

FRGS Assessment Criteria

Criteria			
1. Title	✓	✗	Comments
Specific in nature reflecting fundamental issues to be resolved and novelty of the proposal			<ul style="list-style-type: none"> • The word 'novel' should not be used in the title. Spell out the Novel synthesis. • The novelty or uniqueness is not obvious. There are many similar proposals that has been carried out recently.
Brief and reflects the content of the proposal			<ul style="list-style-type: none"> • Similar work has been done by the group and published: 'Phytosynthesis of Iron Nanoparticle from A verrhoa Bilimbi Linn by

2. Executive Summary	✓	✗	Comments
Problem statement			<ul style="list-style-type: none"> • The problem statement is no explicitly expressed. Is it related to food security? • Problem statement is not highlighted.
Objectives			<ul style="list-style-type: none"> • Objectives do not clearly support the problem statement
Methodology			<ul style="list-style-type: none"> • Aspect of methodology is missing
Expected output/outcome/implication			<ul style="list-style-type: none"> • Highlight the possible outcome
Significance of output			<ul style="list-style-type: none"> • Significance of output not highlighted

3. Research Background	✓	✘	Comments
Elaboration of title			
Clarity of problem statement and research question/hypothesis/theoretical framework (if applicable)			<ul style="list-style-type: none"> • Literature review is too lengthy and without focus. • Problem statement is not reflected as the outcome of the review. • Problem statement is related more to application rather than the fundamental of the system • Hypothesis are not based on a scientific premise. • Research questions are too general and not specific to solving fundamental issues of properties of smart material. • Why are the hypothesis and research questions be focused only to restoration of historic buildings only? • The scope of research is too limited. • Literature review is too lengthy and not focus to current proposal. It has included the whole scenario of Green Growth.
Cited most recent (last 5 years) related references			<ul style="list-style-type: none"> • References are not so recent • References are inadequate
In line with government policy, national agenda and global aspiration (can help alleviate problem at local, national or world level)			<ul style="list-style-type: none"> • Which aspect of research is related to global issues?

4. Objectives	✓	✗	Comments
Specific, Measurable, Achievable, Realistic and within Time-frame (SMART)			<ul style="list-style-type: none"> • The objectives do not seem to support the problem statement • Objectives are too broad and may not be achievable within time frame. • Rephrase the objectives so that it is more realistic and manageable.
Relate to problem statement/research question			<ul style="list-style-type: none"> • Research questions related to solving research problem are not mentioned. Hypothesis statements should also be proposed.

5. Methodology	✓	✗	Comments
Clear and detailed description of methodology (may consist of field work, sampling techniques, interview session, analysis, lab work of different phases, experimental protocol, statistical analysis)			<ul style="list-style-type: none"> • Methodology statements are too lengthy and not focus to address the achievement of the objectives. The format of the methodology seemed adopted from a thesis. • Sentences in past tense: "The system was then will be warmed up (60°C) to evaporate the diethyl ether"; "Washing will be repeated until no chloride traces were detected with silver nitrate" • The methodology statements do not directly address each objectives. There are sentences written in past tense: "The infrared absorption peaks were obtained from spectrometer." • The methodology statements do not clearly address the objectives as listed. The flow of methodology is not sequential with the objectives
Able to achieve research objectives			<ul style="list-style-type: none"> • The methodology to achieve objective 1 is not vividly mentioned. A catalytic mechanism is the sequence of elementary reactions by which a catalytic reaction proceeds. This is missing. • Flowchart does not include the approach to solving objective 1.
Include research design, flow chart, Gantt chart, activities and milestones			<ul style="list-style-type: none"> • Flowchart is not focussing on the flow of the methodology, research activities and milestones.

6. Expected Results	✓	✗	Comments
New theory or new findings/knowledge			<ul style="list-style-type: none"> • Some quantitative aspect is required to strengthen the claim. • Explanation of expected results is not convincing. It is just a mere statement without any supporting facts. • The statement of the suggested output is too qualitative. The impact could come through the quantitative aspect.
Publication in indexed journals (top tier)/Intellectual property			<ul style="list-style-type: none"> • Status or standing of indexed journals should be mentioned.
Human capital - masters or PhD			<ul style="list-style-type: none"> • A three year project should have a PhD candidate.
Impact on society, economy and nation			<ul style="list-style-type: none"> • There is no data or statements to reflect the impact.

7. Track record and composition of Team	✓	✗	Comments
Evidence of previous successful research projects			<ul style="list-style-type: none"> The second grant is related to current proposal
Qualification and rank of researchers			<ul style="list-style-type: none"> Should include some senior members
Well balanced team			<ul style="list-style-type: none"> Should include another team member to support objective 4. If not available in PI 's organization, then seek elsewhere.

8. Quality of Proposal	✓	✗	Comments
Meticulous			<ul style="list-style-type: none"> • Proposal writing is poor especially in the methodology section. There is no connectivity between objectives and stages of the methodology • Proposal needs improvement especially in the methodology section; research activities and mile stones • Proposal lacks in the methodology section to support objective 1 • Proposal could be improved on the methodology section. There should be clear steps to address each objective. • The proposal lacks the novelty. Objective no. 4 has some novelty, but it must focus on the issues of the fundamental aspect.
Proper use of language (grammar, spelling, sentence construction)			<ul style="list-style-type: none"> • PI should be more sensitive and responsible to the proper usage of language.
Good formatting and presentation			<ul style="list-style-type: none"> • Formatting and presentation are haphazard

9. Elements of FRGS criteria	✓	x	Comments
Novel, cutting edge, high impact			<ul style="list-style-type: none">• Aspect of high impact is lacking.• The novelty and fundamental are not explicitly highlighted.• Description of cutting edge research in the required field is not provided.

Activity

Synthesis of TiNT through hydrothermal method and BN-TiNT through CVD method	01/07/2018	30/11/2018
Characterizations of BN-TiNT photocatalyst	01/09/2018	31/01/2019
Characteristic studies of BN-TiNT photocatalyst	01/02/2019	31/05/2019
Correlation study of BN doping and BN-TiNT photocatalytic activities	01/03/2019	30/06/2020
Photocatalytic studies of TNT-BN under UV light and visible light	01/06/2019	30/11/2019
Modelling using first principle calculation	01/12/2019	31/03/2020

Establishing A Novel Low Carbon Option for Historic Buildings Conservation: Fundamental Repair Materials Characterization and Environmental Maintenance Impact (EMI) Appraisal Approach	
Novel synthesis of edible propylene glycol diester through lipase-biocatalyzed esterification of biodiesel-based methyl ester with propylene glycol and the reaction mechanism elucidation	Elucidation of reaction mechanism in the synthesis of edible propylene glycol diester through lipase-biocatalyzed esterification of biodiesel-based methyl ester with propylene glycol
Preparation and characterization of halal based clay nanoparticle (dwi-funtionalized montmorillonite) towards novel food packaging technology	Halal based dwi-funtionalized montmorillonite clay nanoparticles towards efficient food packaging technology
Characterization of the Temperature Dependence and Absorption Coefficients of In(1-x)Ga(x)As and GaSb Thermophotovoltaic (TPV) Cells for Heat-Electricity Conversion in thermal power plant into electricity	Temperature Dependence and Absorption Coefficients of In(1-x)Ga(x)As and GaSb Thermophotovoltaic (TPV) Cells for Heat-Electricity Conversion in thermal power plant
Characteristic and Mechanism Studies of Boron nitride-dope Titanium Nanotubes Visible Light Photocatalysis	Mechanism of Visible Light Photocatalysis in Boron nitride doped Titanium Nanotubes

Milestones and Dates		
Description	Date	Cumulative Project Completion Percentage(%)
Completion of synthesis and characterisation of BN-TiNT photocatalyst	31/01/2019	25
Completion of characteristic studies of BN-TiNT photocatalyst	31/05/2019	50
Completion of Photocatalytic studies of TNT-BN under UV light and visible light	30/11/2019	75
Completion of Correlation study of BN doping and BN-TiNT photocatalytic activities	30/06/2020	100

Connectivity between Objectives and Methodology

- **Objective (s) of the Research**

- 1. To identify the fundamental of encapsulating ginseng inside PDLA microcapsules to be incorporated with PLLA scaffold
- 2. To investigate the effect of different concentrations of ginseng, PDLA and PLLA on physico-chemical and mechanical properties of the ginseng-PDLA/PLLA scaffold
- 3. To determine the effect of different concentrations of ginseng, PDLA and PLLA on degradation and drug release mechanisms of the ginseng-PDLA/PLLA scaffold
- 4. To assess the biological mechanism of the ginseng-PDLA/PLLA scaffold in enhancing cell viability and cell proliferation

- **Methodology**

- **Sample preparation**

- Ginseng encapsulated PDLA microcapsules will be prepared using water-oil-water or oil-water-oil double emulsion techniques. PDLA (500 mg) will be dissolved in its.....

- **Surface characterization**

- The chemical composition of the scaffold will be analyzed through Fourier transform infrared spectroscopy

- **Mechanical test**

- The scaffold will be casted into a dumbbell shaped following ASTM E8 standard for tensile test.....

- **Degradation test**

- Degradation test will be conducted through a potentiodynamic polarization test according to ASTM F2129 standard in.....

- **Drug release test**

- A drug release test will be conducted by ageing the scaffold in phosphate buffer saline (PBS) solution for two months in

- **In vitro cell test**

- Endothelial cells will be cultured in a humidified incubator with the supplement of 5% CO₂ at 37°C using an

- **Statistical analysis**

- For each experimental condition, at least three separate data will be recorded and expressed in the form of mean±standard