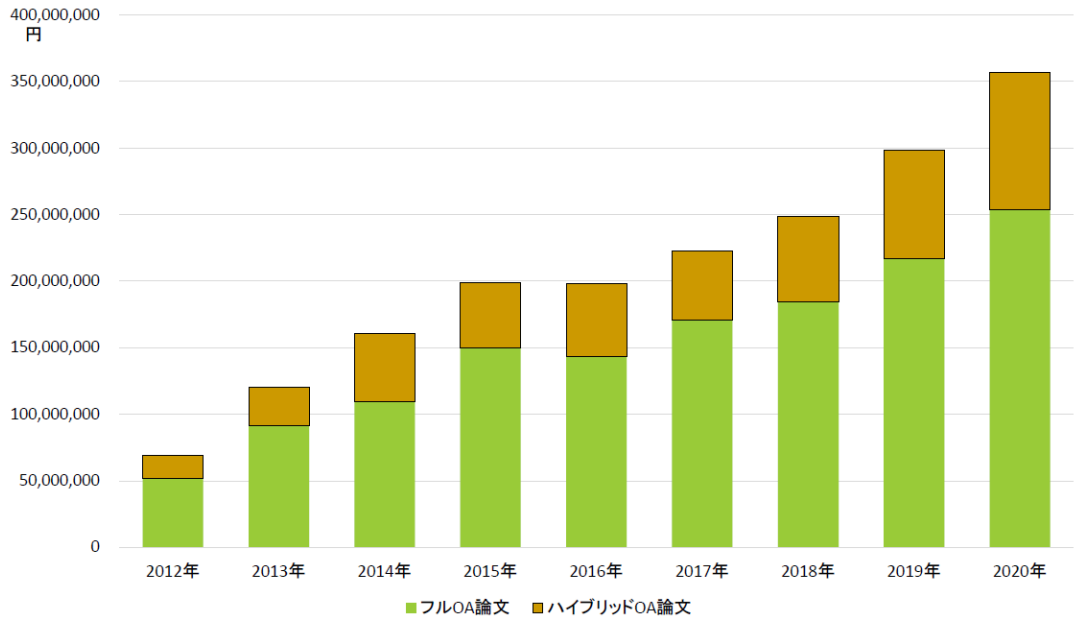
Share of Open Access



	2012年	2013年	2014年	2015年	2016年	2017年	2018年	2019年	2020年
非OA論文	2958	2869	2747	2564	2597	2555	2571	2443	2748
ブロンズOA論文	697	706	750	785	800	643	603	526	343
ハイブリッドOA論文	114	142	186	157	233	229	267	313	408
フルOA論文	353	484	588	637	723	810	891	992	1125

出典：JUSTICEから提供された機関別個別データ（非公表）→取扱注意
Web of Scienceから抽出されたデータに基づく

Number of journals based on Web of Science Data

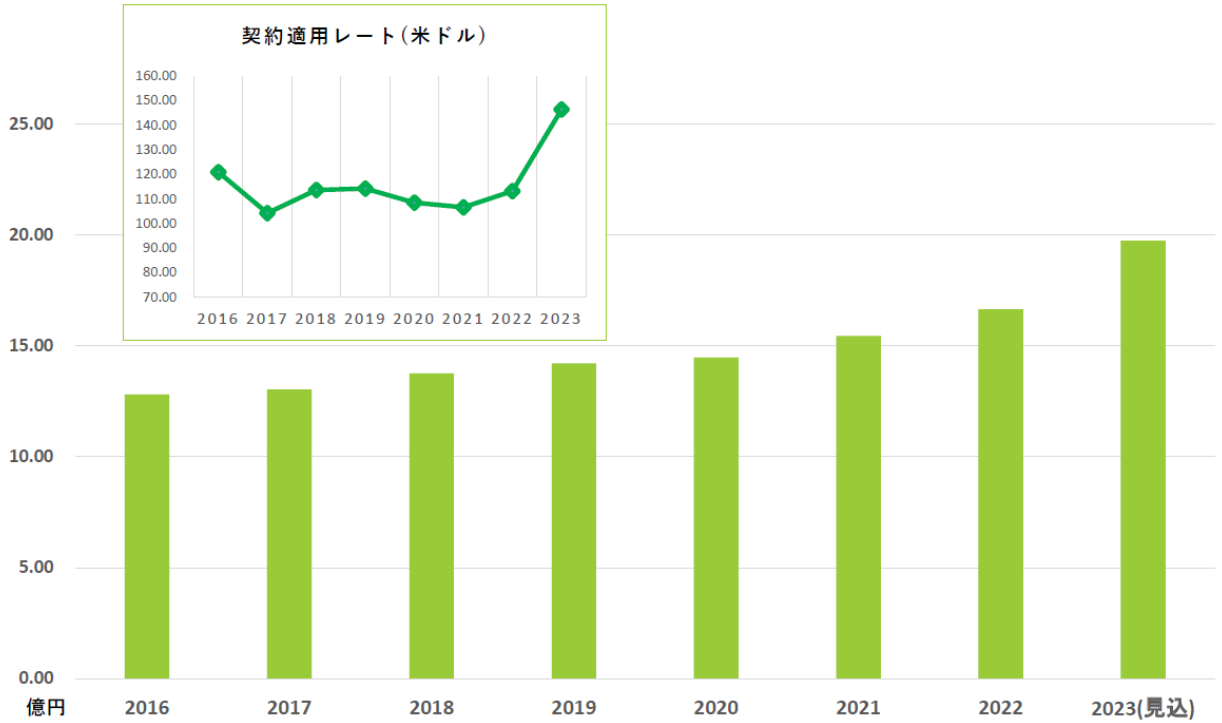


出典：JUSTICEから提供された機関別個別データ（非公表）→取扱注意
Web of Scienceから本学の論文を抽出し、APCを掛け合わせた推計

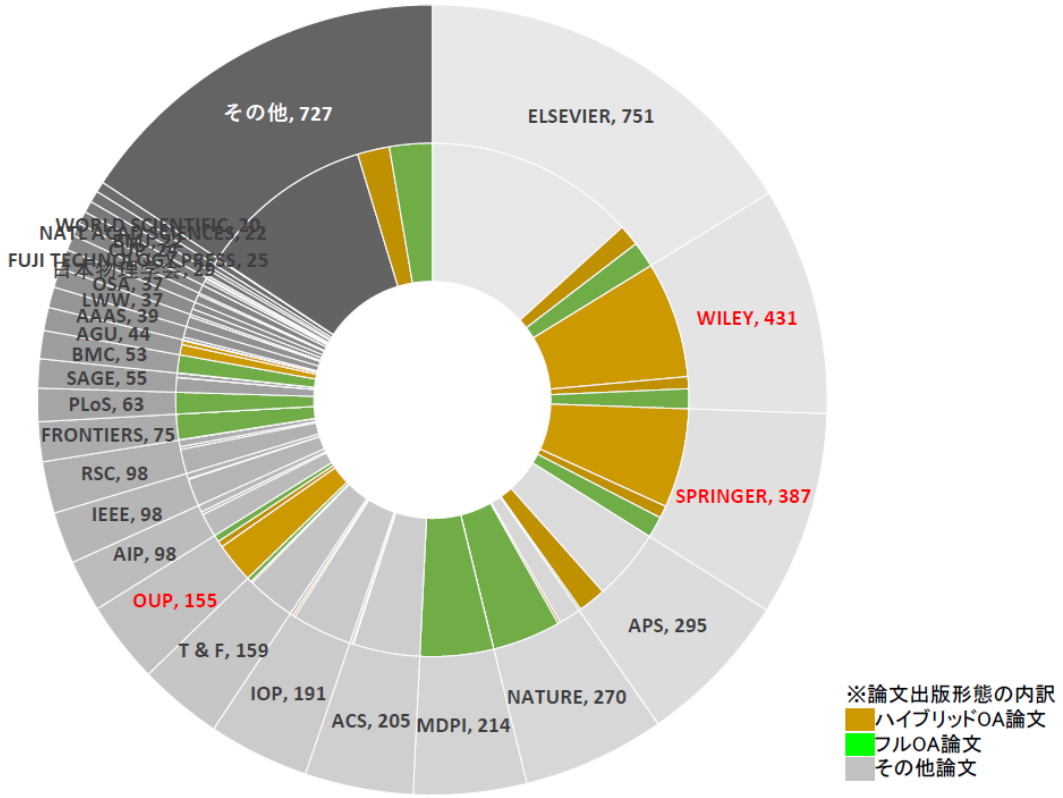
Number of journals published in open access based on Web of Science data

Journal Access Cost

- UTokyo support for golden open access publication, by having contract with 4 global publishers, including Elsevier, Springer Nature, Wiley, and Oxford University Press.



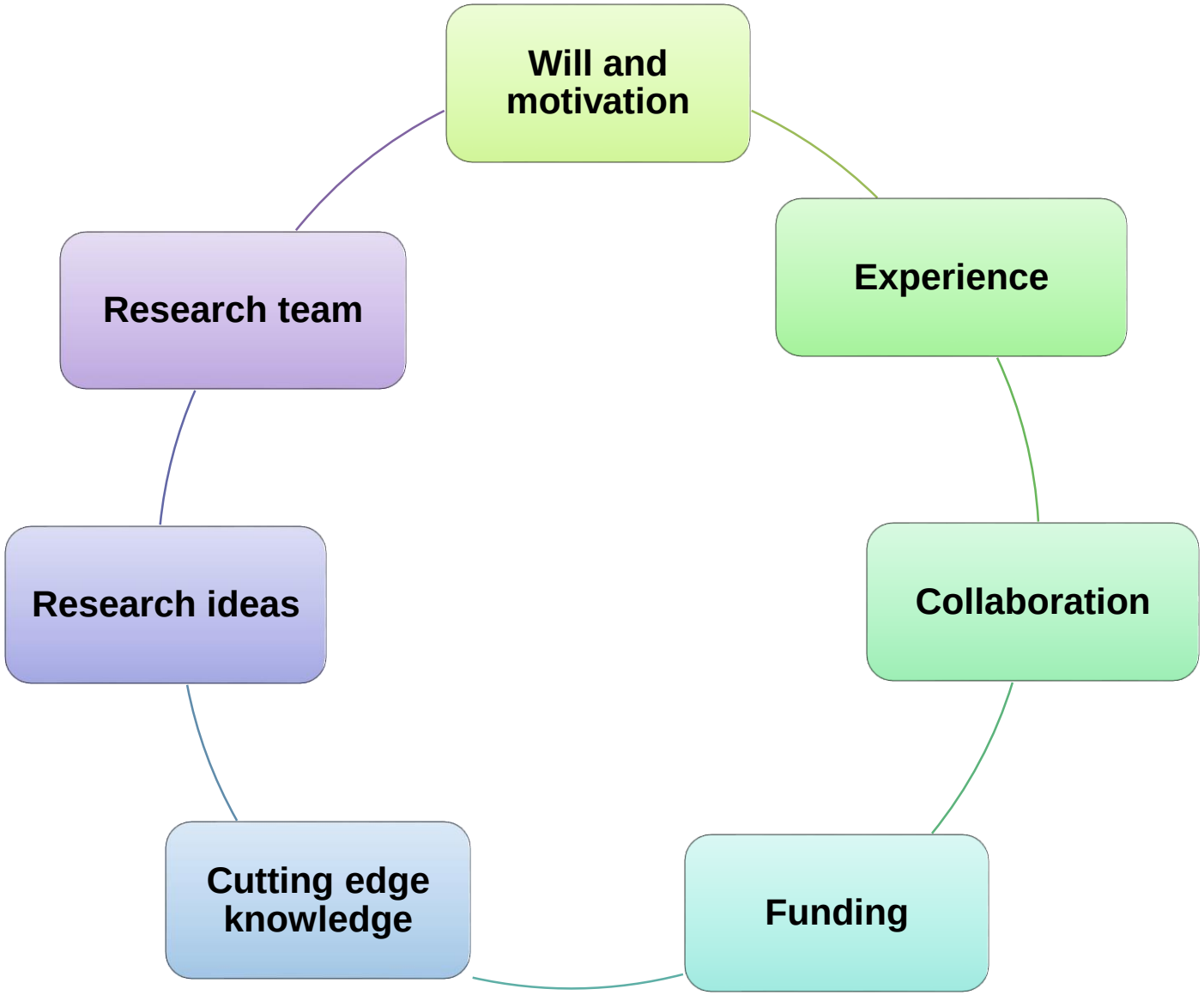
Cost for journal reading contract by UTokyo



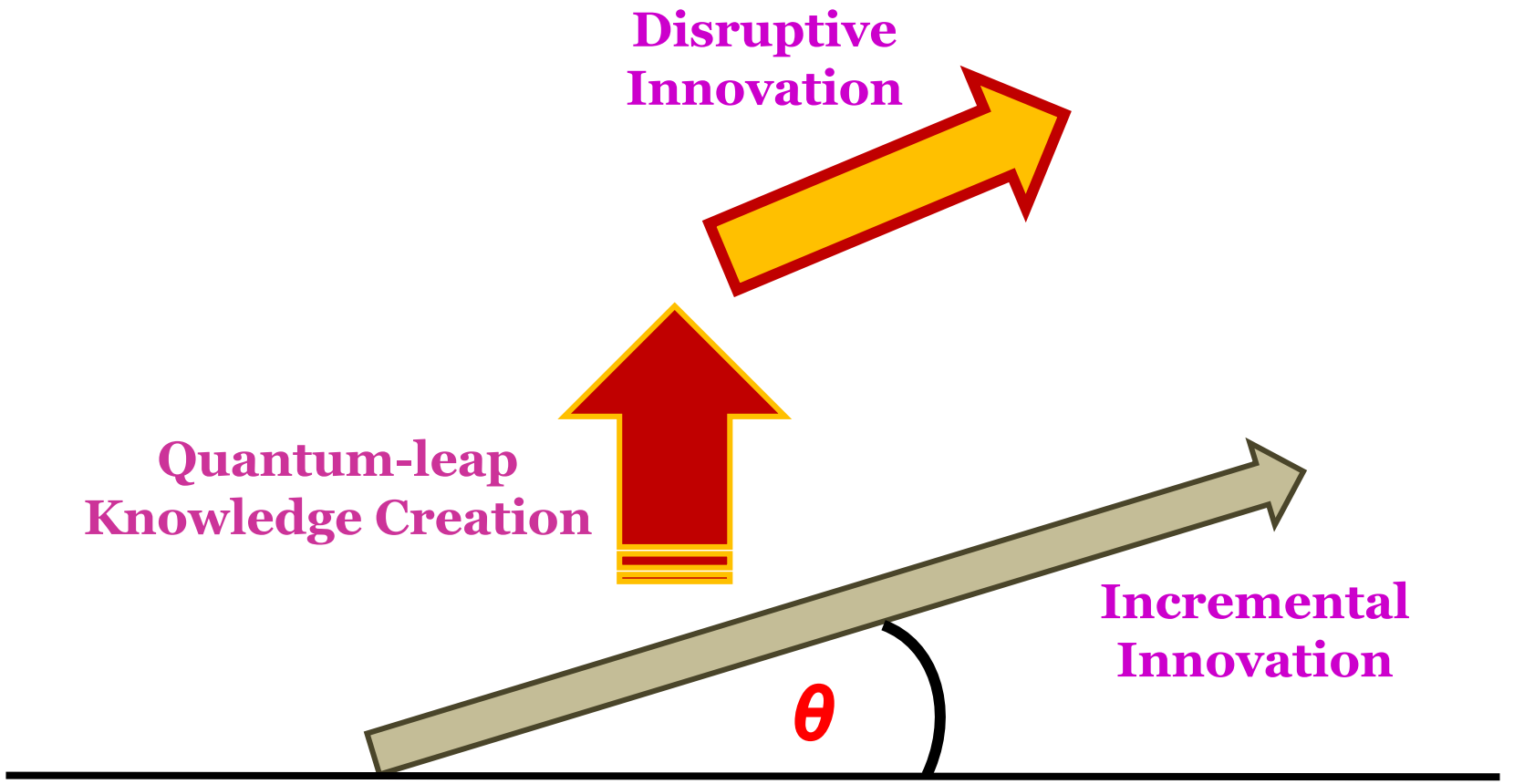
Number of journals published in open-accesss by UTokyo (2020)

Trends in Research

Research Assets



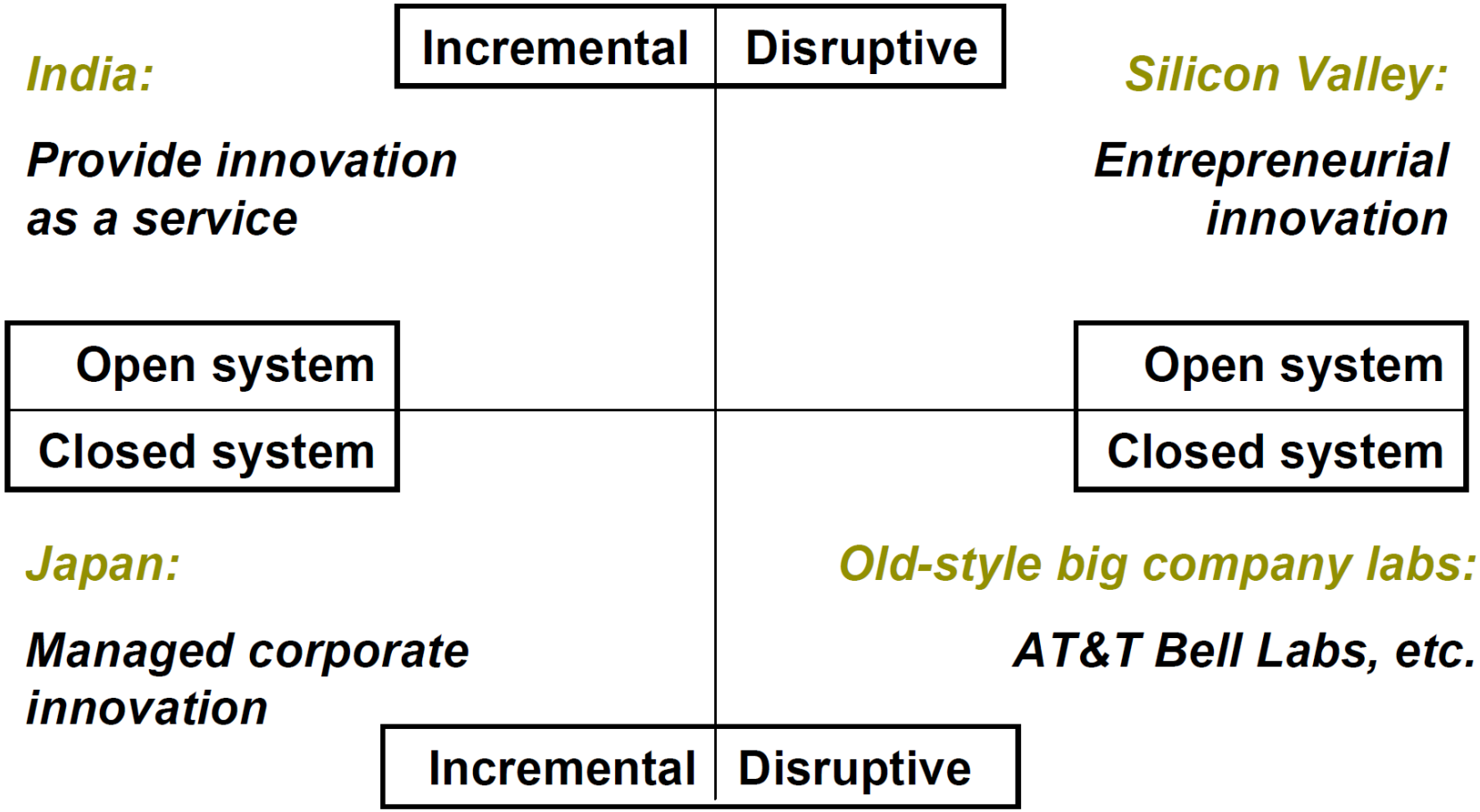
Innovation and novelty



How far can we define the
θ ?????...

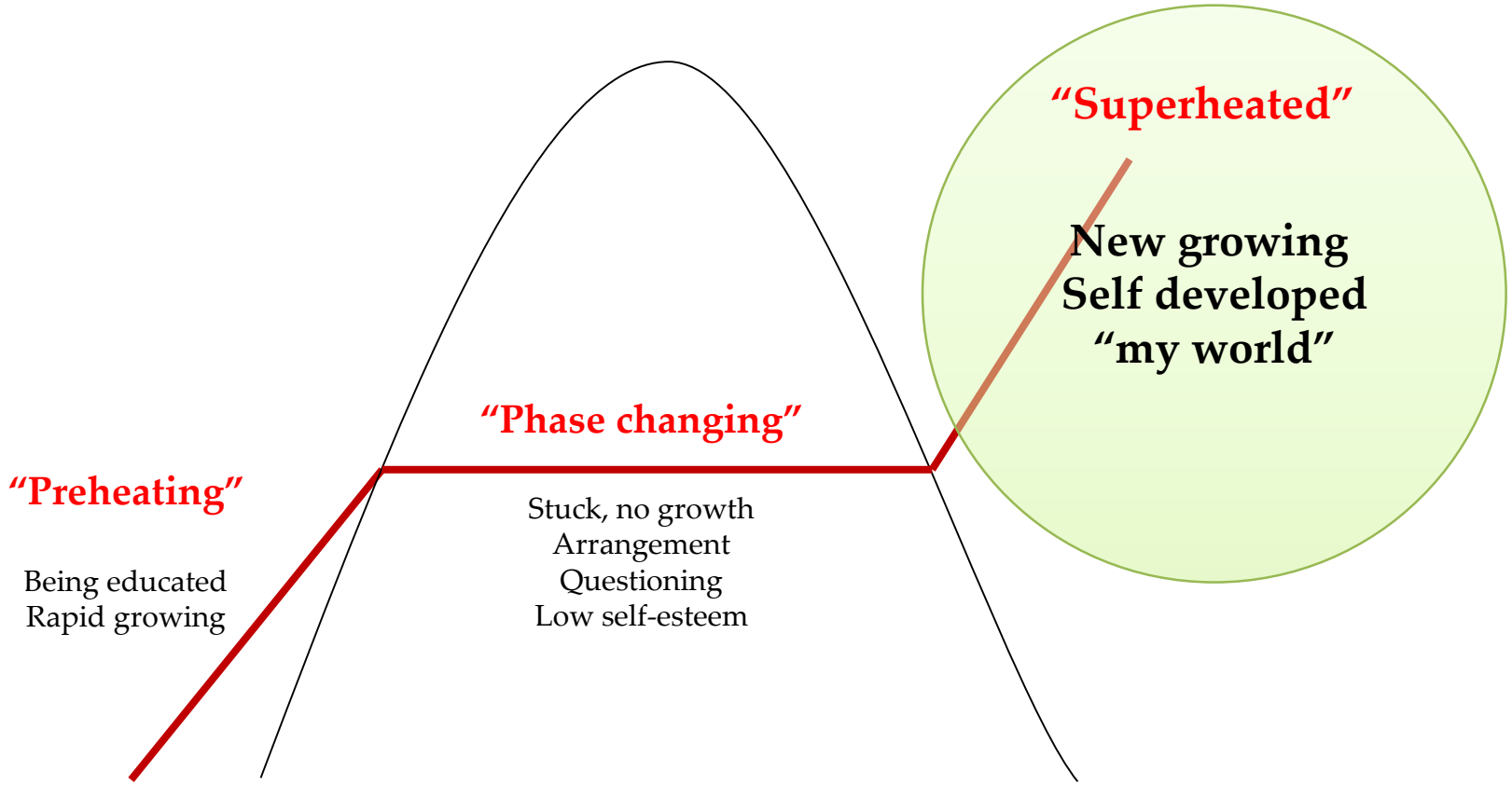
Strong and responsive
academic sense

US-Asia Innovation Models

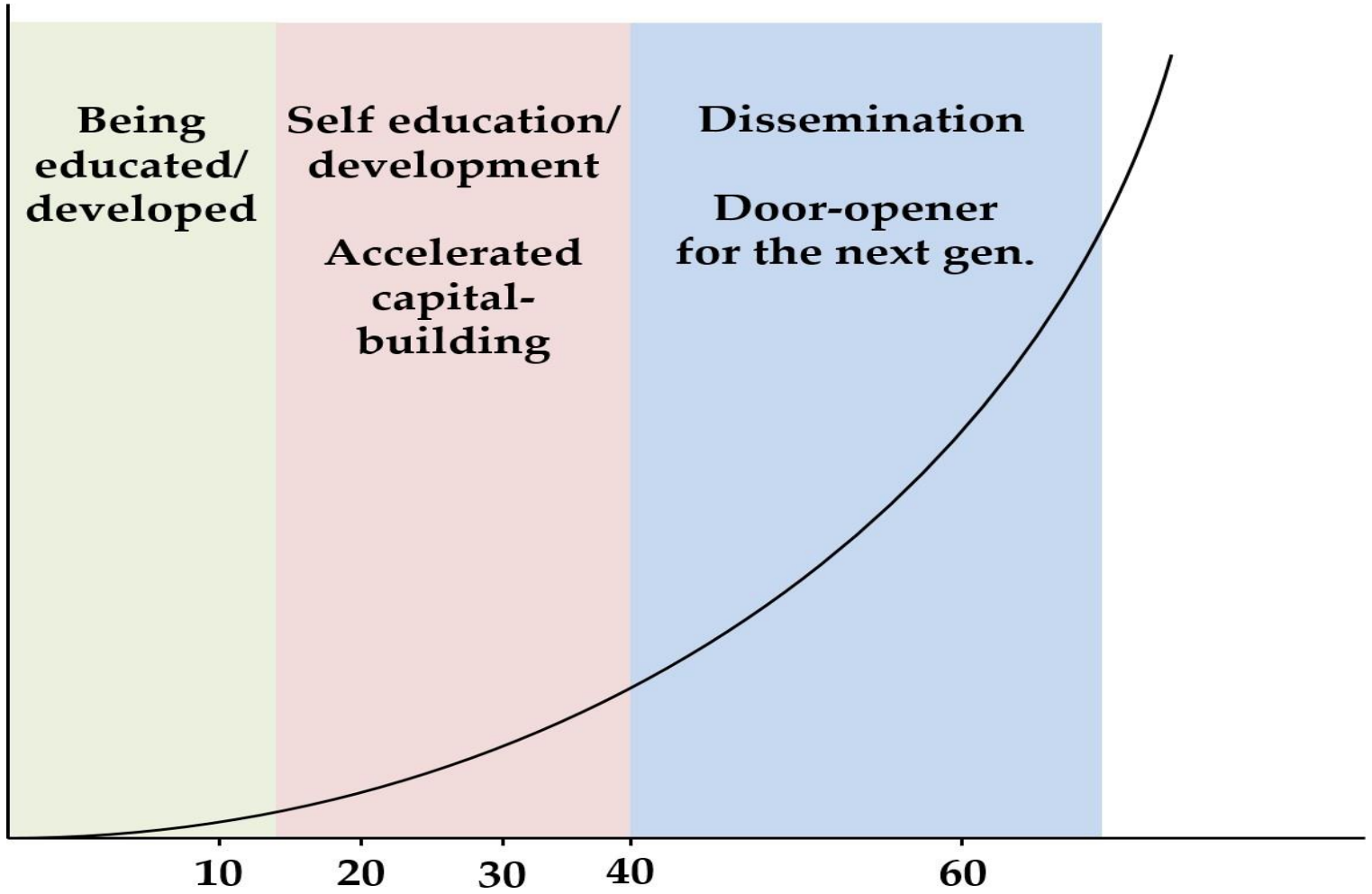


Source: JOIC

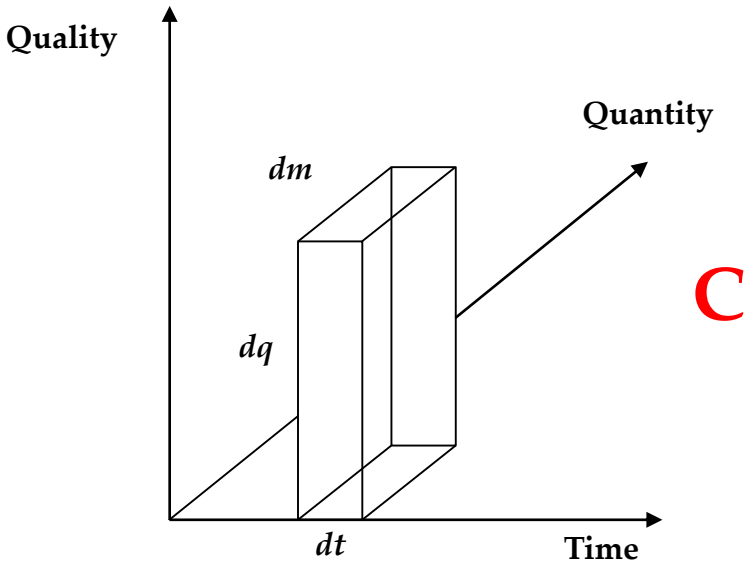
Education and Research Process



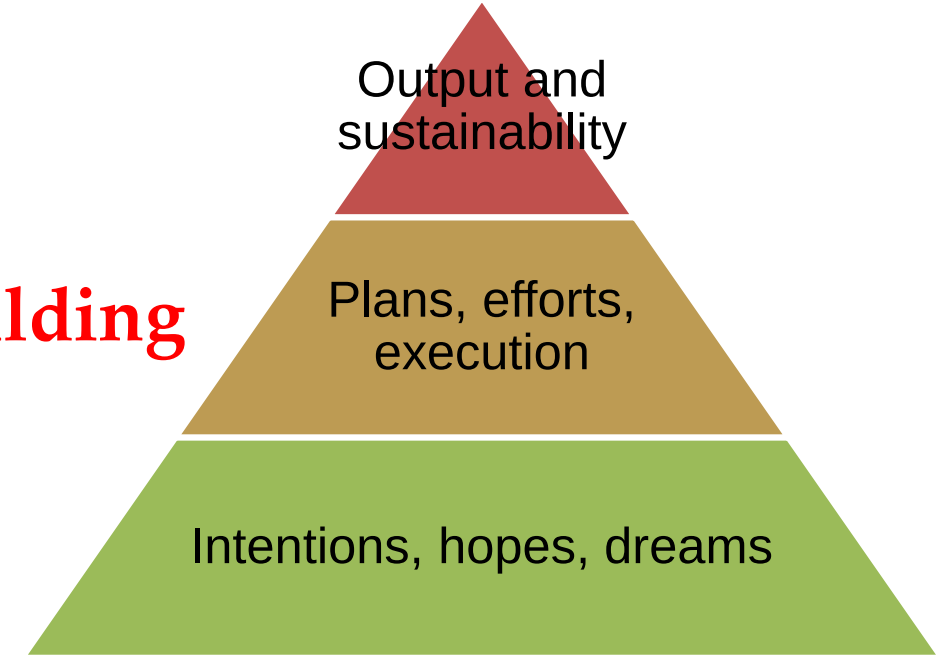
Self Growth


Being educated/ developed
Self education/ development
Accelerated capital-building
Dissemination
Door-opener for the next gen.
10
20
30
40
60

Self optimization and deliverability



Capacity Building



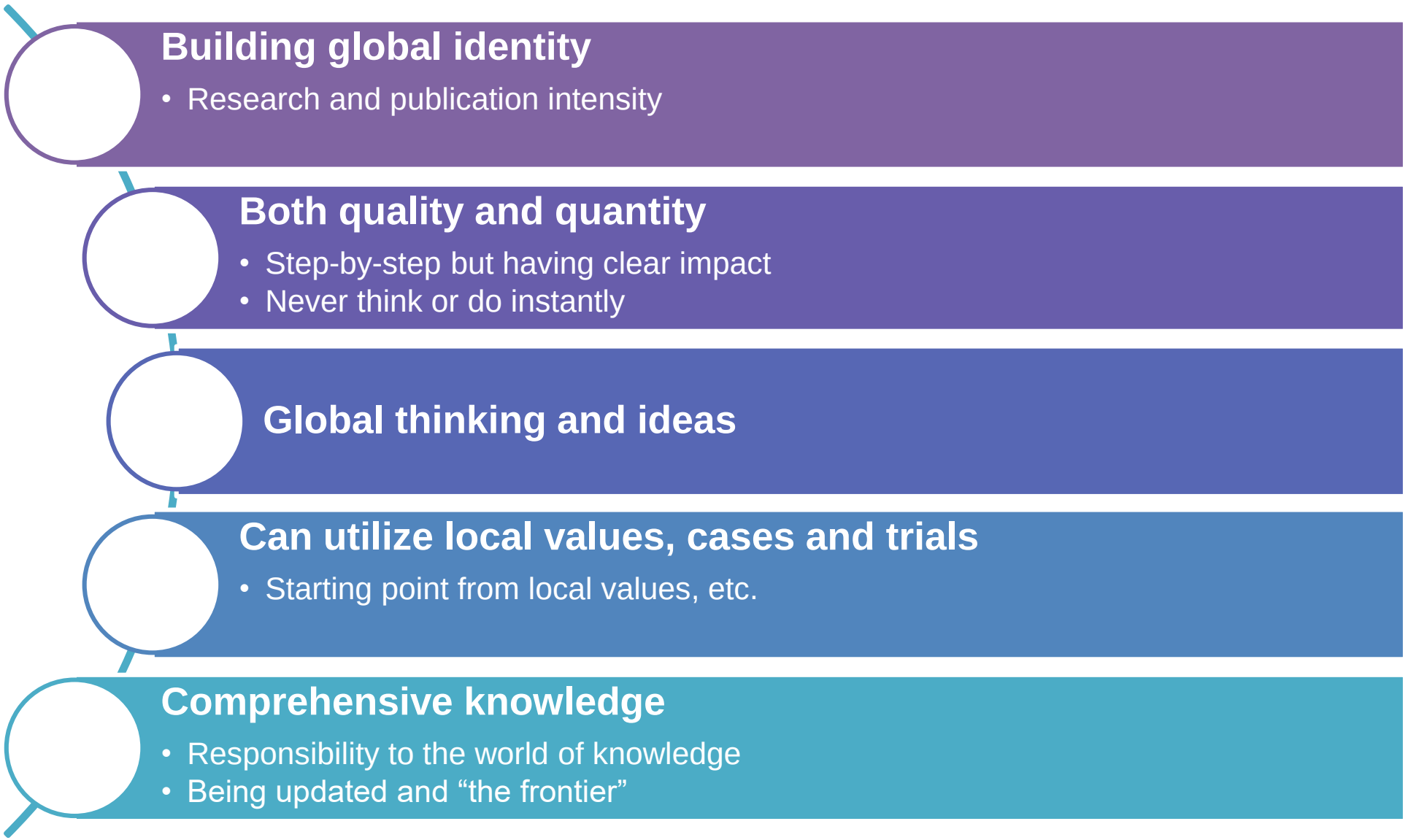
Function of package

$f(t,q,m) = \int\int\int dq\ dm\ dt$

The package must be deliverable

- Novelty/originality in research and innovation
- Knowledge improvement
- Research and innovation capability
- Writing and reporting capability
- Communication skill (presentation, explanation, the way of communication)
- Communication capability (English, etc.)
- Social capability

Paradigms in Research and Publication



Why Publish a Paper

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- Task for **being researcher**
- Useful “Novelty”
- “Publish” and “to be cited”
- **Self assessment**
- Self **knowledge management**, **awareness for the knowledge limation** (humbleness)
- Knowledge development, **being frontiers**
- Direct and concentrate our thinking
- Strengthen a self identity
- Improve both writing and thinking capability
- Avoid plagiarism, respect other’s works

Types of Manuscript

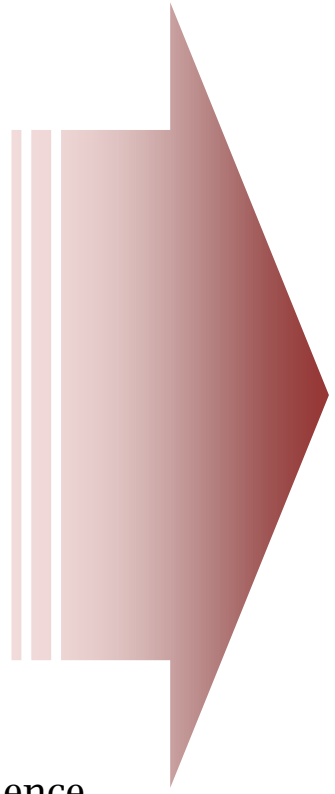
- **Full/original articles**
  - Completed pieces of research
  - Original
- **Letters/short communications**
  - Quick and early communication of significant and original advances
  - Much shorter than full articles
- **Review papers**
  - Summarize recent developments
  - Not the place to introduce new information
  - Often invited
- **Conference paper**
  - Excellent for disseminating early progress research

Types of Manuscript

- **Technical/Method paper**
  - Report on certain developed technical methods
  - Low scientific value
- **Case Studies**
  - Specific instances of interesting
  - Make other researchers aware of the possibility that a specific phenomenon might occur
- **Preprint**
  - A way to freely disseminate research findings while a manuscript undergoes peer review
  - Some journals still don't accept the paper published in preprint
- **Corrigendum/Retractions**
- **Expert insights, Mini review, Cutting edge**

Current Scientific Journals

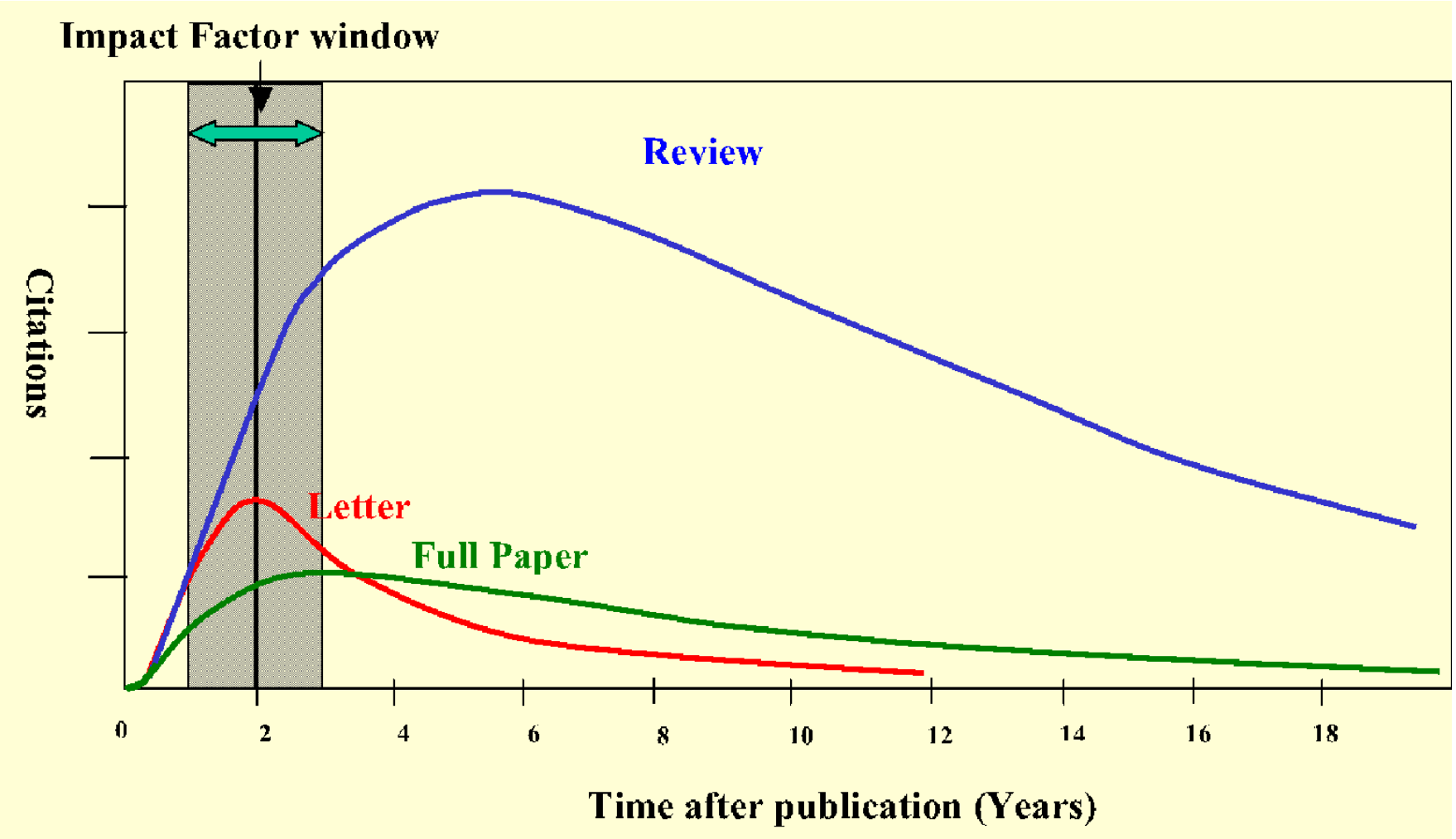
- More than **2.52 million articles** in a year (2018)
  - More than 30,000 journals
  - Double in about 20 years
- Characteristics of current journals
  - Highly specialized
  - Specialized language, highly structured format
  - Citations
  - Multiple authors
  - Demand for open access
- Many published papers are rarely read or cited
  - Uncited percentages: Medicine (12%), Humanities (82%), Natural science (27%), Social sciences (32%)



- **Searchability**
- **Readability**
- **Comprehensiveness**
- **Citability**
- **Usefulness**
- **Applicability**

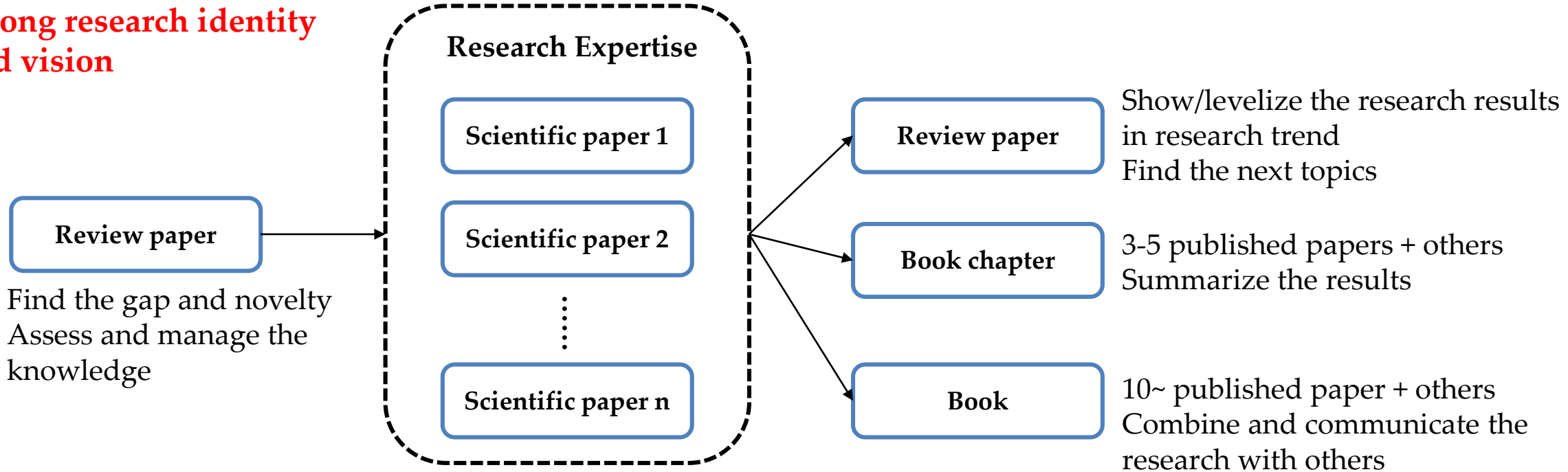
http://arxiv.org/ftp/arxiv/papers/0809/0809.5250.pdf

Citation and Journal Impact Factor

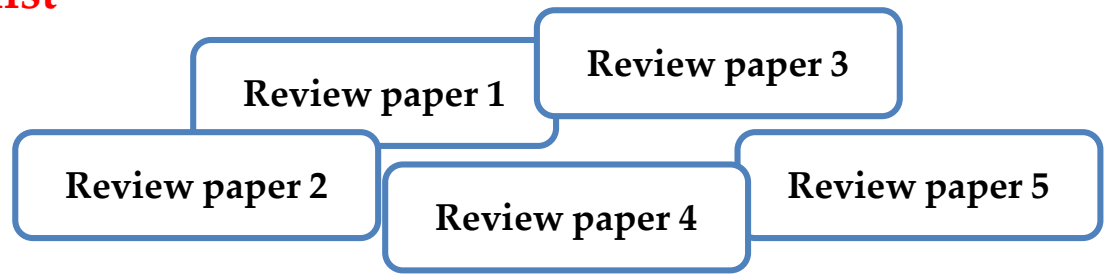


Stances in Writing Original and Review Articles

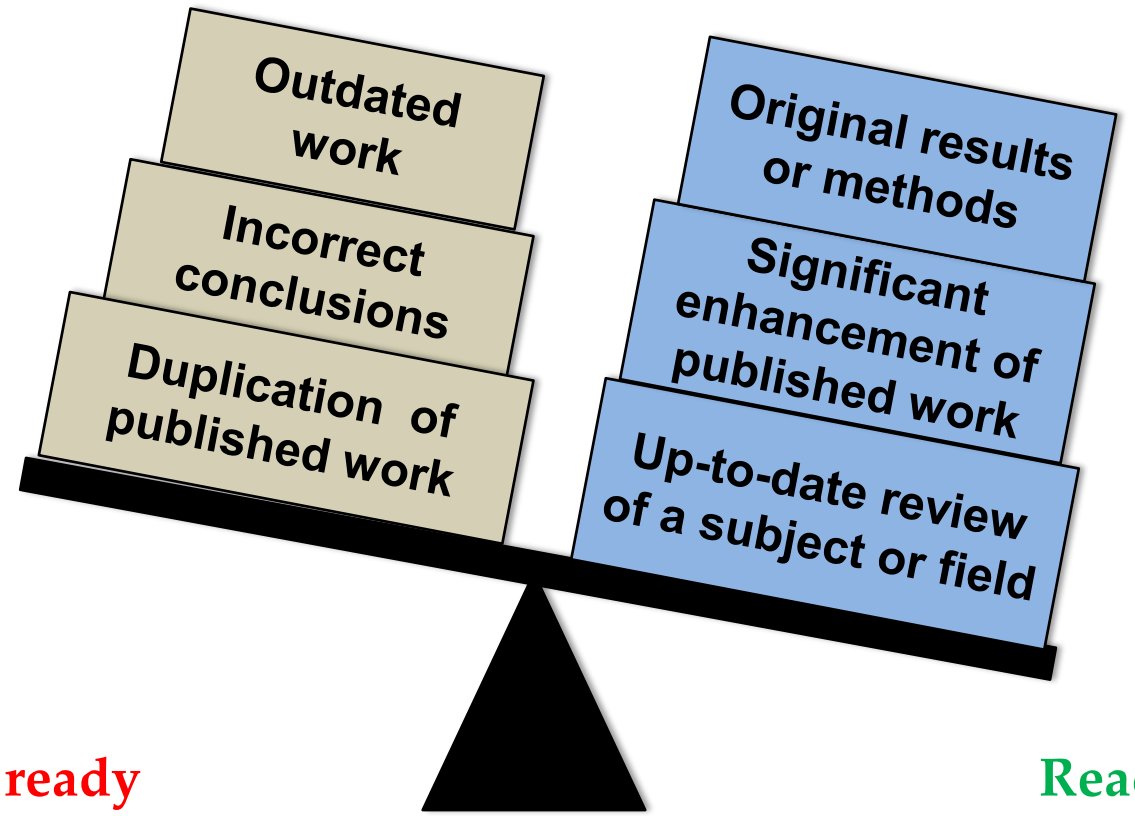
Strong research identity and vision



Citation seeker, generalist



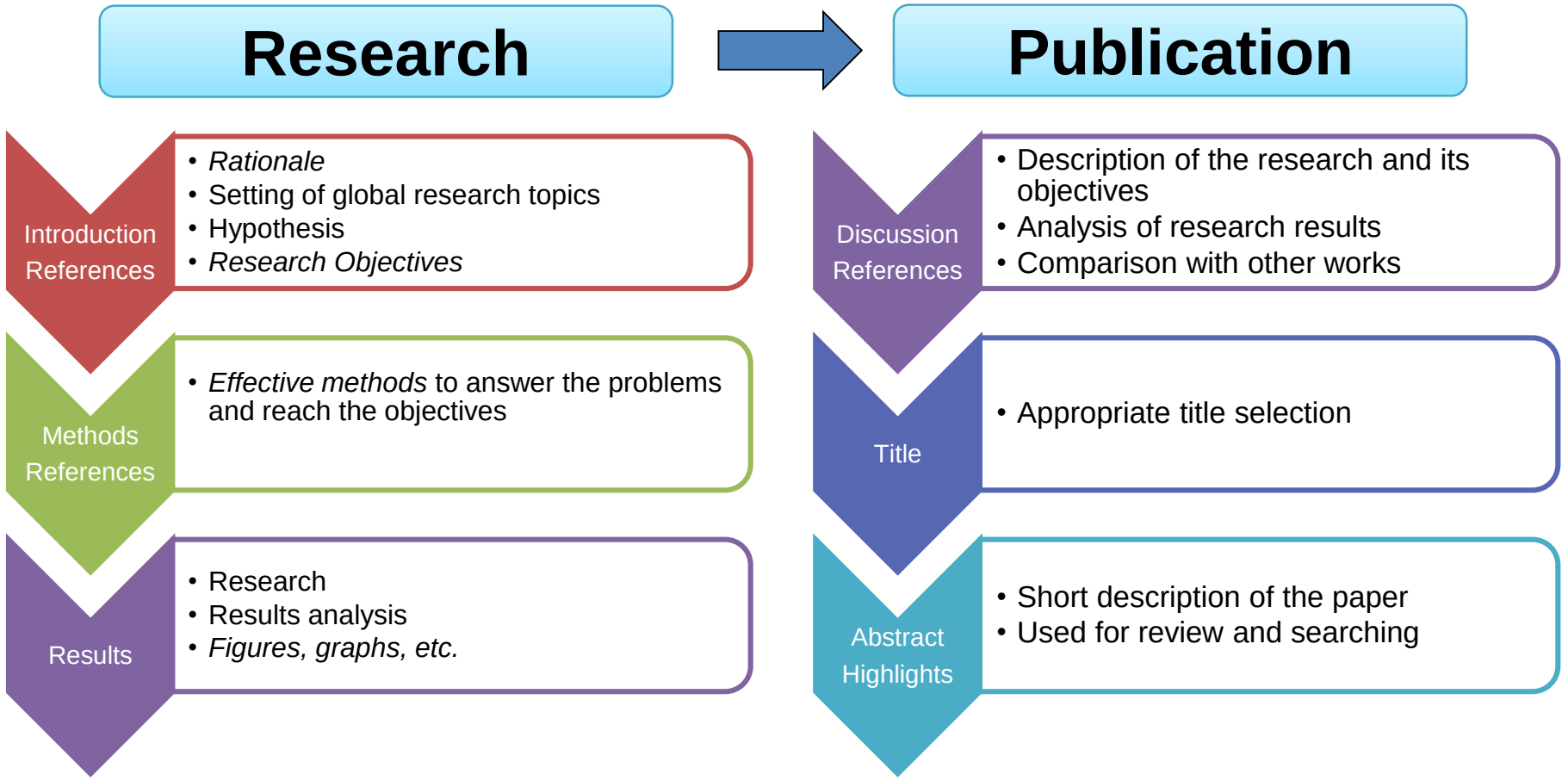
Ready for publication?



Not ready
Work has no scientific interest

Ready
Work advances the field

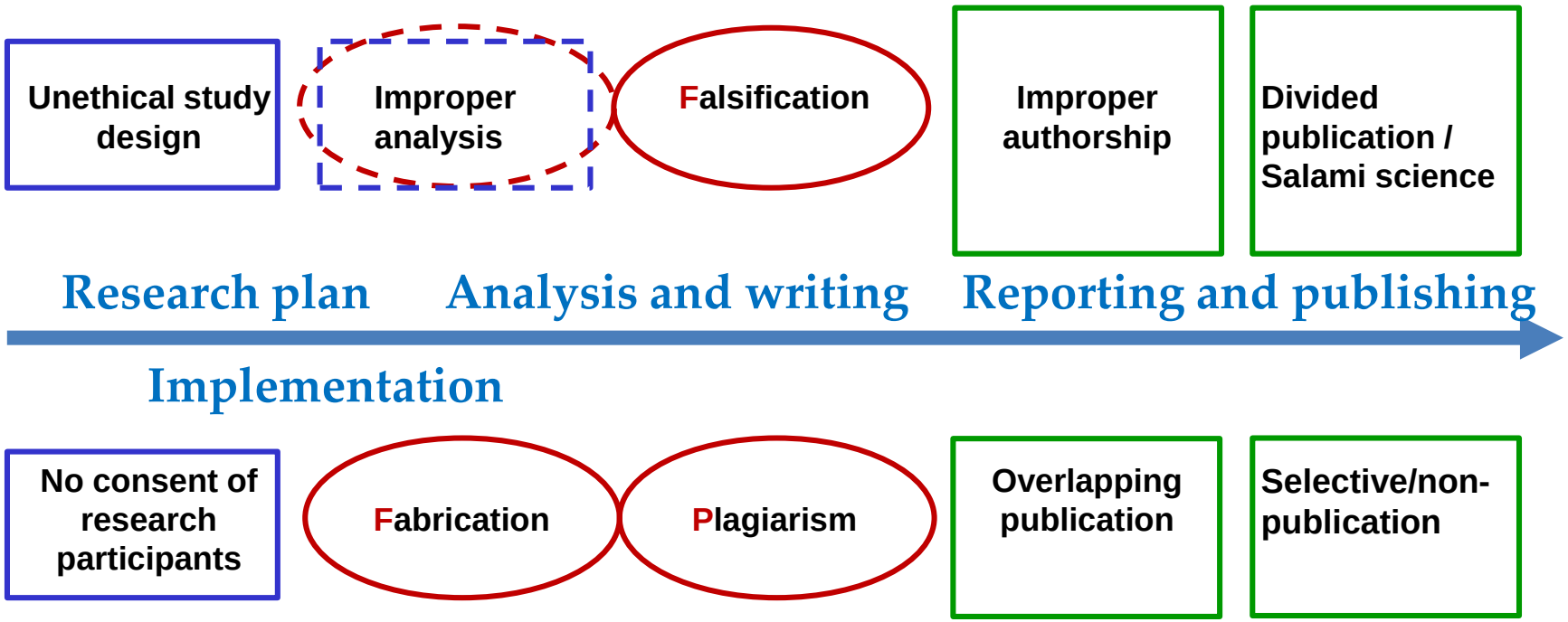
Research and Publication



Being indexed

- ORCID
- Scopus
- Researcher ID
- Publons
- Researchgate
- Google Scholar

Ethics and Misconducts



Research participant protection (Research ethics)

Scientific misconduct

Publication ethics

Scientific Misconduct

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- Fabrication
  - Creating data and research results that do not exist
- Falsification
  - Altering or forging data, images or research results
- Plagiarism
  - Using the ideas, data and research results of others without the appropriate citation
  - Including self plagiarism
  - In case that the publication is extension from previously published work, inform it clearly and cite it as reference

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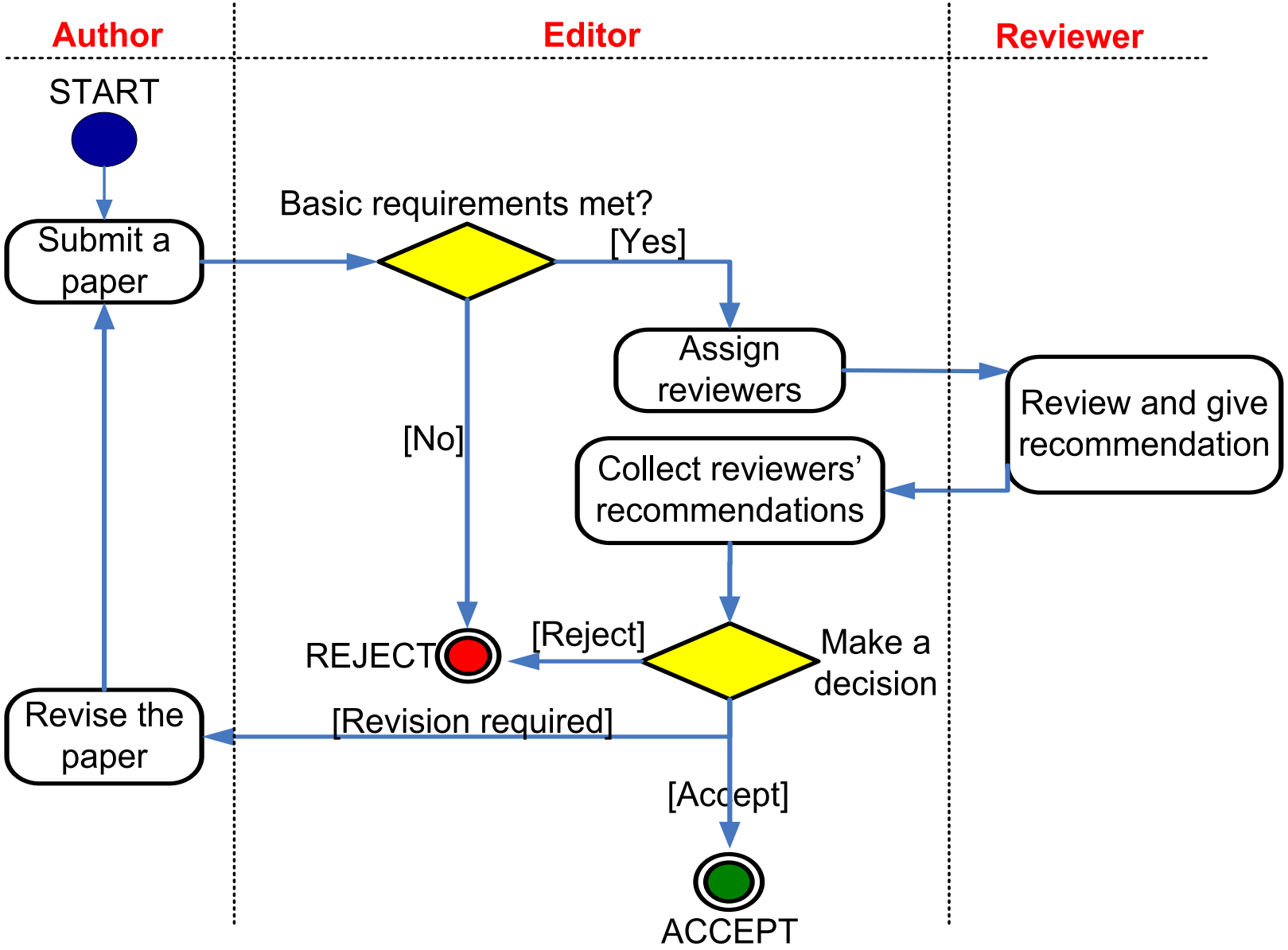
Steps and Process……

Submission and Reviewing Processes



Main Points during Publication

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- Idea pursuit
- Searching capability, sensitivity
- Patience
- Writing capability

Required Manuscript Characteristics

Important Points during Writing

- Flow
  - Simple/easy to understand
  - Clear and easy to read
- Rhythm
  - Enjoyable for reading
  - Informative
  - Problem raising and solves
- Avoid wordy and unnecessary explanation
  - Demotivates to read, boring
  - Low review interest
- My paper “I know better than reader and reviewer”
- Word and phrase selection
  - Simple, clear (non ambiguous)

Best practices in research and publication

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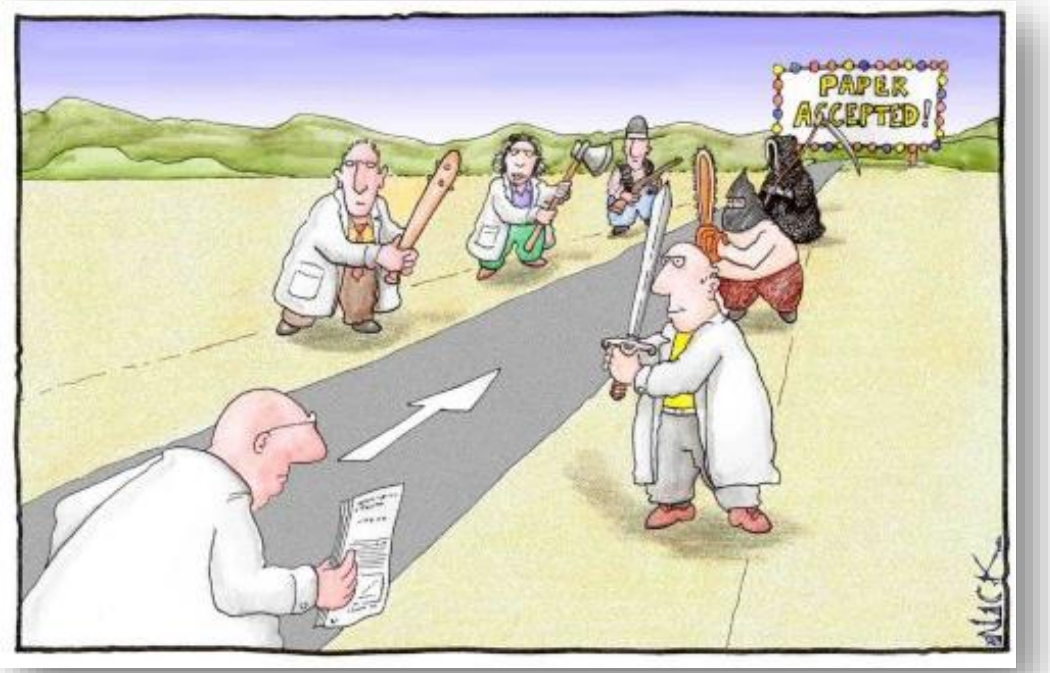
Safety	**Safe for humans/animals/environment; ethics approval; hazard warnings; for humans: informed consent, permission to publish, clinical trial registration**
Reporting	**Complete methods, honest data reporting/interpretation, appropriate citation**
No plagiarism	**Quote, paraphrase, summarize, synthesize; cite sources; © permission**
No data manipulation	**Research data integrity statement: Did not fabricate or falsify data (eg, did not manipulate parts of images); data availability / sharing**
Authorship (www.icmje.org)	Author list, including order and corresponding author: **(1) Design or data acquisition/ analysis/interpretation & (2) Writing/revising & (3) Approval & (4) Accountability** …+ Acknowledgments and permission, personal communications and permission, contribution list, ORCIDs, © transfer or publishing license
Conflicts of interest (COIs)	**Funding source, any potential financial/personal COIs; had full access to data**
Submission	**Submit to only one journal, not yet published, state if previous presentation, any similar papers/preprints, true details for recommended/excluded reviewers**

Always follow ethics guidelines and national laws

http://publicationethics.org

Perspectives during Peer Review



Editor Perspectives

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Scope	Novelty	Quality	Significance
• The contents must match the scope of journal	• It must present novel results	• The quality of the paper (method, execution of research, writing) must be sufficiently high	• The results must be significant enough to be worth reading about and publishing

Novelty

- Significant contribution to one of the field of science
  - New theory, new methods, new materials/tools, new data, and new analysis
  - Effective literature search in very essential
  - For incremental paper, at least about 50% of the reported material must be new

- Need to explain clearly in cover letter and might be in the paper
  - Never expect the readers or reviewers to find/figure out by themselves

- Can we articulate exactly what is novel in our manuscript?
  - Exact measurement, how do we know that it is novel

- The readers must be easily recognize what parts of the paper are novel

- Do the non-novel aspects of our paper properly cite the literature?

Significance

- Many published papers are rarely read or cited
  - Uncited percentages
    - Medicine 12%
    - Humanities 82%
    - Natural science 27%
    - Social sciences 32%

    (Source: http://arxiv.org/ftp/arxiv/papers/0809/0809.5250.pdf)

- Measurement for paper significance
  - Number of downloads over certain period of time
  - Number of citations over certain period of time

- Two parts of significance
  - The importance of the problem being addressed by the work
  - The level of an advancement over the prior literature

- The pursuit of significance can lead to discussion toward hot topics

Perspective reviewer

- Clear, quantified
- Defined novelty
- Understandable message (no complex)
- Easy flow of writing
- Voluntary work (service to community)
- Constraints: making time for multiple review requests, deadlines
- Editors seem to pay more attention to the negative than positive reviews of the paper

Measurement during reviews

- Matching with journal's scope
- Sufficient quality?
  - Novel or important work?
  - Are research, analysis and conclusions valid?
  - Are the aims and achievements are clearly stated?
  - Are figures, tables correctly presented?
  - Are calculations and models correct?
  - Are the literatures and sources correctly cited?
  - Lumping references?
  - Are the judgment sufficiently quantified?
- Language
- Ethics

Measurement during reviews

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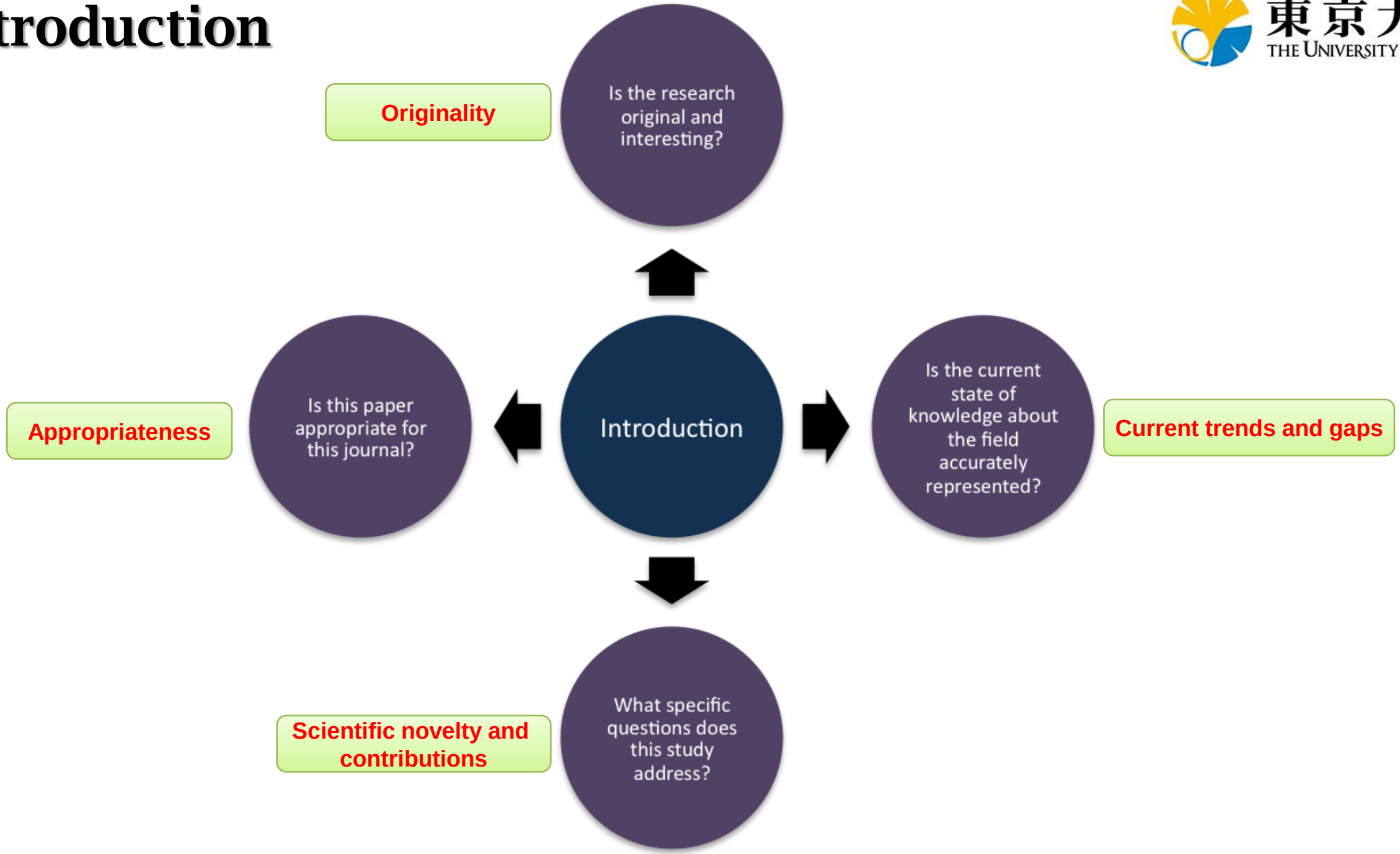
  - Lumping references?
  - Are the judgment sufficiently quantified?
- Language
- Ethics

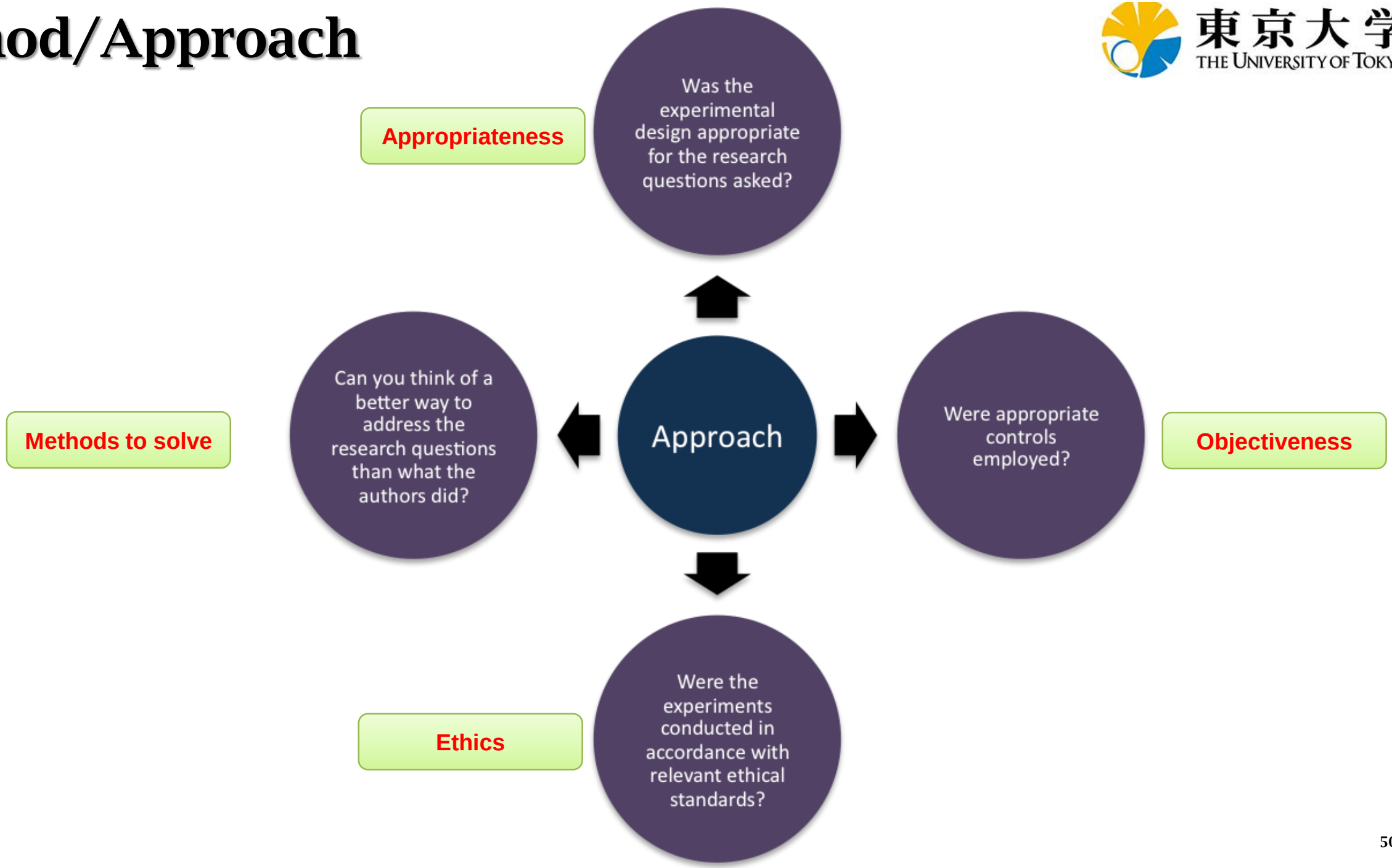
Instant rejection

- Fails the technical screening: English, figures, not follow the guide for authors
- Lacks and unclear novelty, small extension of different paper
- Incomplete and incomprehensible
- Doesn’t fall within the aims and scope
- Uninteresting contents which is leading nowhere
- Focus on descriptive work, not on its scientific findings
- The conclusion cannot be justified clearly
- High similarity
- Poor English

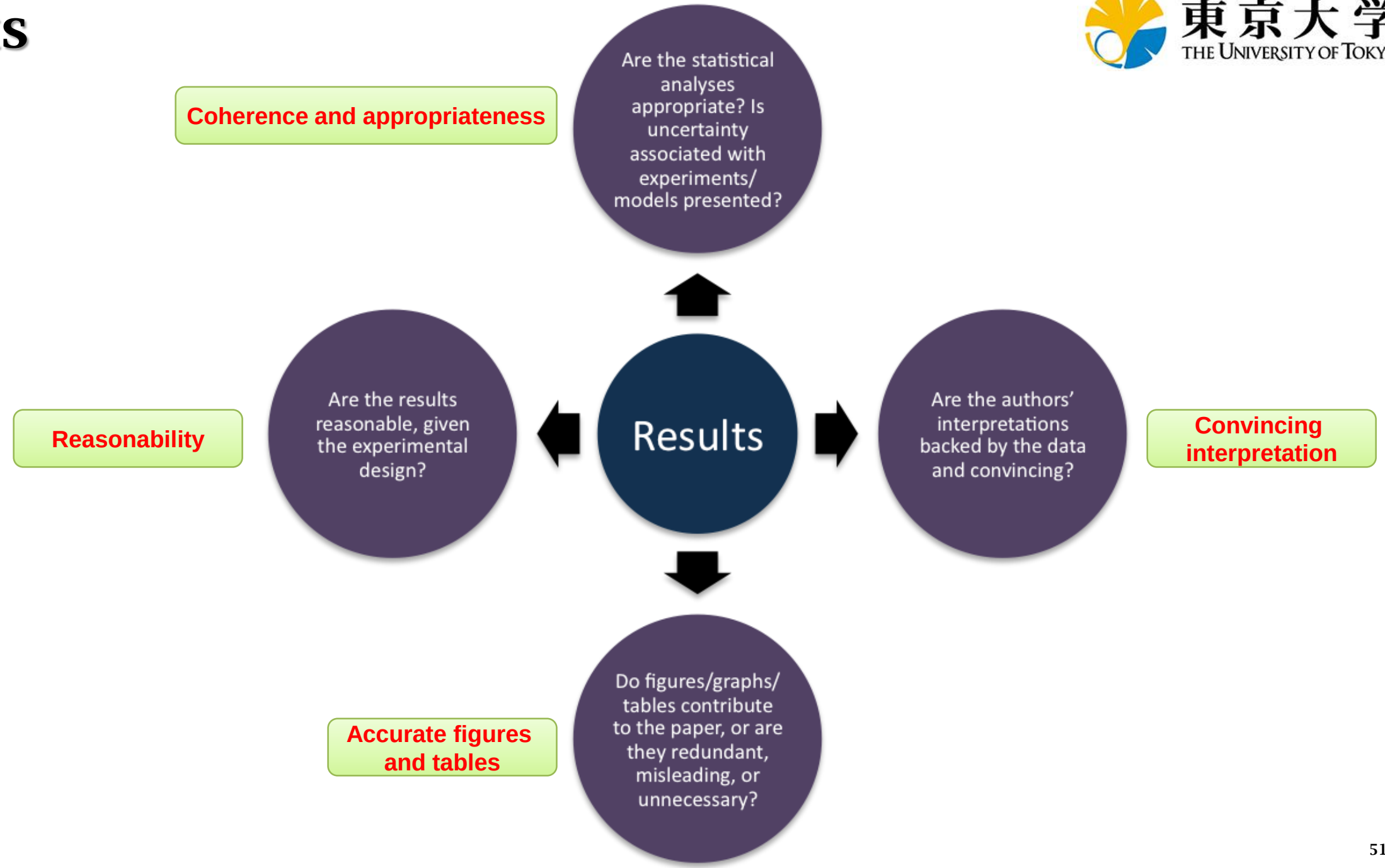
Introduction



Method/Approach



Results


Coherence and appropriateness
Are the statistical analyses appropriate? Is uncertainty associated with experiments/ models presented?
Reasonability
Are the results reasonable, given the experimental design?
Results
Are the authors' interpretations backed by the data and convincing?
Convincing interpretation
Accurate figures and tables
Do figures/graphs/ tables contribute to the paper, or are they redundant, misleading, or unnecessary?

Start Writing……

- *Be a critical reader*
- *Be an effective teacher*

Overview of the Research Paper (IMRD)

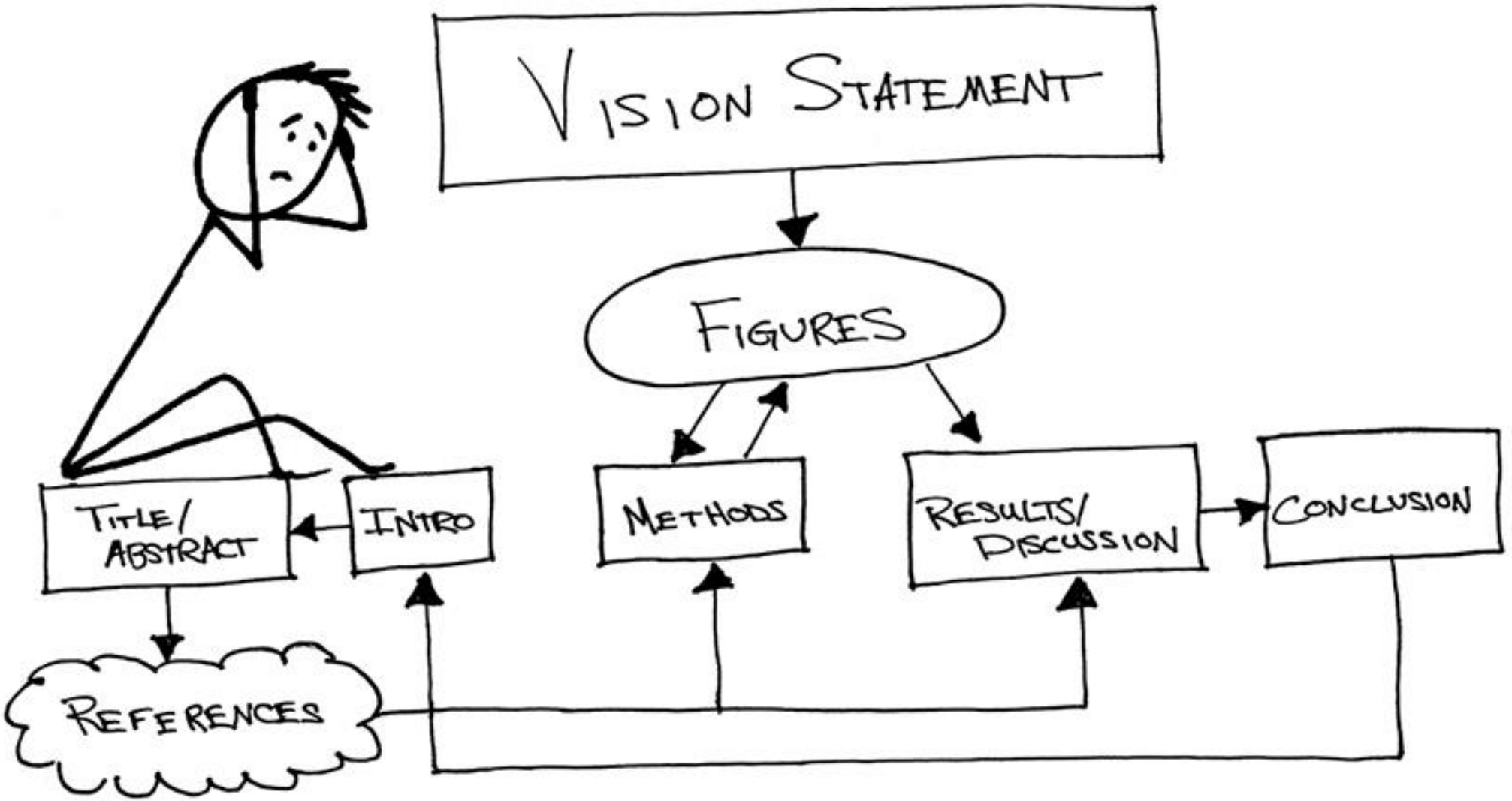
- **Introduction (I)**: General to specific. Cite and comment.
- **Methods & Materials (M)**: High in using passive voice.
- **Results (R)**: Findings
- **Discussion (D)**: Specific to general, high in citation, discussion, and qualifications.

Tense?

Advice: "Use present tense for easier and concise writing" (except for describing the previous works by others)

Which part should you start when you write?

General Simple Steps



https://spie.org/news/photonics-focus/janfeb-2020/how-to-write-a-scientific-paper

Outline

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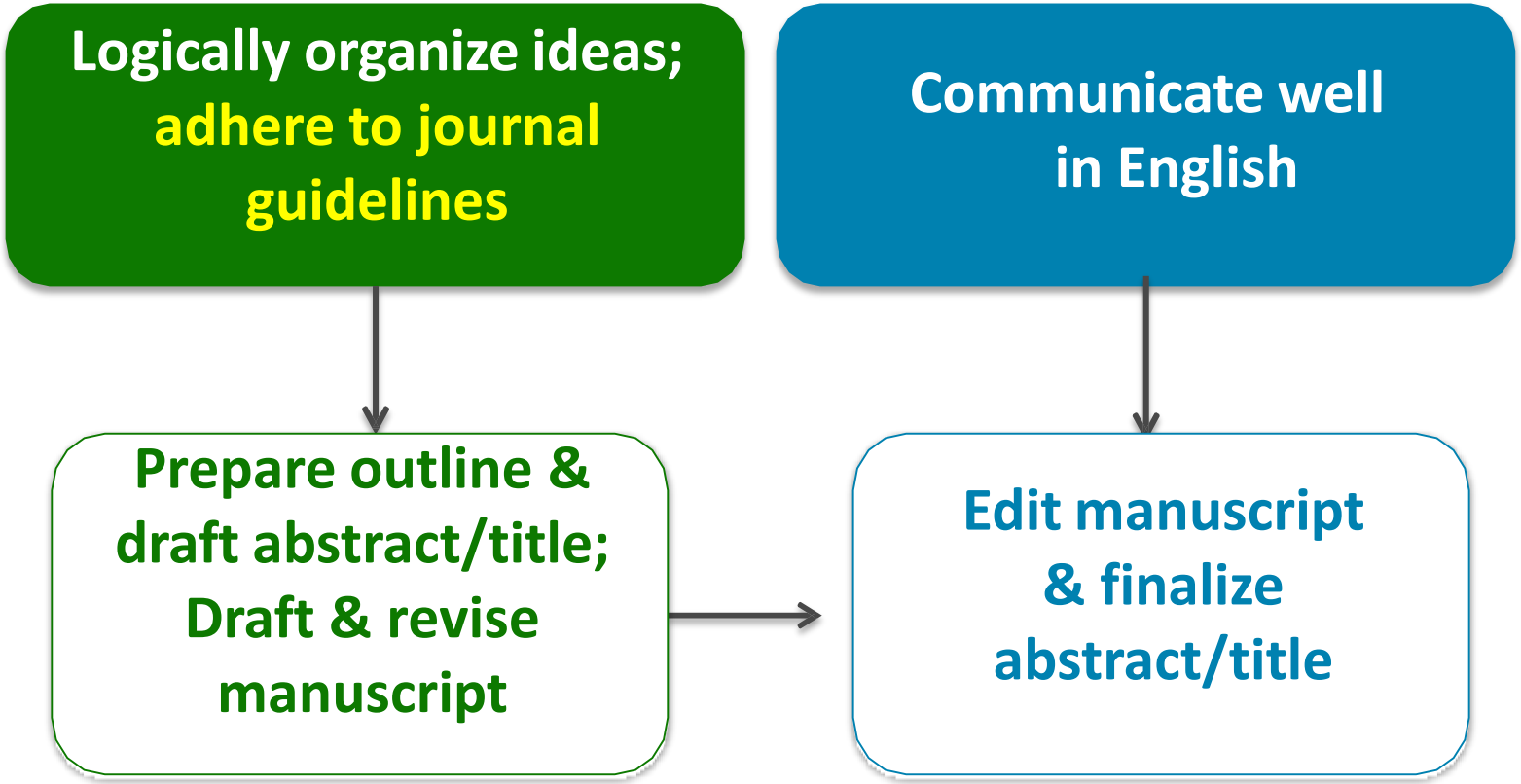
Factors to consider when writing a manuscript

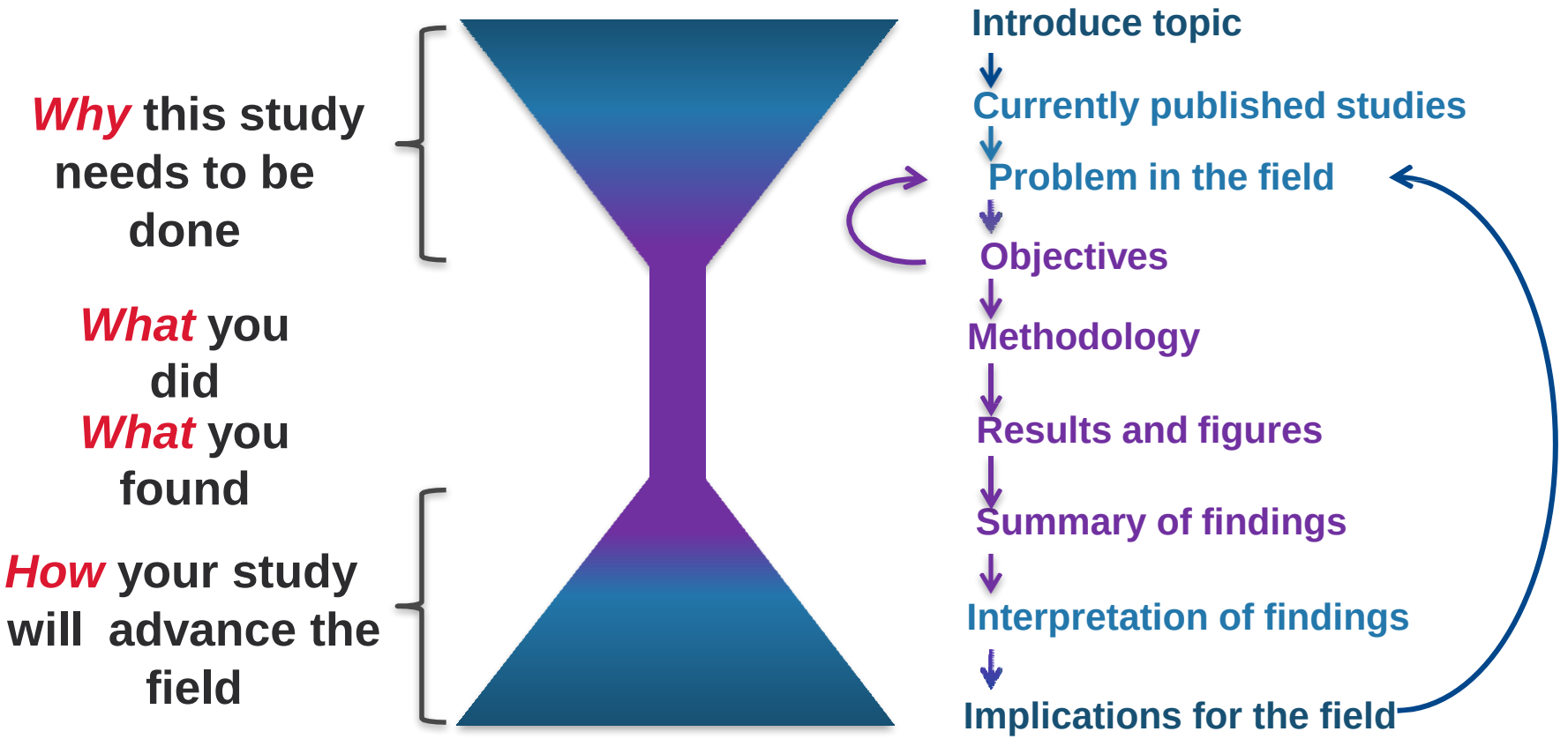


Keep up-to-date with the literature at all times!

Logically linking the ideas

Scientific paper has a “shape” that the expert readers expect

Answer the *four key questions* for your reader



Logically link your ideas throughout your manuscript

Prepare Outline

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Use your manuscript to tell a story

I. Introduction
   - A. General background
   - B. Related studies
   - C. Problems in the field
   - D. Aims & Approach

II. Methods
   - A. Subjects/Samples/Materials
   - B. General methods
   - C. Specific methods
   - D. Statistical analyses

III. Results
   - A. Key points about Figure 1
   - B. Key points about Table 1
   - C. Key points about Figure 2
   - D. Key points about Figure 3
   - E. Key points about Figure 4

IV. Discussion
   - A. Major conclusion
   - B. Key findings that support conclusion
   - C. Relevance to published studies
   - D. Unexpected/negative findings
   - E. Limitations
   - F. Implications
   - G. Future directions

- **Short outline:** list brief notes under IMRaD (Introduction, Methods, Results, and Discussion)
- **Extensive outline:** more detailed points; add as you read more papers
- Draft title & abstract; use Edanz Journal Selector to find journal early

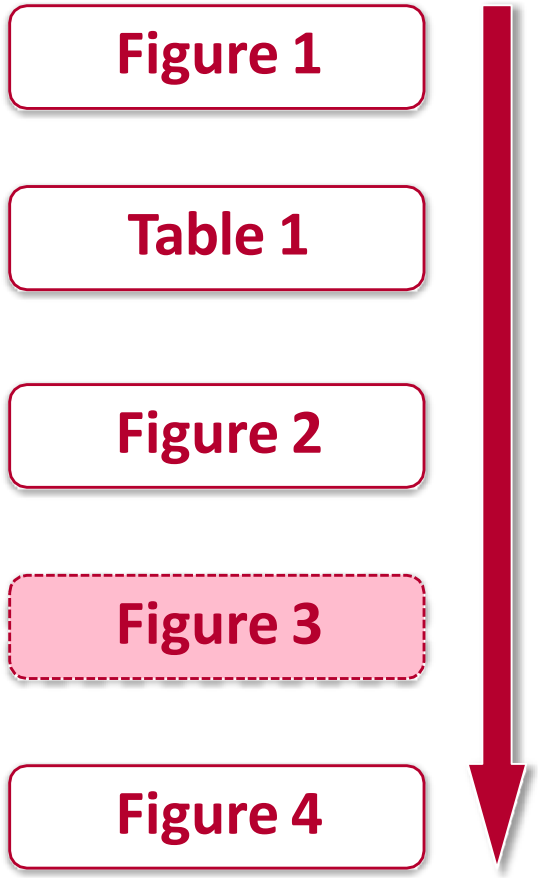
No plagiarism!
Code your notes or use " " if copy-pasting, and add references

Display items

Use display items to structure the manuscript

Where to start?

- Your *findings* are the basis of your manuscript
- First, logically organize your display items
- Then, create text outline



Logical flow

- Time order
- Most ⇔ least important
- General ⇔ specific
- Simple ⇔ complex
- Whole ⇔ parts

Additional display item

Use more active voice

- Sentences written in the active voice are more simple, direct, and easier to read

- However, passive voice can be useful: avoiding repetitions, unclear relationships, sentence structure, paraphrasing, methods sections

AMA Style	**"In general, authors should use the *active voice*…"**
APA Style	**"Use the *active voice* rather than the passive voice…".**
Chicago Style Guide	**"As a matter of style, passive voice is typically, but not always, inferior to *active voice*".**
ACS Style Guide	**"Use the *active voice* when it is less wordy and more direct than the passive".**
ASCE Style	**"Wherever possible, use *active verbs* that demonstrate what is being done and who is doing it…"**
IEEE	**"Use *active voice* by default; research shows readers comprehend it more quickly than passive voice…"**

Be an effective communicator

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You will increase your chance of publication and your research impact

Effective academic writing

Logical manuscript structure

Maximizing visibility

Understand your readers

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Good writers use three important learning principles

Cognitive load theory	**How much new information readers can process**
Cognitive bias	**Assuming your reader knows what you know**
Reader expectations	**Logical presentation of information to readers**

Simple rules

- People can only process ~7–9 pieces of new information at a time
- Use short sentences
- Do not use words that do not add value to your idea

Goals you should aim for:

10–20 words per sentences

- **Some shorter and longer sentences are fine**
- **Varying sentence length makes writing more interesting**

One idea per sentence

- **Only use semi-colons if necessary**
- **Be sure to thoroughly explain idea to the reader**

Cognitive bias

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One of the most common academic writing mistakes

Never assume your readers know what you do

You need to provide enough information for your readers to understand the context of new knowledge

You need to link new knowledge to existing knowledge

Problems

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Common problems with cognitive bias in academic writing

Introduction	Do not define ideas or theories	Do not identify research problem
Methods & results	Do not describe methodology	Do not describe significance of data
Conclusion	Do not discuss implications	Do not discuss future directions

Avoid ambiguity

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Clearly explain your ideas to your reader

Unclear subjects	This, that, these, those, they, it
Qualitative words	Some, most, about, few, will, could, would
Subjective words	Surprisingly, strikingly, interestingly

Effective manuscript title

- Should identify the main issue of the paper
- Should be concise
- But also accurate, unambiguous, specific, and complete
- Should use professional language and avoid rarely-used abbreviations
- Will attract readers - short, catchy titles are often better cited

Examples:

Original title	Revised title
Action of antibiotics on bacteria	Inhibition of growth of mycobacterium tuberculosis by streptomycin
Preliminary observations on the effect of Zn element on anticorrosion of zinc plating layer	Effect of Zn on anticorrosion of zinc plating layer
Fabrication of carbon/CdS coaxial nanofibers displaying optical and electrical properties via electrospinning carbon	Electrospinning of carbon/CdS coaxial nanofibers with optical and electrical properties

Keywords

- Representative
- Are the labels of the manuscript used by indexing and abstracting services
- Acceptable terms
- Should be specific
- Should use only established abbreviations (e.g. DNA)

Abstract

- Keep it as brief as possible
- Summarize the problem, methods, results, and conclusions
- Make sure it is clearly written and easy to understand
- Make sure it is accurate and specific while also being catchy
- Write last so accurately reflects the content of the paper

Follow the Rule of 10

1-2 sentences: aim
2-3 sentences: materials & methods
2-3 sentences: results
2 sentences: discussion/conclusions

Writing the Introduction

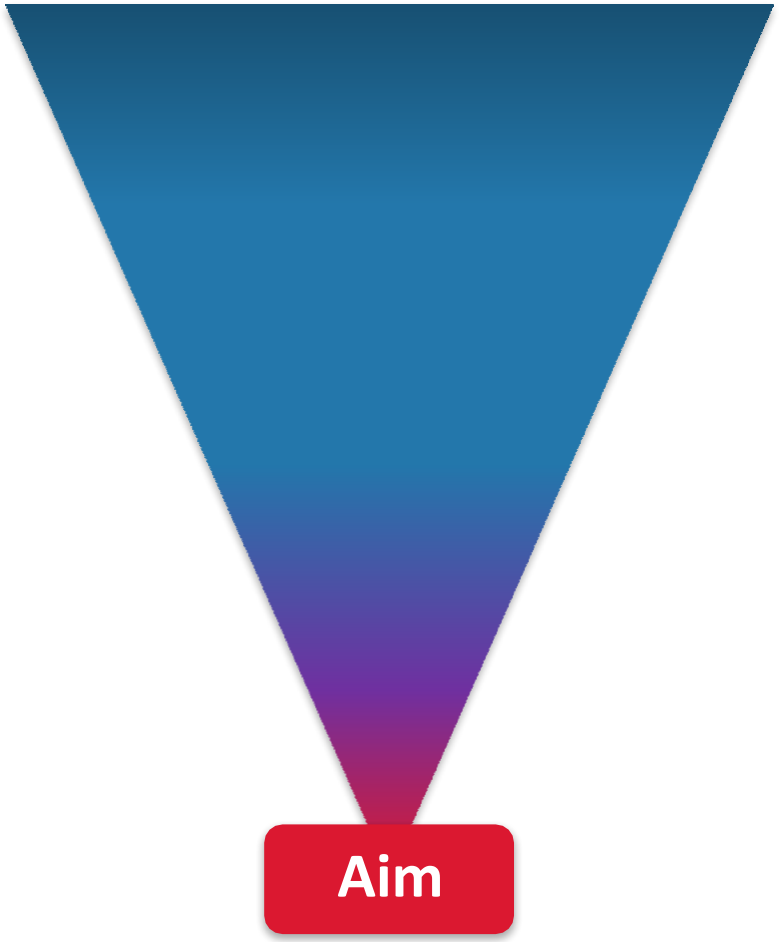
- Move 1. Establishing a research territory
  - By showing its importance, centrality, problematic or relevant in some ways (optional)
  - By reviewing items of previous research in the area (obligatory)

- Move 2 Establishing a niche
  - Indicating a gap in previous knowledge (obligatory)
  - Stating the problems faced by previous works/literature

- Move 3 Occupying the niche
  - By outlining purposes or stating the nature of the present research (obligatory)

Introduction

Why does your study need to be done?



Introduce the topic
- Worldwide/regional relevance
- Broad/specialized audience

What is known about topic
- Up-to-date studies
- Cite broadly worldwide

What is not known
- Clear description of problem
- Use keywords like 'however'

Specific aims

Language Focus: Claiming Centrality

- Recently, there has been growing interest in …
- The possibility of . . . has generated wide interest in. . .
- The development of . . . is a classic problem in. . .
- The development of . . . has led to the hope that. . .
- The . . . has become a favorite topic for analysis. . .
- Knowledge of . . . has a great importance for . . .
- The study of . . . has become an important aspect of . . .
- A central issue in . . . is. . .

(Swales & Feak, 2004, pp. 250-251)

Reviewing Literature

Three major patterns:

1. Past—researcher activity as agent, reference to single studies:
   a. Tim (1999) investigated the causes of …..

2. Present Perfect—areas of inquiry
   a. The causes of illiteracy have been widely investigated (Jones 1977, Ferrara 2000, Hyon 2004)
   b. There have been several investigations into the causes of …

3. Present—reference to state of current knowledge
   a. "Adoption of renewable energy leads to fluctuation…."

Establishing a Niche

- A mini-critique to indicate the gap of knowledge

- Language Focus:
  - Little (Uncountable)
    - However, little information/work/data/research . ..
  - Few (Countable), lack of
    - However, few studies/investigations/ researchers/attempts. . .
  - Avoid using a full negative like “no studies”

Establishing a Niche —Negative Statements (Using Verbs)

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- However, previous research in this field has_____
  - concentrated on
  - disregarded
  - failed to consider
  - ignored/neglected to consider
  - been limited to/been restricted to
  - overestimated
  - overlooked/suffered from/underestimated
  - misinterpreted

- To the best of authors' knowledge, based on scientific database of Scopus, there is almost no study…….

Establishing a Niche —Using Contrastive statements

- However, it remains unclear whether…
- It would thus be of interest to learn how…
- If these results could be confirmed, they would provide strong evidence for…
- The findings suggest that this approach might be less effective when…
- It would seem, therefore, that further investigations are needed in order to …

Occupying the Niche

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Two variations in occupying the niche:

1. **Purposive** (P): The author(s) indicate their main purpose or purposes
   - E.g., The aim of this paper is to give…

2. **Descriptive** (D): The author(s) describe the main feature of their research
   - E.g., This paper reports on the results obtained…

Occupying the Niche

Try to identify the following statements:

- _____In this paper we give preliminary results for. . .
- _____This study was designed to evaluate…
- _____Our primary objective in this paper is to provide . . .
- _____ We now report the interaction between . . .

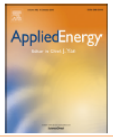
Introduction: Example

Applied Energy 226 (2018) 31–38

Contents lists available at ScienceDirect

Applied Energy

journal homepage: www.elsevier.com/locate/apenergy



Establishing research territory (target, problems etc.)

Highly energy-efficient combination of dehydrogenation of methylcyclohexane and hydrogen-based power generation

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[b] Institute of Innovative Research, Tokyo Institute of Technology, 2-12-1 Ookayama, Meguro-ku, 152-8550, Japan
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[d] Chemical Engineering Department, Gadjah Mada University, Jl. Grafika 2, Yogyakarta 55284, Indonesia

HIGHLIGHTS

- Integrated system of MCH dehydrogenation and H_2 power generation is proposed.
- Enhanced process integration is adopted to realize high energy efficiency.
- The proposed system can realize very high energy efficiency of 58.9%.
- Compared to Graz cycle based system, the proposed system shows excellent efficiency.

ARTICLE INFO

Keywords:
Methylcyclohexane
Dehydrogenation
Hydrogen
Graz
Electricity
Energy efficiency

ABSTRACT

Hydrogen (H_2) has been well studied for its potential use in energy storage, which is particularly related with the intermittent characteristic of renewable energy sources. However, the gas form of H_2 at standard pressure and temperature (STP) poses a challenging problem in terms of storage, transportation, and low volumetric energy density. An effective and reversible method for H_2 storage is chemically bonded H_2 used in the toluene (C_7H_8)/methylcyclohexane (MCH, C_7H_{14}) cycle. This study investigates a power generation system from H_2 storage in MCH, involving the dehydrogenation process and the combined cycle as a power generation process. An adequate analysis of the heat circulation was performed through an enhanced process integration (EPI) to ensure the high energy-efficiency of the proposed system. A highly endothermic reaction of dehyc
by utilizing the energy/heat from air-fuel combustion to ensure the effective heat rec
proposed system was analyzed through an adjustment of the main operating paramet
pressure, GT inlet temperature, and the condenser pressure, to observe their effects
system. It was found that these parameters have a significant influence on the system
the possibility of further improvement. Under optimum conditions, the proposed syste
system efficiency of 54.6%. Moreover, the proposed system is also compared to a Graz c
has been reported to achieve an excellent power generation cycle from H_2. This result
integrated system leads to a significantly higher power-generating efficiency. Numeric
demonstrated a system efficiency of 53.7% under similar conditions as the Graz cy
achieved a system efficiency of 22.7%.

Abstracts: aims, methods/contents, both quantitative and qualitative results, brief discussion

Establishing niche (general to specific problems, current research, etc.)

General background

1. Introduction

Power generation from renewable energy sources has been studied for decades, and has been implemented at a large scale in many countries during recent years [1]. In addition, renewable energy is the fastest growing source of electricity generation, and it has been predicted that its share will increase to 39% by 2050 [2]. However, the power generation from renewable energy sources, particularly wind and solar, faces several challenges to a power grid operation, including an intermittent output and a mismatch between the power output and demand, resulting in grid instability and wasted energy during a period of oversupply [3].

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Electrical energy storage can be installed in the system to balance the energy between demand and supply, as well as store the surplus energy. Electrical energy storage in the form of chemical energy has been widely applied, such as through batteries, methane (CH_4), and hydrogen (H_2) [4]. Among such chemical storage types, H_2 has the best ratio of valence electrons to protons, and therefore, the energy gain per electron is quite high [5]. Energy storage achieved by converting excess electricity into H_2 through the water electrolysis (power-to-gas) process has been widely studied using well-established pilot plans [6,7]. In addition, the trends of decarbonization of fossil fuels and conversion of biomasses into H_2 have increased significantly owing to a high environmental concern and convenience [8,9]. The chemical energy per mass of H_2 (142 MJ kg^{-1}) is at least three-times higher than that of gasoline (44 MJ kg^{-1}) [5,10]. Because H_2 is one of the most abundant elements on Earth, H_2 has a high potential as an energy storage or energy carrier, and it is believed that the role of H_2 will increase in the future.

However, H_2, which is in gas form at standard pressure and temperature (STP), has been a challenging problem in terms of storage and transportation owing to its low volumetric energy density, which is only about 3 Wh L^{-1} [11]. Therefore, an effective storage method of H_2 will play a key role in H_2 technology development. There are many types of H_2 storage systems used with the general purpose of increasing the volumetric energy density of H_2. The compression of H_2 is one of the basic technologies applied to increase the molecule density, resulting in an increase in the volumetric energy density [12]. High-pressure tanks are required with a rated pressure of 200–450 bar. However, high-pressure containers have several significant disadvantages in terms of an additional pressure control required during depressurization and the safety risk of H_2 pressurization. Another method for H_2 storage is liquefaction, which is condensing the gas into a liquid, or even a solid, because both phases have significantly higher density than the gaseous phase [5,13,14]. However, a very low condensation temperature (−252 °C at 1 bar) is required, and cryogenic technology consumes a large amount of energy, and there are still many challenging problems with regard to liquefaction, including super-insulated low-temperature storage methods [5,13].

Many studies related to the effective chemical storage of H_2 have recently been conducted [15,16], including the use of organic materials and ammonia. Unfortunately, ammonia is poisonous and has a pungent odor [17]. The utilization of ammonia via combustion, such as gas turbine, has several problems including lower reactivity of ammonia and release of NO_x. Regarding the latter, the formation of NO_x increases significantly when the combustion temperature reaches about 1500 °C following Zeldovich mechanism (thermal NO_x). Therefore, as NO_x is a pollutant (GHG), direct utilization of ammonia via combustion is not environmental friendly. Although there are several technologies which can reduce the NO_x formation, however, they are still under development. In addition, in ammonia-based H_2 chemical storage system, N_2 is released during the dehydrogenation process, creating one-way transport from the site of H_2 production to the site of H_2 utilization. On the other hand, toluene in liquid phase as the result of dehydrogenation of MCH, will be returned to the hydrogenation plant and reused, allowing sustainable cycle of H_2 storage system.

Chemical H_2 storage can be applied by binding H_2 to produce H_2-rich molecules in a catalytic hydrogenation reaction [15]. To create a sustainable H_2 storage system, at least two processes, namely, H_2-rich molecule formation (hydrogenation) and H_2 release (dehydrogenation), are required. Numerous molecules can be utilized in chemical storage, which can be distinguished into two main categories: (1) natural H_2-lean molecules that can be extracted from an exhaust gas mixture such as CO_2 or N_2, and (2) a H_2-lean organic liquid, which allows a fully reversible cycle of hydrogenation/dehydrogenation. The latter is commonly referred to as liquid organic H_2 storage (LOHC) [16,15].

LOHC technology has been widely studied, with an option of different organic material pairs such as methylcyclohexane (MCH, C_7H_{14})-toluene(C_7H_8), cyclohexane-benzene, decalin-naphthalene, and dibenzyl-toluene. Among the first three pairs, MCH-toluene is preferable for easier storage and transportation owing to its wide temperature range under a liquid state [18,19]. Among the available LOHCs, MCH-toluene and dibenzyl-toluene have a relatively high H_2 content of 6.2% [20]. A dibenzyl-toluene pair has been recently reported with a focus on the dynamism of the system in supplying electricity [21]. However, this work remains at the laboratory scale, without a sufficient analysis at larger scales, and is designed for fuel cell application. In contrast, the MCH-toluene cycle has been evaluated at the pilot scale by a Japanese company, and has been demonstrated to be effective [18]. Gaseous H_2 is chemically bonded to toluene through hydrogenation forming liquid MCH [22]. Transportation and storage are the main features of MCH with a high boiling point, which make it a potentially safe medium for an H_2 carrier. This is also very promising because up to 6–8 wt% of H_2, or 60–62 kg m^{-3} (volume based under ambient conditions), can be stored [15,23]. Toluene as a raw material has been widely produced and utilized industrially, and provides a low-cost material for large-scale processes [23]. In addition, both toluene and MCH are in a liquid phase over a wide range of temperatures, which is favorable for long-term storage. At the industrial scale, in 2013, the Chiyoda Corporation began successfully operating a large-scale H_2 storage and delivery system by utilizing toluene-MCH as an H_2 carrier using a K-promoted Pt/Al_2O_3 catalyst [18]. Therefore, the toluene-MCH cycle is theoretically promising as an H_2 carrier, and is practically applicable at an industrial scale.

To gain energy from H_2 bonded in MCH, H_2 must be separated from toluene through a dehydrogenation process. The extracted H_2 can be converted into electrical energy through thermal energy (a combined cycle) or chemical energy (a fuel cell). Numerous studies have been carried out to develop an efficient dehydrogenation process and electricity generation from MCH. Scherer et al. developed a seasonal electricity generation from MCH by employing solid oxide fuel cells (SOFCs) [24]. However, despite exhibiting high energy efficiency, SOFCs have very fragile characteristics owing to the reformation-based H_2 used for the fuel [25]. Most studies on fuel cells have a common challenge in terms of the inability to provide a large power output [25,26]. It has been reported that, for power units with a capacity greater than 10 MW, steam-turbine-based units are preferable over fuel cell power units [27]. An H_2-fueled combustion turbine cycle (HFCTC) is expected to be a new energy source for the power sector, and certain countries, including Japan, have started its development [28]. To confirm its operability, a number of turbine manufacturers have reported studies on HFCTC, both numerically and experimentally, including H_2-fueled burners [28,29]. Milewski et al. investigated the utilization of H_2 as a fuel based on a combined cycle concept with various plant utility configurations, and successfully achieved 60% energy efficiency [28]. Among these cycles, the Graz cycle has been developed further with an improved net efficiency of greater than 65% [26]. However, most of the combined cycles, including the Graz cycle, employ pure O_2, resulting in additional utilities and energy required for O_2 separation from the air, leading to high-cost plants and a drop in efficiency of nearly 61% [26]. Moreover, the above studies have disregarded the hydrogenation process, and assumed that the H_2 feed is in a pure phase, which is very difficult to achieve in a real operation. Regarding the large-scale production of MCH, Aziz et al. developed novel integrated concepts of large-scale MCH production from both low-rank coal [11] and brown coal [30] by applying chemical looping and hydrogenation using toluene. These concepts have achieved high values of H_2 production while maintaining a clean technology for the environment. However, no evaluation regarding the dehydrogenation and utilization of H_2 from MCH has been conducted.

To the best of the authors' knowledge, few investigations have addressed the concept of energy-efficient electricity production from H_2 through MCH as a storage method. In this paper, we therefore propose the concept of an electricity generation plant, which is an integrated

Establishing niche: current researches and their problems

Occupying the niche

Writing the Discussion

- Results deal with facts--descriptive;
- Discussions deal with points--interpretive.
- Length of Discussion: In life sciences, it is believed that a long Discussion implied weak methods and results, while social scientists and humanities may well believe the opposite
- Should be more than summaries of the results.
- Should be more theoretical or
  - More integrated with the field
  - More connected to the real world
  - More concerned with implications or applications

Avoid:

- Statements that go beyond what the results can support (exaggeration)
- Non-specific expressions
- New terms not already defined or mentioned in your paper
- Speculations on possible interpretations

Discussion

How your study contributes to the field

Summarize what you did

- Reintroduce topic
- Restate the research problem
- Summarize key findings

Interpret your findings

- Similarities & differences
- Unexpected/negative results
- Limitations

Why important to the field

- Main conclusion
- Implications

Points in Discussion

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- **Consolidate the research space** (obligatory)
  - Report the accomplishments by highlighting major findings
  - Relate and evaluate the data in the light of previous research.
  - Interpret the data by making suggestions as to why the results are the way they are.
  - Anticipate and deal with potential criticism

- **Indicate the limitations** of the study (optional)
  - highlighting intelligently its weaknesses (less)

- **Recommend action** or to identify useful areas of further research (optional)

Consolidate the Research Space

- Report your accomplishments by highlighting major findings
- Relate and evaluate your data in the light of previous research.
- Interpret your data by making suggestions as to why the results are the way they are.
- Anticipate and deal with potential criticism

Language Focus: Generalization in Discussion Sections and Limitation

- Specific for expressing the results
  - As we can see in Table 1, 84% of the. . .
- High level of generality in discussion
  - The results indicate that …..
- Phrases of generality:
  - Overall, . . .
  - In general, . . .
  - On the whole. . .
  - With . . . exception(s),
  - The overall results indicate. . .

- Expressions of limitation
  - It should be noted that this study has been primarily concerned with. . .
  - This analysis has concentrated on . . .
  - This findings of this study are restricted to . . .
  - This study has addressed only the question of. . .
  - The limitations of this study are clear. . .
  - We would like to point out that we have not. . .

Conclusion

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Last thing that is

What is remembered most by your readers about your study

What do you want your readers to remember?

Main Conclusions	**The solution to the problem**
Key Findings	**1–2 most important findings**
Implications	**Contribution to the field**
Future Directions	**How to build on your study**

References

- The balance between reference and journal
- Find the newest reference
  - We are the frontier
  - We know the newest
- Some journals are demanding the references in the last 2 years (related to IF)
- Avoid lumped references
  - Describe and justify each of them accurately, provide a descriptor
  - One of writing ethics
- Reference management software: Mendeley, Endnote, etc.
- Follow the rule, styles, etc.

After the first draft….

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Format manuscript

- Use journal template/style
- Re-check word limits
- Format references

Revise manuscript

- Get input from colleagues
- Check Figures/Tables
- Check consistency/logical flow between sections
- Edit for clarity, conciseness, and accuracy
- Have a rest! Then proofread

Optional: English check by English-speaking/fluent scientist

Answering the reviews

- Revise and resubmit promptly (keep the deadline)

- Indicate clearly what revisions were made
  - Include a letter saying what revisions were made. If you received a list of requested revisions, address each (point-to-point) in the letter.
  - If requested, show revisions in Track Changes.

- If you disagree with a requested revision, explain why in your letter. Try to find a different way to solve the problem that the editor or reviewer noted

Reviewing the galley proof

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- Proofs: typeset material to check before publication
- Review the proofs promptly/quickly
  - Dealing with the publisher and not with the journal editor
  - Only small corrections
  - No authorship changes
- Some things to check:
  - Completeness (presence of all components)
  - Accuracy (absence of typographical errors in text and references)
  - Placement of figures and tables
  - Quality of reproduction of figures
- This is not the time to rewrite the paper (required for re-reviewing)

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Detailed Practical

Avoid unnecessary words

ACS Style Guide (pp 54–55)

INSTEAD OF	CONSIDER USING
a number of	many, several
a small number of	a few
are found to be	are
are in agreement	agree
are known to be	are
at present	now
at the present time	now
based on the fact that	because
by means of	by
despite the fact that	although
due to the fact that	because
during that time	while
fewer in number	fewer
for the reason that	because
has been shown to be	is
if it is assumed that	if
in color, e.g., red in color	just state the color, e.g., red
in consequence of this fact	therefore, consequently
in length	long
in order to	to
in shape, e.g., round in shape	just state the shape, e.g., round
in size, e.g., small in size	just state the size, e.g., small

INSTEAD OF	CONSIDER USING
in spite of the fact that	although
in the case of …	in …, for …
in the near future	soon
in view of the fact that	because
is known to be	is
it appears that	apparently
it is clear that	clearly
it is likely that	likely
it is possible that	possibly
it would appear that	apparently
of great importance	important
on the order of	about
owing to the fact that	because
prior to	before
reported in the literature	reported
subsequent to	after

It was evident that…	Evidently…
It was possible that…	Possibly…
It is interesting to note that…	Notably…

Linking words/phrases

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Contrast

- However
- Whereas
- On the other hand
- Nevertheless
- Although
- Yet
- Despite
- In contrast to
- By contrast

Similar

- Likewise
- Similarly
- Also
- As well

Addition

- Additionally
- Furthermore
- Moreover

Result

- Therefore
- Consequently
- Thus
- As a result (of)
- Due to
- Because of

Use more active voice

- Sentences written in the active voice are more simple, direct, and easier to read

- However, passive voice can be useful: avoiding repetitions, unclear relationships, sentence structure, paraphrasing, methods sections

AMA Style	**"In general, authors should use the *active voice*…"**
APA Style	**"Use the *active voice* rather than the passive voice…".**
Chicago Style Guide	**"As a matter of style, passive voice is typically, but not always, inferior to *active voice*".**
ACS Style Guide	**"Use the *active voice* when it is less wordy and more direct than the passive".**
ASCE Style	**"Wherever possible, use *active verbs* that demonstrate what is being done and who is doing it…"**
IEEE	**"Use *active voice* by default; research shows readers comprehend it more quickly than passive voice…"**

Use strong verbs

…performed an analysis to investigate …

↓

…. investigated …

…led to an improvement ….

↓

…. improved …

… could ….

… can ….

Avoid as much as possible to use words of “will”, “may”, etc.

After the first draft….

Format manuscript

- Use journal template/style
- Re-check word limits
- Format references

Revise manuscript

- Get input from colleagues
- Check Figures/Tables
- Check consistency/logical flow between sections
- Edit for clarity, conciseness, and accuracy
- Have a rest! Then proofread

Optional: English check by English-speaking/fluent scientist

Selecting the Journal

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- Check the references or literature we used
- Check the publication trend in certain journals
- Journal' **scope**
- Who's the **audience**?
- Average required time for publication
- Impact factor
- **Cost**
- Relation to certain academic community
- Relation or network with the **editor**

Journal Finder Services

Elsevier Journal Finder
The Journal Finder uses smart search technology and field-of-research specific vocabularies to match your article to Elsevier journals.

EndNote Match: Manuscript Matcher
With a few key pieces of information—title, abstract, and references—, it can help to find the right journal for your manuscript.

Journal/Author Name Estimator (JANE)
Relies on the data in PubMed (still possibility for predatory journals. To help identify high-quality journals, it tags journals that are currently indexed in MEDLINE, and open access journals approved by the Directory of Open Access Journals (DOAJ)

Springer Journal Suggester
Search for all Springer and BioMed Central journals

Think. Check. Submit
It is a campaign to help researchers identify trusted journals for their research. It is a simple checklist researchers can use to assess the credentials of a journal or publisher.

Publish or Flourish Open Access
FlourishOA is a resource for identifying high-quality, high-value open access journals.

Edanz Journal Selector

Journal Metrics

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- Impact Factor (Clarivate Analytics)
  - The average of the sum of the citations received in a given year to a journal's previous two years of publications divided by the sum of "citable" publications in the previous two years
  - Data base: Web of Science
- CiteScore (Scopus)
  - The average of the sum of the citations received in a given year to publications published in the previous three years divided by the sum of publications in the same previous three years.
  - Data base: Scopus
- Source Normalized Impact per Paper (SNIP)
  - Comparing each journal's citations per publication with the citation potential of its field, defined as the set of publications citing that journal
  - Data base: Scopus
- SCImago Journal Rank (SJR)
  - The concept of a transfer of prestige between journals via their citation links
  - Data base: Scopus
- Journal Quartile
  - The set of journals have been ranked according to their SJR and divided into four equal groups, four quartiles

Impact Factor (Clarivate Analytics)

- The average of the sum of the citations received in a given year to a journal's previous two years of publications divided by the sum of "citable" publications in the previous two years
- Data base: Web of Science

- Example
  - A = the number of times articles published in a specific journal in 2014 and 2015 were cited by journals during 2016.
  - B = the total number of 'citable items' published by that journal in 2014 and 2015. ('Citable items' are usually articles, reviews, proceedings, etc.; not editorials or letters-to-the-editor.)
  - 2016 impact factor = A/B.

Citescore (Scopus)

- The average of the sum of the citations received in a given year to publications published in the previous three years divided by the sum of publications in the same previous three years.
- Data base: Scopus

- Example
  - A = Citations to articles, reviews, conference papers, data papers and book chapters published in 2016-2019
  - B = Sum of articles, reviews, conference papers, data papers and book chapters published in 2016-2019
  - 2019 CiteScore = A/B

Important Criteria

Suiter A, Sarli MLS. Selecting a Journal for Publication: Criteria to Consider. Mo Med 116 (2019) 461-465

Check…..!!!

Do we or our colleagues know the journal? (read any articles in the journal before, easy to discover the latest papers in the journal?)

Are articles indexed in clear indexing services? (Scopus, Web of Science, etc.)

Can we easily identify and contact the publisher? (publisher name is clearly displayed, and contactable)

Do we recognize the editorial board? (heard/know the editorial board members, editorial board mention the journal on their own websites)

Is the publisher a member of a recognized industry initiative?

- Committee on Publication Ethics (COPE) ?
- If the journal is open access, is it listed in the Directory of Open Access Journals (DOAJ) ?
- If the journal is open access, does the publisher belong to the **Open Access Scholarly Publishers' Association** (OASPA) ?
- Is the journal hosted on one of INASP's Journals Online platforms (for journals published in Bangladesh, Nepal, Sri Lanka, Central America and Mongolia) or African Journals Online (AJOL, for African journals)?
- Is the publisher a member of another trade association?

Warning signs….

- Journal Title: very similar to one of well-known journal, No ISSN
- Editorial Board
  - No editorial board members listed, or all from a single institution or have no affiliation noted.
  - No established or reputable investigators/authors within your area of research.
  - No contact information for the editor-in-chief or the editorial board
  - The listed editorial board/staff are unaware of their affiliation with the journal
- Website: Incomprehensive “Instructions for Authors”, poor and difficult-to-access journal, advertisement on the website
- Publisher:
  - Disreputable or unknown publisher
  - Unclear/difficult-to-identify journal office, no response to e-mail sent to the editor/office within a few days
- Publication schedule and fee
  - No clear information on fees, The journal charges a fee before a manuscript is submitted for peer review.
  - The publication schedule is unclear/inconsistent, promised routine turnaround times are so rapid
- Articles
  - Misspellings or grammar errors noted for articles, no DOI
  - The articles are not germane to the aim and scope of the journal
  - Publication schedule is inconsistent and erratic
  - Several of the articles over the past few years are authored by the same person or a member of the editorial board
- Invitation email for submissions that do not specify an interest in particular projects/areas

OASPA

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OASPA

Open Access Scholarly Publishers Association

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- Beilstein-Institut
- Cogitatio
- Compuscript Ltd
- CSIC Press
- F1000Research
- HBKU Press (Formerly Bloomsbury Qatar Foundation Journals)
- Hipatia Press
- Institute of Slavic Studies, Polish Academy of Sciences
- Internet Policy Review
- Journal of Health and Pollution
- Korea Institute of Science and Technology Information
- Leibniz Institute for Psychology Information / PsychOpen
- Open Book Publishers
- Open Library of Humanities
- PAGEPRESS Publications
- PeerJ

Answering the reviews

- Revise and resubmit promptly (keep the deadline)

- Indicate clearly what revisions were made
  - Include a letter saying what revisions were made. If you received a list of requested revisions, address each (point-to-point) in the letter.
  - If requested, show revisions in Track Changes.

- If you disagree with a requested revision, explain why in your letter. Try to find a different way to solve the problem that the editor or reviewer noted

- Request for additional works
  - Calm down and be moderate when the reviewers asked for additional data, experiment, etc.
  - In case we have strong concept and we thought that additional works are unnecessary, try to mention the reason (sufficiency, underlining the concept and objectives, taking as future works, etc.)

Responses to the Reviews

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Responses to the reviewers

Manuscript Number: TSEP-D-20-00047

Title: CO_2-free power generation employing integrated ammonia decomposition and hydrogen combustion-based combined cycle

Thanks and appreciation to Editors and Reviewers

We would like to express our deep appreciation to all of the reviewers and the editor for their valuable comments and advice regarding our manuscript submitted to *Thermal Science and Engineering Progress*. We believe that, by following their comments and advice, the manuscript, as well as the overall research, were significantly improved. Based on such comments and advice, we have revised the manuscript and attached both clean and marked versions. Below are our detailed responses to each reviewer.

Responses to Reviewer #1:

Thank you very much for your very valuable comments and advice to our manuscript. We believe that your advice and comments significantly helped improve the quality of our manuscript and research. We have made some revisions following your comments and advice.

This paper discusses integration of an NH3 decomposition process with a H2-fired CCGT power plant. The paper is well structured with a reasonable level of English language except for a few sentences that aren't properly worded which can of course be easily addressed through a thorough proof reading. I also consider the subject to be topical and aligned to the theme of this journal. The authors have performed a considerably sound review of relevant literature which is great to show where this paper stands with respect to existing papers in terms of novelty. However, the details of the work and the results are severely limited for this paper to be published in its current form. Below are some of the concerns:

Point-by-point response, keep being polite, don't try to ignite any sensitive or emotional matters

1. *You have not given the details of the model developed in Aspen Plus. There should be a proper presentation of the model including all input conditions used.*

   Thank you for your suggestion. Additional explanation regarding the model developed in Aspen Plus has been added into the revised manuscript.

2. *There is no reference to validation. I understand that this a new process and validation could be a problem. However, you could explore ways to validate the units maybe as standalone, then scaleup and integrate.*

   Thank you for your suggestion. This work proposes the process integration of catalytic decomposition process of ammonia to produce hydrogen, and the hydrogen utilization for power generation, resulting in a highly efficient ammonia energy utilization system. The decomposition reaction of NH_3 refer to the experimental works that reported the maximum reaction conversion of multiple catalysts at a predetermined temperature (Reference: Ammonia for hydrogen storage; A review of catalytic ammonia decomposition and hydrogen separation and purification. *Int J Hydrogen Energy* 2019;44:3580–93.). The membrane reactor employed in this work, has been reported experimentally successful to produce high purity H_2 by employing the permeance ratio between among the products (Reference: *Catal Commun* 2008;9:482–6; *Catal Commun* 2011;15:60–3; *Catal Today* 2014;236:70–6)

Sufficient explanation

3. *The catalytic reactor: It appears to me that you have simply modelled the reactor using the ideal reactor in Aspen Plus (RSTOIC) and simply specified conversions. How about considering the actual detail of the catalysts and using PBR? The details of the reactor must be provided.*

   Thank you for your suggestion. This work focuses on continuous process of ammonia decomposition and the integration with power generation cycle, while the catalytic reaction kinetic analysis including the reaction characteristics of different catalyst has been well-reported previously by Lamb et al. Additional information regarding the ammonia decomposition reaction characteristic has been added in the manuscript based on experimental and numerical simulation reported in the other and the current works.

4. *The results are too few. There are results that immediately crosses your head that you would want to see in a paper like this. First, what is the energy consumption of the NH3 decomposition reactor? What is the energy penalty of integrating the ammonia decomposition process with the H2-Fired CCGT? etc. The answers are already in the model you have developed, and you don't need to do a new model. The results can easily be reported and it will make your paper more robust.*

   Thank you for your suggestion. Further explanation regarding the simulation results, including the thermal energy required for ammonia decomposition, has been added into the revised manuscript.

5. *There are too many abbreviations and a table of abbreviations with all of them must be added*

   Table of abbreviations has been added into the revised manuscript.

Reviewing the Galley Proof

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- Proofs: typeset material to check before publication
- Review the proofs promptly/quickly
  - Dealing with the publisher and not with the journal editor
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  - Accuracy (absence of typographical errors in text and references)
  - Placement of figures and tables
  - Quality of reproduction of figures
- This is not the time to rewrite the paper (required for re-reviewing)

Example of "Cover Letter" (simple)

Tokyo Institute of Technology
2-12-1 Ookayama, Meguro-ku, Tokyo 152-8550 JAPAN
TEL: +81-3-5734-3809 FAX: +81-3-5734-3559 URL: http://www.titech.ac.jp/

May 9, 2016

Professor H. Lund,
Editor-in-Chief of Energy

Subject: Manuscript entitled "Clean co-production of hydrogen and power from low rank coal"
by Muhammad Aziz, Firman Bagja Juangsa

Dear Professor H. Lund,

We would like to submit our manuscript entitled "Clean co-production of hydrogen and power from low rank coal" which we would like you to kindly consider for publication in "Energy" as a regular research article. The work has not been published previously (except as an abstract and part of published lecture), is not under consideration for publication elsewhere and was approved by all the authors.

Sincerely yours,

Muhammad Aziz, Dr. Eng.

Associate Professor
International Research Center of Advanced Energy Systems for Sustainability
Institute of Innovative Research, Tokyo Institute of Technology

2-12-1 O-okayama, Meguro-ku, Tokyo 152-8550, Japan
Tel: +81-3-5734-3809, Fax: +81-3-5734-3559
E-mail: maziz@ssr.titech.ac.jp

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The University of Tokyo
4-6-1 Komaba, Meguro-ku, Tokyo 153-8505, Japan
Tel: +81-3-5452-6196 / fax: +81-3-5452-6196
E-mail: maziz@iis.u-tokyo.ac.jp

17 November 2020

Professor Emre A. Veziroglu
Editor-in-Chief *International Journal of Hydrogen Energy*

Subject: Manuscript entitled "Production of ammonia as potential hydrogen carrier: Review on thermochemical and electrochemical processes" by Firman Bagja Juangsaa, Adrian Rizqi Irhamna, Muhammad Aziz.

Dear Professor Emre A. Veziroglu,

We would like to submit our manuscript entitled "Production of ammonia as potential hydrogen carrier: Review on thermochemical and electrochemical processes" which we would like you to kindly consider for publication in *International Journal of Hydrogen Energy* as a review article.

This paper reviews comprehensively both thermochemical and electrochemical NH_3 production technologies, including their updates and challenges, and also by considering both technological feasibility and applicability. H_2 and NH_3 are considered as very potential secondary energy sources in the future energy system to facilitate optimum introduction of fluctuating renewable energy. In addition, several projects and efforts carried out by several countries to utilize NH_3 as potential fuel in the energy system are also overviewed. Furthermore, technological analysis, challenges, and recommendations are also provided in order to evaluate the potential adoption of NH_3 in the future energy system. As we know that *International Journal of Hydrogen Energy* concerns with the issues related to efficient hydrogen production and utilization, we believed that the topics discussed and described in this manuscript fall in the scope of this respected journal. In addition, we strongly expect that our study could provide more insights and contribute to more advanced research in this field.

Short description

The work has not been published previously, is not under consideration for publication elsewhere, and is approved by all authors. All authors listed have contributed sufficiently to the project to be included as authors, and all those who are qualified to be authors are listed in the author byline. To the best of our knowledge, no conflict of interest, financial or other, exists.
Lastly, the authors acknowledge the financial support received from JSPS KAKENHI (Grant Number 19K04211).

Statement

Sincerely Yours,

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Example of “Cover Letter” (long)

東京大学
THE UNIVERSITY OF TOKYO

DATE

A. J. M. Ferreira

Editor

Composite Structures

Dear Editor:

Introduction

Please find enclosed our manuscript entitled “Experimental verification of interfacial strength effects on the mechanical properties of carbon fiber–epoxy composites,” which we request you to consider for publication as a *Research Paper* in *Composite Structures*.

Short description

The mechanical properties of fiber–matrix composites are expected to be affected by both the mechanical properties and the interfacial properties of the constituents. Interfacial properties—especially interfacial strength—strongly influence stress transfer from the fibers to the matrix and vice versa; this transfer is related to the mechanical properties of such composites, and a low t_o has been predicted to lead to poor composite mechanical properties. However, the literature contains few studies that demonstrate the effects of the t_o on the mechanical properties of such composites subjected to axial and transverse loadings.

In this work, we experimentally investigated the effects of carbon fiber–epoxy interfacial strength on the mechanical properties of the corresponding fiber–matrix composites. We tested both fibers in their as-received state and fibers soaked in acetone to remove their adhesive. We characterized the composites’ surfaces using scanning electron microscopy and time-of-flight secondary-ion mass spectrometry to verify that the adhesive had been removed. We subsequently conducted single-fiber fragmentation tests to evaluate the interfacial strength of the specimens. We further evaluated the mechanical properties of the composites with different fiber surface treatments by conducting tensile tests under axial and transverse loads. Our results demonstrate that interfacial strength strongly affects the mechanical properties. Thus, interfacial strength must be carefully considered in the design of composite structures, particularly in the case of composites used in critical primary load-bearing structures.

Statement

This manuscript has not been published elsewhere and is not under consideration by another journal. We have approved the manuscript and agree with its submission to *Composite Structures*. There are no conflicts of interest to declare.

Additional confirmation and information

We believe that the findings of this study are relevant to the scope of your journal and will be of interest to its readership. The manuscript has been carefully reviewed by an experienced editor whose first language is English and who specializes in editing papers written by scientists whose native language is not English.

We look forward to hearing from you at your earliest convenience.

Sincerely,

[AUTHOR]
[AFFILIATION]
[POSTAL_ADDRESS]
Phone No:
Fax No:
Email Address:

Scholarship and Funding Opportunities

International research grants and funding

東京大学 THE UNIVERSITY OF TOKYO

→ **Other funding programs**

→ JSPS bilateral program joint research https://www.jsps.go.jp/english/e-bilat/joint.html

→ e-Asia https://www.the-easia.org/jrp/

→ SATREPS https://www.jst.go.jp/global/english/index.html

→ SICORP https://www.jst.go.jp/inter/english/program_e/announce_e/announce_stand.html

→ aXis https://www.jst.go.jp/global/axis/

→ JSPS LEADER https://www.jsps.go.jp/english/e-le/index.html

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Japan Society for the Promotion of Science

SATREPS
Science and Technology Research Partnership for Sustainable Development Program

e-ASIA JRP

SICORP
戦略的国際共同研究プログラム

aXis
持続可能開発目標達成支援事業

International Research Grants

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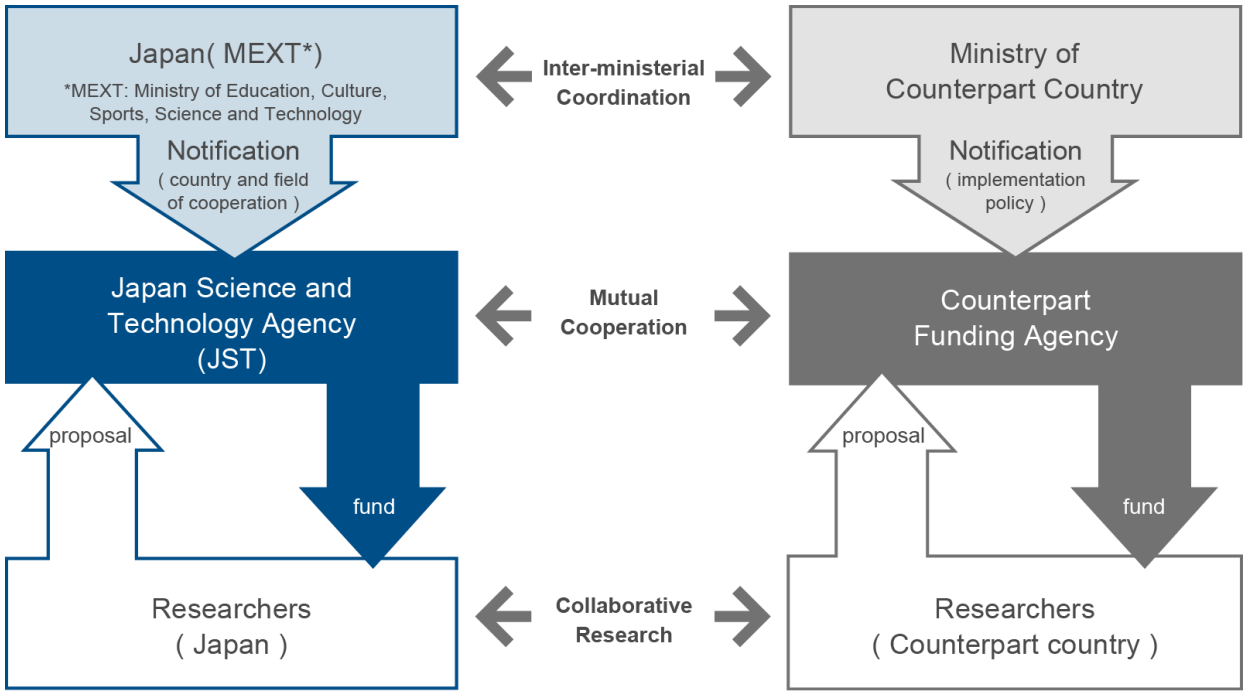
Nama program	Kisaran periode aplikasi	Max. Budget	Durasi	Link Website	Keterangan
Billateral Joint Research (DIKTI)	Agustus ~ awal September	2,500,000 JPY per tahun	1~3 tahun	Link	Perkiraan jumlah penerimaan per tahun: 3
Billateral Joint Research (LIPI)	Agustus ~ awal September	2,000,000 JPY per tahun	2 tahun		Perkiraan jumlah penerimaan per tahun: 2
e-ASIA	Januari ~ akhir Maret	27,000,000 JPY	3 tahun	Link	Konsorsium minimal terdiri dari 3 negara anggota
SATREPS	Awal September ~ awal November	JST: 35,000,000 per tahun JICA: 60,000,000 per tahun	3~5 tahun	Link	Sumber dana: JST (pada dasarnya untuk riset di Jepang) and JICA (untuk riset demonstrasi di negara partner)
STAND	Januari ~ awal Februari	5,000,000 JPY per tahun (Japan side)	1 tahun	Link	JP - UK- SE countries. PI harus pernah terlibat di salah satu proyek e-ASIA, SATREPS maupun aXis(maximum 3 tahun sebelumnya)
aXis	Februari ~ awal Maret	Tipe A: 90,000,000 JPY Tipe B: 30,000,000 JPY	1 tahun	Link	Tipe A: Riset demonstrasi Tipe B: Riset demonstrasi skala kecil, FS

SICORP

- The aim of this program is to contribute solutions to challenges facing the world today and to bolster Japan's scientific and technological capabilities through collaboration with a broad range of countries.
- Provides support for international joint research projects on the basis of equal partnership in countries, regions, and fields of cooperation that have been designated as particularly important by MEXT on the basis of intergovernmental agreements in collaboration with funding agencies in the countries concerned.



Outlines

1. Scholarships

→ MEXT scholarships

→ JSPS fellowship for young researchers

→ Various other scholarships

2. Post-doctoral and Fellowships

→ JSPS Postdoctoral Fellowships for Research in Japan

→ Specific institution fellowship

→ Excellence young researcher program

→ J-RECIN Portal and other fellowships

3. Research grants and funding

→ JSPS grant-in-aid funding

→ JST strategic basic research funding

→ Other funding programs

4. Tips for successful application

1. Scholarships

→ **MEXT scholarships** https://www.id.emb-japan.go.jp/sch.html

→ **Government to government recommendation (G to G)**

- → Application through embassy
- → 6 months researcher student before graduate students

→ **University to university recommendation (U to U)**

- → Application through university
- → Directly to graduate students

TokyoTech IGPA
5-year master & doctor

https://www.titech.ac.jp/english/admissions/prospective-students/graduate-programs/igp-a

→ **Other programs** https://www.id.emb-japan.go.jp/sch.html

- → For undergraduate degree
- → For college of technology degree
- → For specialized training college
- → For teacher training
- → For Japanese studies

Stipend

Research student	143.000 JPY/month
Master student	144.000 JPY/month
Doctoral student	145.000 JPY/month

1. Scholarships

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→ JSPS fellowship for young researcher

https://www.jsps.go.jp/english/e-pd/

→ DC1 program

→ Apply during 2nd year of master degree in Japanese universities

Acceptance rate
± 18%

→ 3 years fellowship

→ Stipend 200.000 JPY/month + research grant ±1.000.000 JPY/year

→ DC2 program

→ Apply during 1st or 2nd year of doctoral degree in Japanese universities

→ 2 years fellowship

→ Stipend 200.000 JPY/month + research grant ±1.000.000 JPY/year

Remaining fellowship contract → postdoctoral

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日本学術振興会
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1. Scholarships

Independent Administrative Institution
Japan Student Services Organization

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→ Various other scholarships

→ JASSO

→ For private funding students (48.000 JPY/month)

→ Local governments and associations

→ Kitami city scholarship

→ Iwate International Association

→ Kawasaki International Association

→ Kawasaki International Association

20.000 – 50.000 JPY/month

→ Private foundations

→ INPEX scholarship

→ Kubota funds

→The Asahi Glass Foundation

20.000 – 150.000 JPY/month

https://www.studyinjapan.go.jp/en/planning/by-style/pamphlet/index.html

PDF File → https://www.studyinjapan.go.jp/en/_mt/2022/04/3500fb71fcef9dde65fe53c1baa1befd4743b371.pdf

III. Scholarships by Local Governments and Local International Associations

*1
S : School
F : Foundation

*2 Qualifier
HS : High School Students
CT : College of Technology Students
PT : Professional Training College Students
UJ : University Japanese Program Students
JL : Japanese Language Institute Students
JC : Junior College Students
A : Auditors (Undergraduate)
U : Undergraduate Students
R : Research Students (Graduate)
P : Professional Degree Program
M : Master's Program Students
D : Doctoral Program Students

*3 Y=Plural grants permitted, N=Not permitted
*4 Y=Applicable, N=Not applicable
*5 D : Document
I : Interview
W : Written exam
O : Others

No.	Name of Foundation Name of Scholarship	Address/Phone/Fax/ Website (http://) /E-mail	*1		Eligibility								Contents (¥1,000)	Duration	Application Period	*5	Grantees	Grantees/ Applications for the Previous Year
			Inquiry	Application	*2 Qualifier (School Year)	Age Limit (at the start of payment)	Designated Countries	Designated Schools in Japan	Designated Fields of Study	*3 Plural Grants and Limits (¥1,000)	*4 Non-Student Visa	Additional Requirements				Selection		
1	Kitami City 北見市 Kitami City Scholarship for Foreign Students	Citizen Environment Department Kitami City Office, Odori Nishi-3-Chome 1-1 Kitami-City, Hokkaido 090-8501 Tel 0157-25-1105 Fax 0157-25-1016 www.city.kitami.lg.jp/administration/education/detail.php?content=9543 shiminkatsudo@city.kitami.lg.jp	F	F	PT JC U R M D	—	—	Kitami city, Hokkaido	—	N	N	Kitami city residents	200/Y	1y (Apr.-Mar.) (Scholarship payment in July and Dec.)	Late May	D	15	15/26
2	Iwate International Association （公財）岩手県国際交流協会	Aina 5F, 1-7-1 Moriokaekinishitori, Morioka, Iwate 020-0045 Tel 019-654-8900 Fax 019-654-8922 iwateint@iwate-ia.or.jp	S	S	CT(3-) JC U M D	—	—	Iwate pref.	—	Y 60/M	N	Students interested in intercultural activities Recommendation from designated schools required	20/M (TBA)	1y (Apr.-Mar.)	Mid Feb	D, I	10 (TBA)	10/15
3	Ohtawara-city Board of Education 大田原市教育委員会 Ohtawara-city Foreign Student Scholarship	Ohtawara City Office, 1-4-1, Honcho, Ohtawara-City, Tochigi 324-8641 Tel 0287-23-3111 Fax 0287-23-3113 soumu-kyouiku@city.ohtawara.tochigi.jp	F・S	S	U(1-6)	—	—	International U of Health and Welfare (Ohtawara City)	—	Y	N	University recommendation required Legally registered as residents of Ohtawara city	5/M	1y (Apr.-Mar.)	Apr.-Mar.	D	About 30	23/23
4	Shinjuku-ku 新宿区 Foreign Student Scholarship	Shinjuku City Office, 1-4-1, Kabuki-cho, Shinjuku-ku, Tokyo 160-8484 Tel 03-5273-3504 Fax 03-5273-3590	F・S	S	PT (2-) JC (2) U (2-) M (2) D (2-)	—	—	Shinjuku City, Tokyo	—	Y	N	Privately financed students in Shinjuku who have studied at eligible schools for one year or longer and are planning to continue their studies for at least one year	240/Y	1y (Scholarship payment in July and Dec.)	Mid May-Late May	D	About 15	15/37
5	Kawasaki International Association （公財）川崎市国際交流協会 Financial Assistance Program for Foreign Students	Kawasaki International Association 2-2 Kizuki, Gion-cho, Nakahara-ku, Kawasaki-city, Kanagawa 211-0033 Tel 044-435-7000 Fax 044-435-7010 www.kian.or.jp kiankawasaki@kian.or.jp	S	S	CT PT JC U M D	—	—	Kawasaki city, Kanagawa	—	Y (N:MEXT)	N	Privately financed students in Kawasaki. School recommendation required. Student who resides and can participate in the international exchange activities in Kawasaki. Students who live in Kawasaki	100/Y	1y	Apr.- Mid May	D	24	30/35

2. Post-doctoral and Fellowships

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→ JSPS Postdoctoral Fellowships for Research in Japan

→ Standard Program

https://www.jsps.go.jp/english/e-ippan/index.html

→ 1–2 years of fellowship

→ Any research institutes/universities in Japan

Acceptance rate ± 10%

Maximum 4 years after doctoral degree

→ Propose your own research topic with a host researcher in Japan

→ Stipend 362.000 JPY/month (non-taxable) + research grant ±1.000.000 JPY/year

→ Invitational Fellowship → short/long term

https://www.jsps.go.jp/english/e-inv/index.html

→ Short: 14–60 days Long: 2–10 months

→ Any research institutes/universities in Japan

Acceptance rate ± 30–45%

Affiliated with institution in the home country

→ Propose your own research topic with a host researcher in Japan

Short:
18.000 JPY/day
150.000 JPY funding

Long:
387.600 JPY/month
150.000 JPY funding

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2. Post-doctoral and Fellowships

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→ Specific institution fellowships

→ RIKEN SPRD Program

Maximum 6 years after doctoral degree

https://www.riken.jp/en/careers/programs/spdr/

→ JAMSTEC Young Research Fellow (JYRF)

Maximum 6 years after doctoral degree

https://www.jamstec.go.jp/e/work_with_us/jobs/details/jyrf20220906/

→ JAEA Postdoctoral Fellow

Maximum 8 years after doctoral degree

https://www.jaea.go.jp/english/news/recruitment/employment/974/

→ NIMS International Center for Young Scientists

Maximum 10 years after doctoral degree

https://www.nims.go.jp/icys/recruitment/

2. Post-doctoral and Fellowships

→Excellence young researcher program (Assistant Professor and above)

→The University of Tokyo Excellent Young Researcher

3.000.000 JPY/year funding for the first-2 years

https://www.u-tokyo.ac.jp/ex-researchers/

https://www.eri.u-tokyo.ac.jp/en/news/5136/

→Kyoto University – The Hakubi Project

5-years contract

Possibility tenure

Acceptance rate: ±3-5%

https://www.hakubi.kyoto-u.ac.jp/eng

→Tohoku University – Frontier Research Institute for Interdisciplinary Sciences

5-years contract

Possibility tenure

2.500.000 JPY/year funding for the first-2 years

https://www.fris.tohoku.ac.jp/en/

2. Post-doctoral and Fellowships

東京大学 THE UNIVERSITY OF TOKYO

→Other Fellowships

→ Matsumae International Foundation

Affiliated with institution in the home country

No experience living in Japan

https://www.mif-japan.org/en/fellowship/announcement/

→ Job opening in JREC-IN Portal

All academic positions opened by institutions in Japan

Funded by institution
Funded by research fundings

https://jrecin.jst.go.jp/seek/SeekTop?ln=1

4. Tips for successful application

1. Scholarships

	Selection criteria	Important notes
→ MEXT scholarships	GPA score Graduated university Conferences and publications English language skill	Contact prospective supervisor ASAP (6 months before)
→ JSPS fellowship for young researchers	List of publications Research plan	Prepare your proposal (2-3 months before)
→ Various other scholarships	GPA score Japanese language skill	Mostly can be applied after enrollment

4. Tips for successful application

2. Post-doctoral and Fellowships

	Selection criteria	Important notes
→ JSPS Postdoctoral Fellowships for Research in Japan	List of publications Research plan	Prepare your proposal (2-3 months before)
→ Specific institution fellowship	List of publications Research plan	Research proposal follow the institutes field
→ Excellence young researcher program	List of publications Research plan	Tend to be merit based (recommended for foreign researchers)
→ J-RECIN Portal and other fellowships	List of publications Research plan	Position open by the university or the professor (connection is important)

4. Tips for successful application

東京大学
THE UNIVERSITY OF TOKYO

3. Research grants and funding

→ JSPS grant-in-aid funding

→ JST strategic basic research funding

→ Other funding programs

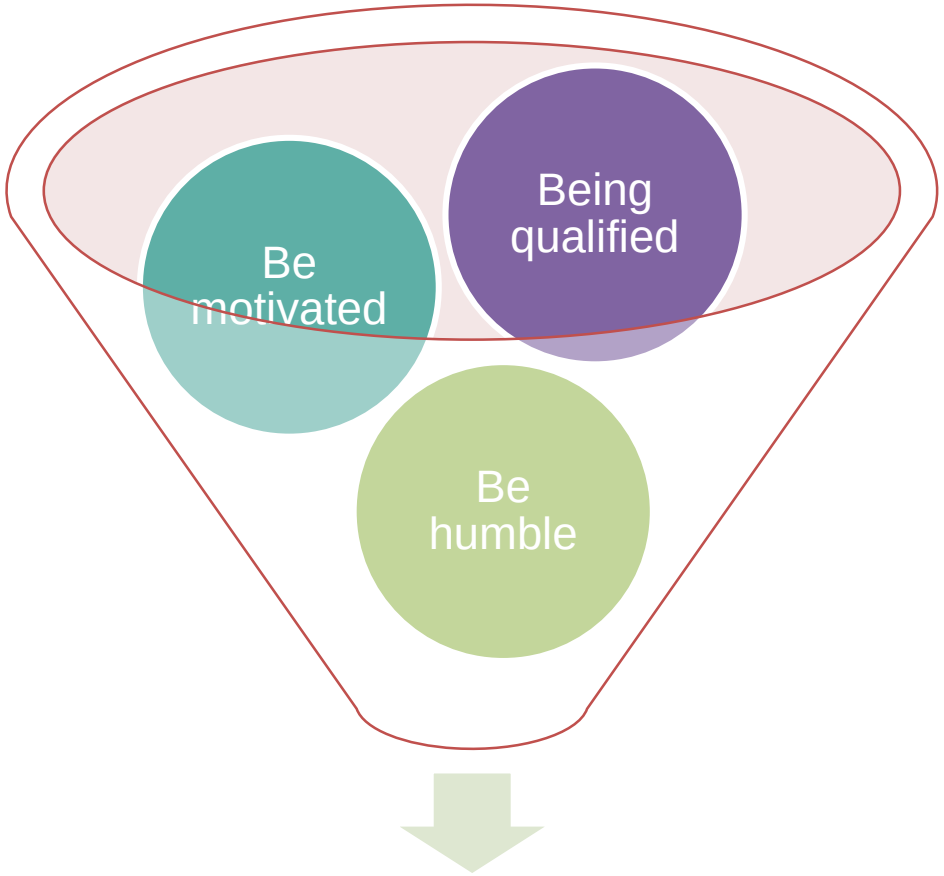
Selection criteria

List of publications
Research plan

Important notes

Advisable to follow the research trend in Japan and the World

Ethics and Motivation



Ethics and sustainable motivation

感謝！
Thank you.

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