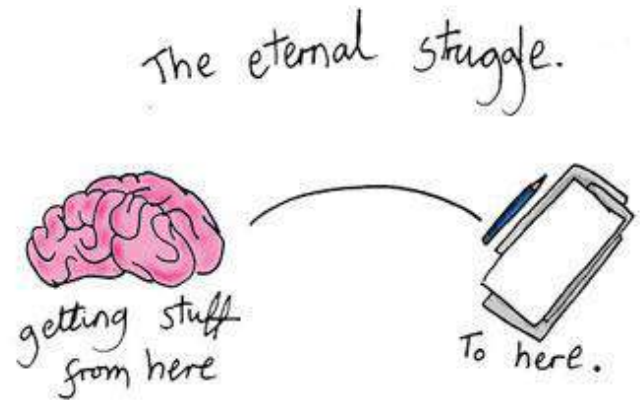


Methodology courses for postgraduate student 2016-2017

Congratulation,
congratulation and
congratulation....to all of you.

Welcome and well come back
to the academic line and to
the research scholar.

Tough but exciting work



Writing and presentation of academic proposal

Where to start?

What we have to do?

How deep the information?

But.....importantly "what is/are the problem statement?"



Course objectives

- Describe an effective research proposal.
- Describe main components of a research proposal.
- Write an effective research proposal.
- What to include in the presentation of proposal

Proposal writing



"I call it, 'Research Paper Lite.' It contains a third fewer facts, but you'd never know it."



"READING THIS GRANT PROPOSAL, I CONCLUDE THAT YOU MUST HAVE GOTTEN AN A IN CREATIVE WRITING."



"OUR PROPOSAL DIDN'T GET THE GRANT, BUT THEY WANT US TO TEACH PROPOSAL WRITING."

About me....

- *ASSOCIATE PROFESSOR*
- *DR. COSWALD STEPHEN SIPAUT @ MOHD NASRI*
 - Chemical Engineering Program
 - Faculty of engineering
 - UMS
 - *CHEMISTRY AND MATERIAL TECHNOLOGY*
- Graduated:
 - Liverpool university (BSc),
 - Victoria Manchester University (MSc)
 - UMIST, Manchester (PhD)

Brief achievements (researcher since 2001).

- Journals/Proceedings/Book chapters > 200
- Patents = 4
- Total project >50
- Current projects = 9
- Graduated/ongoing research students >25
- Research Proposals Submitted > 50, gained > 40
- Awards
- Evaluator for research proposal in UMS and Malaysia
- Journal reviewer international and national

Research interest

- Nano-chemistry
- Polymer and material technology
- Molecular imprinted polymer
- Polymeric foam
- Synthesis and characterization of materials and polymer



It's a proposal, so expect it to be
changed

Draft proposal
then
final proposal

Benefit of Good research or academic proposal

- Can complete your research on time.
- Can help your supervisor for research grant money

- “Successful proposal writing is not complicated. It does, however, take a considerable amount of preparation and good organization”
- (Eric Rinehart and Barbara Bouie-Scott)

What do I need to prepare before writing the proposal?

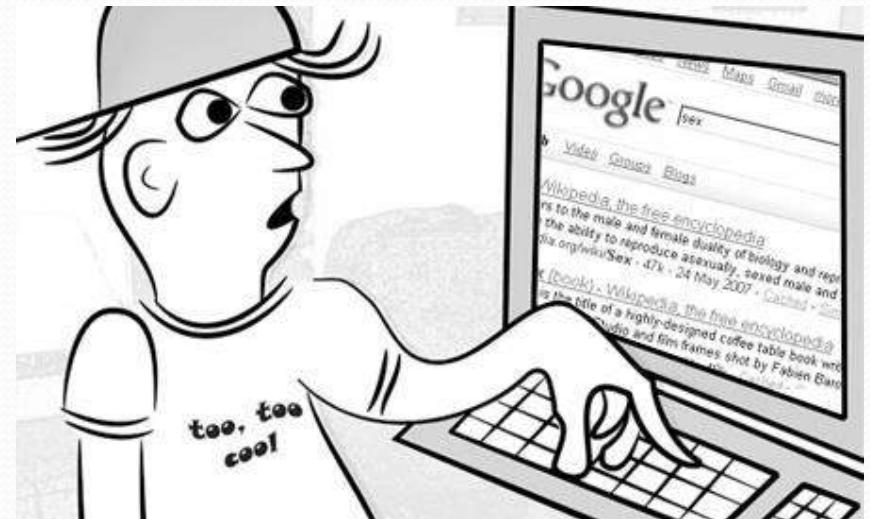
- Read the guidelines
 - Different organizations may have slightly different formats
 - Special requirements
 - Max no. of words
 - Quantum of budget
- Read examples of proposals
- Decide on writing styles
 - Persuasive, theoretical, graphical, simple/complex, short/lengthy etc.

Essential Contents of Proposal

- **Title**
- **Introduction/Background information/literature review**
- **Problem statement????????????????**
- **Objectives**
- **Research approach (Materials & Methods)**
- **Flowchart on the methodology**
- **milestone**
- **Project activities : *include the possible manuscript that will be submitted***
- **Project cost: if wanted to submit for grant application.**

TITLE - proposal

- Must highlight the main research area.
- Not focusing on the specific objectives but rather than the overall objective.
- Understanding the research problem first....then the title will be very clear to address the issues



BUT DAD, THAT IS THE MOST SEARCHED KEYWORD ON SEARCH ENGINES...

Writing an proposal: What to do?



Finding a research Area/topic

- The more you know, the better is your proposal
- Require experience (time): that's why you need a supervisor .
- Rule of thumb: Selection of topic based on
 1. Your interest
 2. Something u know about

Finding a research topic/Area

- How to find ?

Read broadly.

Start with review articles.

Keep in mind what interests you.

Many issues may seem relevant.

Introduction/Background information

- Introduction
 - To answer *What* and *Why* and lead the reader to *How*
- Background
 - History, Industry or Process background

Literature Review

- Not merely a summary of books or articles
 - To describe development of the subject
- To evaluate and interpret existing research (not just repeat it!)
 - Express your opinion (describe areas of agreement or disagreement)
- To identify your place in relation to others works
 - Organize review by topic (not by person, group or country!!)

Problem statement or research problem

- What led to the question
 - Should be clear and concise
 - Reader generally develops understanding of the research needs at this stage
 - Contents should be reflected/developed in the subsequent chapters (literature review and methodology)

Identify a Research Problem/Problem Statement

- Probably the most difficult part !!
- Narrow many issues to only ONE.
- Read more but selectively.
- Make observations for finding problematic relations among phenomena. Ask 5-W questions like:
 1. What are the variables involved?
 2. Their magnitude?
 3. How it happen?
 4. Why it happen?
 5. When it happen? When it not happen?
 6. Where it happen?
- A true research is about understanding a phenomena. (Evaluative/Feasibility studies should be avoided).

Defining a Problem

- A problem statement should reveal your purpose:
 1. To understand a set of phenomena.
 2. To describe interrelations between variables.
 3. To offer potential solution.
 4. To limit range of study.

A problem statement is composed of words about finding out.

How to write it? – Problem Statement

- A statement about relations among measurable variables
- Have to argue that relations between variables are problematic (this represent a research problem), thus proposes to get further evidence.

Example

Application or usability

Hydroxyapatite (HAp) is an interesting material for application in implant materials replacing the traditional restorative dental materials including amalgam, composite (resin), glass ionomer, gold or gold alloy, and porcelain.

Problem statement

Synthetic HAp normally used as materials for bone regeneration in different fields such as orthopaedic surgery, dentistry, maxillofacial surgery and reconstructive surgery. Several studies have been conducted on various techniques to synthesize a porous HAp with minimum pore size. It was reported that HAp with smaller pore and smaller interconnection size allowed a faster occurrence of bone tissue. However, there is no studies has been made or reported so far on the porous HAp at extremely smaller pore cell sizes (<100 nm) using polyurethane (PU) foam as a template.

Objective and scope

- Objectives
 - What you want to find out/achieve
 - General and specific
 - Measurable
 - Should complement the problem statement
- Scope ~ Within what limits / conditions/ parameters/ sample size etc.

EXAMPLE

Reserach objectives

The main objective of this research is to generate nanoporous HAp cement with smaller pore sizes in nanometer. This will be conducted by using the established method for synthesizing HAp liquid and using designed open cell polyurethane foam as a template for the coating HAp.

More specific objective:

1. To **prepare** open-cell PU foam with cell size range between 100 μm to 100nm
2. To **evaluate** the parameters controlling cell size, structure and properties of nanocell PU foam.
3. To **investigate** techniques to generate nanoporous HAp using PU foam as a template (coating techniques).
4. To **assess** the properties of nanoporous of HAp cement generated.

Materials & Methods

- Describe the data needed to test a hypothesis or to answer a question.
- Describe the control group.
- Include a flow diagram if can.
- Explain not only what you do (procedure), but why you do it!
- Explain how data are analyzed and include statistical analysis
- **MUST** include flowchart of your experiment and analysis

- Methodology ~ Also known as Materials and Methods ~ Important to be clear and brief ~ A flowchart is always helpful.
- Materials ~ List out materials needed (brand, origin)

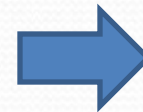


Experimental/Simulation works

- List out procedures for each method
- Enough information to ensure repeatability
- List out quantity of materials used (avoid 'some', 'a few' etc.)
- Name the equipment and procedures clearly ~
Brand, origin.
- If procedure is well known, just name it

Milestones

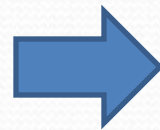
- Think of what can you complete in every 6 months
- From the planning of your research.
- TARGET!!!



No	Milestones	Dates
1	Complete parameter determination on PU foam processes and characterisation of the PU foam produced: formulation including materials, its ratio, concentration, blowing agent, surfactant to obtain desire cell structure and size. (open cell structure and cell size with 100 nanometer to 100 micrometer)	MAY 2015
2	Complete synthesis and characterization of the HAp liquids that suitable for the use in the nanoporous HAp cement.	DECEMBER 2015
3	Complete formation and characterisations of nanoporous HAp cement using design PU foam as a template.	JUNE 2016
4	Complete correlation and conducting the final report	NOVEMBER 2016

Research activities/Gannt Chart

- Will show examples



Budget

- Research budget proposal
 - Research material cost
 - Staff cost
 - Utility cost
 - Travel and transportation cost
 - Special service cost

Presentation of proposal

- Remember it is a proposed work!!!! Can be changed
- Content of presentation will be the same as in the writing.

Concentrate on the

- 1. the problem statement
- 2. literature review findings: what are the un study issues
- 3. objective/s
- 4. methods: how to gain data and to answer the objectives.
- 5. The research activities or planning to complete the research

What it takes to make your life easy?

Systematic
Consistency
Clarity & Objectivity
Some intelligence

How to make your life easier?

Read, compile, write

- **Read** one paper a day (keeps trouble away)
- Compile in a **table** (introduce evaluation criteria)
- Develop **master reference list**
- **Keep writing**

Time saved: 2-6 months

TIPS for proposal writing

- Title
- Introduction of your research (500 words)
- Literature review (1000-1500 words)
- Problem statement (200-300 words)
- Methodology (250-500 words)
- Reference (all references must be cited in the text)
- Flowchart (1 page)
- Gantt Chart (1 page)
- Milestones (0.5 page)

Last words...

...Start writing today (never tomorrow)



Good Luck