

# Title and Executive Summary

A. S. M. A. Haseeb  
 Research Clusters, IPPP and  
 Dept. of Mechanical Engineering  
 University of Malaya



Workshop on Research Grant Proposal Writing: Attaining Essential Quality for Success, Research Clusters, IPPP, University of Malaya, 06 Nov 2019

## References

- S. Finger, Advice on Writing Proposals to the National Science Foundation, Carnegie Mellon University, April 2015
- Adventures in Grantseeking: NSF, TAMU – Texarkana, May 2018
- G. A. Hazelrigg, Honing Your Proposal Writing Skills, National Science Foundation
- NSF, A Guide for Proposal Writing
- 2013 NSF CAREER Proposal Writing Workshop, University of South Florida
- Grant Proposals (or Give me the money!), The Writing Center, University of North Carolina at Chapel Hill
- Art of Grantsmanship, Human Frontier Science Program
- A. M. Coelho, Jr., Formula for Grant Success, <<https://www.youtube.com/watch?v=A1Zb517qGs>>
- Writing Guide for NSERC Grant Applications, The Word Company, Ottawa
- T. M. Pinkston, Academic Career Workshop: Writing Research Proposals, USC
- Regents of the University of Michigan, Updated in 2014 by Christine Black (Originally produced by Don Thackrey)
- Principal Investigators Association, Executive Report: How to Write a Winning NSF Proposal
- University of Sheffield, Technical Report Writing for Engineers
- <https://www.futurelearn.com/courses/technical-report-writing-for-engineers/0/steps/40128>
- <https://www.thebalancesmb.com/writing-goals-for-grant-proposal-2501951>
- S. A. Jones, Proposals, Biomedical Engineering, Louisiana Tech University
- <https://www.editage.com/insights/how-to-write-a-problem-statement-for-my-research>
- <https://chandoo.org/forum/threads/the-connections-between-milestone-activities-deliverables-project-phase.16738/>
- Univ of Michigan, The Proposal Writer's Guide: Overview
- UNISA, Engineering research project: proposal
- Elena Kallestinova, How to Write a Compelling Grant Abstract, Yale Center for Teaching and Learning
- RT Erasmus, Writing a Grant Funding Proposal: General Overview, Choosing the topic, Abstract and Executive Summary



# Title

## The Title

- Extremely **important** and needs great care → will be **read first**
- Captures **nature of work** → must relate to **specific research question being studied**
- Should **relate** to grant funder's application **call**
- "Good title" → **fewest** possible **words** that adequately describe contents of proposal
- **Accuracy** of title → Very important
- **Concise, specific** and **informative**
- Usually emerges when proposal has been completed

**The Title...****How to Prepare the Title**

- List → most **important words**
- Think of a title that contains these words
- **NEVER** contains → abbreviations, chemical formulas, proprietary names or jargon
- **Think, rethink** of title before submitting
- Be very **careful of grammatical errors**
- **Waste words** should not be used → eg, 'studies on', 'investigations on', 'a', 'an', 'the' etc.
- **Avoid** use of word like, **"using"**

**The Title...****Title**

Original	Revised	Remarks
Preliminary observations on the effect of Zn element on anticorrosion of zinc plating layer	Effect of Zn on anticorrosion of zinc plating layer	Long title distracts readers. Remove all redundancies such as "studies on", "the nature of", etc.
Action of antibiotics on bacteria	Inhibition of growth of <i>mycobacterium tuberculosis</i> by streptomycin	Titles should be specific. Think about "how will I search for this piece of information" when you design the title.
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	"English needs help. The title is nonsense. All materials have properties of all varieties. You could examine my hair for its electrical and optical properties! You MUST be specific. I haven't read the paper but I suspect there is something special about these properties, otherwise why would you be reporting them?" – the Editor-in-chief

## Title formation

### Organic matter for sustainable agriculture in the tropics

Residual accumulation of herbicide residue threatens the sustainability of rice-wheat rotation systems in northern Bangladesh. The incorporation of green manure into the soil may stimulate the co-mineralization of pesticides and their metabolites. A two year field experiment was conducted on the experimental station of the Bangladesh Rice Research Institute to evaluate the effects of the application of *Azolla pinata* and *Azolla carolingiana* as green manure on the mineralization and co-metabolization of the herbicides propanil and butachlor in a flooded rice soil.....

## Title formation

### Organic matter for sustainable agriculture in the tropics

**Studies on the effects of *Azolla pinata* and *Azolla carolingiana* green manure on the mineralization and co-metabolization of Propanil and Alachlor in a flooded Trophaept under *Oryza sativa* L. - *Triticum aestivum* L. rotation in Nangara village of Northern Bangladesh**

Residual accumulation of herbicide residue threatens the sustainability of rice-wheat rotation systems in northern Bangladesh. The incorporation of green manure into the soil may stimulate the co-mineralization of pesticides and their metabolites. A two year field experiment was conducted on the experimental station of the Bangladesh Rice Research Institute to evaluate the effects of the application of *Azolla pinata* and *Azolla carolingiana* as green manure on the mineralization and co-metabolization of the herbicides propanil and butachlor in a flooded rice soil.....

### Title formation

What	Why/Object	-- System/crop ---- Soil -----Area -----		
Where <b>General</b>				
Org. matter	Sustainability	Rice-Wheat	Soil	Asia
N <sub>2</sub> fixation	Soil health	Rice	Flooded soil	South Asia
Green manure	Agro-chemicals	Lowland rice	Inceptisol	Bangladesh
Azolla	Pesticides	<i>Oryza sativa</i>	Tropaquept	N-Bangladesh
<i>A. pinata</i>	Herbicides	<i>Triticum aestivum</i>		Nangara
<i>A. caralingiana</i>	Mineralization			
<b>Specific</b>	Propanil			
	Alachlor			

Residual accumulation of herbicide residue threatens the sustainability of rice-wheat rotation systems in northern Bangladesh. The incorporation of green manure into the soil may stimulate the co-mineralization of pesticides and their metabolites. A two year field experiment was conducted on the experimental station of the Bangladesh Rice Research Institute to evaluate the effects of the application of *Azolla pinata* and *Azolla carolingiana* as green manure on the mineralization and co-metabolization of the herbicides propanil and buthachlor in a flooded rice soil.....

### Title formation

What	Why	Where (1)	Where (2)	Where (3)
<b>General</b>				
Org. matter	Sustainability	-- System/crop ---- Soil -----Area -----		
N <sub>2</sub> fixation	Soil health	Rice-Wheat	Soil	Asia
Green manure	Agro-chemicals	Lowland rice	Flooded soil	South Asia
<b>Azolla</b>	Pesticides	<i>Oryza sativa</i>	Inceptisol	Bangladesh
<i>A. pinata</i>	Herbicides	<i>Triticum aestivum</i>	Tropaquept	N-Bangladesh
<i>A. caralingiana</i>	Mineralization			Nangara Village
<b>Specific</b>	Propanil/Alachlor			

**Select main words for title**

- As general as permissible
- As specific as required

### Title formation

What	Why	Where (1)	Where (2)	Where (3)	
<b>General</b>			-- System/crop	---- Soil -----Area -----	
Org. matter	Sustainability				
N <sub>2</sub> fixation	Soil health	Rice-Wheat	Soil	Asia	
Green manure	Agro-chemicals	Lowland rice	Flooded soil	South Asia	
	Pesticides	<i>Oryza sativa</i>	Inceptisol	Bangladesh	
<b>Specific</b>	<b>Azolla</b>	<b>Herbicides</b>	<i>Triticum aestivum</i>	Tropaquept	N-Bangladesh
	<i>A. pinata</i>	<b>Mineralization</b>			Nagara Village
	<i>A. caralingiana</i>	Propanil/Alachlor			

Select main words for title

- As general as permissible
- As specific as required

### Title formation

What	Why	Where (1)	Where (2)	Where (3)	
<b>General</b>			-- System/crop	---- Soil -----Area -----	
Org. matter	Sustainability				
N <sub>2</sub> fixation	Soil health	Rice-Wheat	Soil	Asia	
Green manure	Agro-chemicals	Lowland <b>Rice</b>	Flooded soil	South Asia	
	Pesticides	<i>Oryza sativa</i>	Inceptisol	Bangladesh	
<b>Specific</b>	<b>Azolla</b>	<b>Herbicides</b>	<i>Triticum aestivum</i>	Tropaquept	N-Bangladesh
	<i>A. pinata</i>	<b>Mineralization</b>			Nagara Village
	<i>A. caralingiana</i>	Propanil/Alachlor			

Select main words for title

- As general as permissible
- As specific as required

### Title formation

What	Why	Where (1)	Where (2)	Where (3)
<b>General</b>			-- System/crop	---- Soil -----Area -----
Org. matter	Sustainability			
N <sub>2</sub> fixation	Soil health	Rice-Wheat	Soil	Asia
Green manure	Agro-chemicals	Lowland <b>Rice</b>	<b>Flooded soil</b>	South Asia
	Pesticides	<i>Oryza sativa</i>	Inceptisol	Bangladesh
<b>Specific</b>	<b>Azolla</b>	<b>Herbicides</b>	<i>Triticum aestivum</i>	Tropaquept
	<b>Mineralization</b>			N-Bangladesh
<i>A. pinata</i>				Nangara Village
<i>A. caralingiana</i>	Propanil/Alachlor			

Select main words for title

- As general as permissible
- As specific as required

### Title formation

What	Why	Where (1)	Where (2)	Where (3)
<b>General</b>			-- System/crop	---- Soil -----Area -----
Org. matter	Sustainability			
N <sub>2</sub> fixation	Soil health	Rice-Wheat	Soil	Asia
Green manure	Agro-chemicals	Lowland <b>Rice</b>	<b>Flooded soil</b>	South Asia
	Pesticides	<i>Oryza sativa</i>	Inceptisol	<b>Bangladesh</b>
<b>Specific</b>	<b>Azolla</b>	<b>Herbicides</b>	<i>Triticum aestivum</i>	Tropaquept
	<b>Mineralization</b>			N-Bangladesh
<i>A. pinata</i>				Nangara Village
<i>A. caralingiana</i>	Propanil/Alachlor			

Select main words for title

- As general as permissible
- As specific as required

## Title formation

What	Why	Where (1)	Where (2)	Where (3)
<b>General</b>			-- System/crop	---- Soil -----Area -----
Org. matter	Sustainability		Rice-Wheat	Soil
N <sub>2</sub> fixation	Soil health		Lowland Rice	Flooded soil
Green manure	Agro-chemicals		Oryza sativa	Inceptisol
	Pesticides		Triticum aestivum	Tropaquept
<b>Specific</b>	<b>Azolla</b>	<b>Herbicides</b>		<b>Bangladesh</b>
	A.pinata	Mineralization		N-Bangladesh
	A.caralingiana	Propanil/Alachlor		NagaraVillage

**Select main words for title**

- As general as permissible
- As specific as required

**Effect of azolla on the mineralization  
of herbicides in a flooded rice soil  
of Bangladesh**

# Keywords



- Keywords → for electronic **searches** and **indexing**
- Use keywords that are **specific**
- Should reflect what is **essential** about the proposal

## *Key Words*

**Use relevant words of lower  
hierarchy for key word list**

→ different from title words

→ 5 key words

## Key Words

What	Why	Where (1)	Where (2)	Where (3)
<b>General</b>			<b>-- System/crop</b>	<b>----- Soil -----</b>
Org. matter	Sustainability			<b>----- Area -----</b>
N <sub>2</sub> fixation	Soil health	Rice-Wheat	Soil	Asia
<b>Green manure</b>	Agro-chemicals	Lowland <b>Rice</b>	<b>Flooded soil</b>	South Asia
<b>Azolla</b>	Pesticides	<i>Oryza sativa</i>	<b>Inceptisol</b>	<b>Bangladesh</b>
<b>Specific</b>	<b>Herbicides</b>	<i>Triticum aestivum</i>	<b>Tropaquept</b>	<b>N-Bangladesh</b>
<i>A. pinata</i>	<b>Mineralization</b>			<b>Nangara</b>
<i>A. caralingiana</i>	<b>Propanil/Butachlor</b>			

**Effect of azolla on the mineralizaion of herbicides in a flooded rice soil of Bangladesh**

Use relevant key words of lower hierarchy for key word list

- different from title words
- 5 key words

## Key Words

What	Why	Where (1)	Where (2)	Where (3)
<b>General</b>			<b>-- System/crop</b>	<b>----- Soil -----</b>
Org. matter	Sustainability			<b>----- Area -----</b>
N <sub>2</sub> fixation	Soil health	Rice-Wheat	Soil	Africa
<b>Green manure</b>	Agro-chemicals	Lowland <b>Rice</b>	<b>Flooded soil</b>	West Africa
<b>Azolla</b>	Pesticides	<i>Oryza sativa</i>	<b>Inceptisol</b>	<b>Bangladesh</b>
<b>Specific</b>	<b>Herbicides</b>	<i>Triticum aestivum</i>	<b>Tropaquept</b>	<b>N-Bangladesh</b>
<i>A. pinata</i>	<b>Mineralization</b>			<b>Naranga</b>
<i>A. caralingiana</i>	<b>Propanil/Butachlor</b>			

**Effect of azolla on the mineralizaion of herbicides in a flooded rice soil of Bangladesh**

Use relevant key words of lower hierarchy for key word list

- different from title words
- 5 key words

**5-6 Key words:**

***A. pinnata*, *A. Carolongiana*, Propanil, *Oryza sativa*, Inceptisol**

## Key Words

What	Why	Where (1)	Where (2)	Where (3)
<b>General</b>			-- System/crop	----- Soil -----
Org. matter	Sustainability			----- Area -----
N <sub>2</sub> fixation	Soil health		Rice-Wheat	Soil
Green manure	Agro-chemicals		Lowland Rice	Flooded soil
	Pesticides		Oryza sativa	Inceptisol
				Bangladesh
<b>Specific</b>			Triticum aestivum	Tropaquept
Azolla	Herbicides			N-Bangladesh
A. pinata	Mineralization			Naranga
A. caralingiana	Propanil/Butachlor			

Effect of azolla on the mineralizaion of herbicides in a flooded rice soil of Bangladesh

Use relevant key words of lower hirarchy for key word list  
 → different from title words  
 → 5 key words

Key words ... in alphabetical order !

*A. pinnata, A. carolongiana, Inceptisol, Oryza sativa, Propanil*

## Introduction

What	Why	Where (1)	Where (2)	Where (3)
<b>General</b>			-- System/crop	----- Soil -----
Org. matter	Sustainability			----- Area -----
N <sub>2</sub> fixation	Soil health		Rice-Wheat	Soil
Green manure	Agro-chemicals		Lowland Rice	Flooded soil
	Pesticides		Oryza sativa	Inceptisol
				Bangladesh
<b>Specific</b>			Triticum aestivum	Tropaquept
Azolla	Herbicides			N-Bangladesh
A. pinata	Mineralization			Nangara
A. caralingiana	Propanil/Butachlor			

Effect of azolla on the mineralizaion of herbicides in a flooded rice soil of Bangladesh

Use relevant key words of higher hierarchic order in the Introduction

# Executive Summary / Abstract

*Extremely important part of proposal – reviewers will  
very much be influenced by this*

- May be **used to decide** whether proposal should receive further serious consideration
- Must provide most **important message** you want to convey
- Must **entice reviewer** to read more about proposal
- **Accurate** description of proposed work
- Highlights **importance** and relevance of research
- Informative to people working in same or related fields
- Guide to proposal

- **Condensed** version of proposal → self-contained description of **problem** statement, **objectives**, **methodology**, **expected output**, **significance**
- May follow → “**Problem- Purpose -Method- Application**” structure
- **Balanced**: all major areas are covered
- **Clear** and **easy** to understand → not verbose
- **Focused**: no superfluous information is covered
- Able to **stand on its own**
- **Succinct** and **concise**

## Executive Summary/Abstract

Provides Answers to These Questions:

What do you intend to do?	<b>Background</b>	
Why is the work important?	<b>Problem</b>	
What has already been done?	<b>Objectives</b>	
	<b>Prelim. Results</b>	← If any
How are you going to do the work?	<b>Strategy</b>	
	<b>Significance</b>	← Methodology

***Executive Summary/ abstract is not an introduction → summary of whole grant application***

## Signals of the Structure

<p><b>Problem</b></p> <p>... has not been determined          ... is unclear          X is limited by ...          The questions remains if...</p> <p><b>Objectives</b></p> <p>Our objective is ...          We propose to ...          We will examine the hypothesis that ...</p>	<p><b>Strategy</b></p> <p>We will achieve this goal by ...          Specifically, we will ... by ...          Our general strategy is to ...</p> <p><b>Significance</b></p> <p>... is important for ...          These results may play a role in ...          Y can be used to ...          ... will provide insights into...</p>
---	--

## Example 1

Global warming is arguably one of the most pressing concerns of our time. However, we lack an effective model to predict precisely by how much the temperature will rise as a consequence of the increased levels of CO<sub>2</sub> and other factors. The width of this range is due to several uncertainties in different elements of the climate models, including the variability in the Sun's rate of energy output. To gain greater insight into the relationship between solar energy output and global temperature, we propose to launch the internationally led ABC satellite in April 2018. Our aim is to collect for 2 years data on the solar diameter and shape, oscillations, and photospheric temperature variation. We will assess these data to model solar variability. Our findings will dramatically advance our understanding of solar activity and its climate effects.

**Background**

**Problem**

**Objectives**

**Strategy**

**Significance**

## Example 2

X is a major human pathogen, which infects over 100 million people per year, leading to high morbidity and mortality. Current therapies for X are expensive, poorly tolerated, and only partially effective in controlling the pathogens and in limiting disease. Recently, we and other succeeded in establishing a system to grow X in cell culture. These systems will allow us to completely dissect the life cycle of X. Our initial characterization of cell culture-produced X indicates unusual physical properties. Understanding of X's life cycle will aid in the development of improved pharmaceuticals.

## Avoid in executive Summary/ Abstracts

- Descriptions of past accomplishments
- Any information not covered in your proposal
- Any confidential information
- Graphs or images
- Citations