



## **Project Proposal On**

*"PREPARATION OF BIODEGRADABLE PLASTIC FROM  
AGRICULTURE WASTE"*

**Submitted to**

**Division :SEED**

**Programme or Scheme :** Scheme for Young Scientists and  
Technologists

**Submitted by**

**Project Investigator:**

Dr. OSSCHANDANA

ADITYA COLLEGE OF ENGINEERING, SURAMPALEM-  
SURAMPALEM

# Part 1 : General Information

## General Information:

**1. Name of the Institute/University/Organisation submitting the Project Proposal :**

ADITYA COLLEGE OF  
ENGINEERING, SURAMPALEM

**2. State** Andhra Pradesh

**3. Principal Investigator Name:** Dr. OSSCHANDANA

**4. Category:** General

**5. Type of the Institue :** Academic Institutions (Private)

**6. Project Title :** PREPARATION OF BIODEGRADABLE PLASTIC FROM AGRICULTURE WASTE

**7. Division :** SEED

**8. Programme Or Scheme :** Scheme for Young Scientists and Technologists

**9. Academic Area :** Chemical Science,

**10. Application Area :** Basic Science,

**11. Government National Initiative :** Make in India,

**12. Type of Proposal :** Proposal Against Call

**13. Project Duration :** 2 Years and 0 Months

**14. Proposal Submit Date :** 20/11/2021

**15. Project Keywords :** Cotton linters, Flax fibers, Cellulose acetate, Characterization, biodegradability

**16. Project Summary :**

## Objectives

1 To produce biodegradable plastics from agriculture waste

2 To produce ecofriendly plastics

3 To produce biodegradable plastics from cotton linters and flax fibres.

4 To characterize the prepared fibres by using XRD, FT-IR and Gel permeation chromatography

5 To examine biodegradability, resistance for acids, alkalies and salts.

## Methodology

### Materials and chemicals

Flax fibers and cotton linters are required for this experiment. Glacial acetic acid and acetic anhydride are used to dissolve. Sulfuric acid will be used as a catalyst and for the acid resistance test polyethylene glycol 600 was used as a plasticizer and acetone was used as a solvent. Sodium hydroxide, lead acetate, ferrous sulfate and tri- sodium orthophosphate were used for testing acids, alkalis and salts to the produced CA's resistance.

### Procedure of manufacturing cellulose acetate

Colors, dusts, and fats were removed from flax fibers and cotton linters by washing with water and bleaching with 120 mL of household bleaching agent 5 NaOCl 5 NaOH, thoroughly washing and, then, was followed by drying. A sample of 35 g of each raw material was used. Acetic anhydride 100 mL, glacial acetic acid 100 mL and sulfuric acid 10 mL were mixed and the mixture was cooled to 7 176C. Flax fibers or cotton linters were added slowly to the previous mixture with agitation to bring about the acetylation process this step produced the primary CA. Hydration of the primary CA viscous fluid was achieved by diluting with 30 mL of equal parts of concentrated acetic acid 99.8 and sulfuric acid 98 and, then, the primary CA was allowed to age for 15 h. The resulting viscous fluid was centrifuged in order to separate the final product. Plasticizer polyethylene glycol 600 was added as 25 by volume of the viscous CA with agitation this formed the final product which was dried in an oven at 60 176C until a constant weight in order to get the product ready for use. Before being shaped, the product was diluted with acetone to bring it into the form of a viscous fluid which could be poured in a mold or on a smooth surface for shaping.

Characterization of the produced cellulose acetate has to be done by

#### 1 X-ray diffraction XRD

This test was performed to obtain information about the crystallinity of the produced CA by using an X-ray diffractometer to collect at room temperature XRD patterns of the prepared cellulose acetate sample.

#### 2 Fourier Transform Infrared FTIR

FTIR was used to confirm the structure of cellulose acetate

#### 3 Gel Permeation Chromatograph GPC

The information about the molecular weight of CA was obtained by using Gel Permeation Chromatograph .

Biodegradable tests and chemical tests has to be performed to know the resistance against acids,alkalies and salts.

### Outcomes of the work

Biodegradable plastic are used instead of synthetic plastics which are made from petroleum based polymers. The present work aims to produce cellulose acetate biofibres from flax fibres and cotton linters. The obtained cellulose acetate will be investigated and evaluated for crystalline structure, molecular weight, biodegradability, resistance for acids, alkalies and salts. The structure of the produced bioplastic will be confirmed by X-Ray diffraction, FT-IR and gel permeation chromatography.

### Key question

What is the use of biodegradable plastic

### Hypothesis

Petroleum based plastics are harmful to the environment ,hence instead of them biodegradable plastics are synthesized from flax fibres and cotton linters. biodegradable polymers can make significant contributions to material recovery, reduction of landfill and utilization of renewable resources. This work aims to use low cost cellulosic raw materials for the preparation of CA and, so far, few reports have been proposed on the preparation of CA from flax fiber. Consequently, in this work, flax fibers and cotton linters are used for the production of CA. Moreover, this work investigates and evaluates the obtained CA for crystalline structure, molecular weight, biodegradability, resistance for acids, alkalis and salts.

## Part 2: Particulars of Investigators

### Principal Investigator:

<b>1. Name:</b>	Dr. OSSCHANDANA
<b>Gender:</b>	Female
<b>Date of Birth:</b>	21/09/1982
<b>Designation :</b>	ASSOCIATE PROFESSOR

<b>Department:</b>	H&BS
<b>Institute/University:</b>	ADITYA COLLEGE OF ENGINEERING, SURAMPALEM
<b>State:</b>	Andhra Pradesh
<b>District:</b>	East Godavari
<b>City/Place:</b>	SURAMPALEM
<b>Address:</b>	ADB Road, Aditya Nagar, Surampalem
<b>Pin:</b>	533437
<b>Communication Email:</b>	chandana_bse@acoe.edu.in
<b>Alternate Email:</b>	osschandana@gmail.com
<b>Mobile:</b>	9701650333
<b>Phone:</b>	
<b>Fax:</b>	
<b>Category:</b>	General

## **Co-Investigator:**

<b>1. Name:</b>	Mr. N VV D PRASAD
<b>Gender:</b>	Male
<b>Date of Birth:</b>	05/04/1989
<b>Designation :</b>	ASSISTANT PROFESSOR
<b>Department:</b>	CHEMISTRY
<b>Institute/University:</b>	ADITYA COLLEGE OF ENGINEERING, SURAMPALEM
<b>State:</b>	Andhra Pradesh
<b>District:</b>	East Godavari
<b>City/Place:</b>	SURAMPALEM
<b>Address:</b>	SURAMPALEM,ANDHRAPRADESH
<b>Pin:</b>	533437

**Communication Email:**

vdprasad\_bse@acoe.edu.in

**Alternate Email:**

kalyanvandematharam@gmail.com

**Mobile:**

9493338916

**Phone:**

**Fax:**

**Category:**

OBC

### Part 3: Suggested Refrees

**Suggested Refrees: NA**

### Part 4: Financial Details

**Financial Details:**

#### A. Non - Recurring

Equipment

S.	Equipments	Qty.	Justification	1 Year	Total
1.	FTIR	1	ANALYSIS	1700000	1700000
2.	GEL PERMEATION CHROMATOGRAPHY	1	CHARACTERIZATION	500000	500000
<b>Total</b>				<b>2200000</b>	<b>2200000</b>

#### B. Recurring

Project Staff

S.	Project Staff	No.	Justification	1 Year	2 Year	Total
1.	Project Associate -II	1	NVVDPRASAD	120000	120000	240000
2.	Project Coordinator /PI	1	OSSCHANDANA	180000	180000	360000
<b>Total</b>				<b>300000</b>	<b>300000</b>	<b>600000</b>

Consumables

S.	Items	Qty.	Justification	1 Year	2 Year	Total
1.	ALL CHEMICALS	10	ANALYSIS	20000	20000	40000
<b>Total</b>				<b>20000</b>	<b>20000</b>	<b>40000</b>

Contingency

S.	Description	Justification	1 Year	2 Year	Total
1.	SUDDEN REPAIRS	REPAIRS	5000	5000	10000
<b>Total</b>			<b>5000</b>	<b>5000</b>	<b>10000</b>

Travel

S.	Description	Justification	1 Year	2 Year	Total
1.	TRAVEL	FARE	10000	10000	20000
2.	TRAVEL TO MEETINGS	FARE	0	10000	10000
<b>Total</b>			<b>10000</b>	<b>20000</b>	<b>30000</b>

## Budget Head Summary in (INR)

Budget Head	Year-1	Year-2	Total
<b>1- Non-Recurring</b>			
Equipment	2200000	0	<b>2200000</b>
Subtotal (Capital)	2200000	0	<b>2200000</b>
<b>2- Recurring</b>			
Project Staff	300000	300000	<b>600000</b>
Consumables	20000	20000	<b>40000</b>
Contingency	5000	5000	<b>10000</b>
Travel	10000	20000	<b>30000</b>
Subtotal (General)	335000	345000	<b>680000</b>
<b>Total Project Cost (Capital + General)</b>	<b>2535000</b>	<b>345000</b>	<b>2880000</b>

## Part 6: PFMS Details

**PFMS Unique Code Available: Yes**

**PFMS Unique Code :**

APEG00008296

## Part 5: Current Ongoing Project

**Current Ongoing Project: NA**

## **List of Uploaded Documents:-**

1. Complete Project proposal
2. Biodata
3. Certificate from PI
4. Conflict of interest
5. Endorsement from head of Institute
6. Quotation for Equipments

# PREPARATION OF BIODEGRADABLE PLASTIC FROM AGRICULTURE WASTE

Synthetic polymers are important in many branches of industry, particularly in the packaging industry. However it has an undesirable influence on the environment and causes problems with non-biodegradable polymers that undergoes a process. In recent years, biofibres have attracted increasing interest due to their wide applications in food packing and in the biomedical sciences. These ecofriendly polymers reduce rapidly and replace the usage of the petroleum-based synthetic polymers due to their safety, low production costs and biodegradability. The present study aims to produce cellulose acetate biofibres from flax fibres and cotton linters. The obtained cellulose acetate will be investigated and evaluated for crystalline structure, molecular weight, biodegradability, resistance for acids, alkalies and salts. The structure of the produced bioplastic will be confirmed by X-Ray diffraction, FT-IR and gel permeation chromatography.

Objectives:

- 1) To produce biodegradable plastics from agriculture waste
- 2) To produce ecofriendly plastics
- 3) To produce biodegradable plastics from cotton linters and flax fibres.
- 4) To characterize the prepared fibres by using XRD, FT-IR and Gel permeation chromatography
- 5) To examine biodegradability, resistance for acids, alkalies and salts.

**Keywords:** Cotton linters, Flax fibers, Cellulose acetate, Characterization, biodegradability

## Methodology

### Materials and chemicals

Flax fibers and cotton linters are required for this experiment. Glacial acetic acid and acetic anhydride are used to dissolve. Sulfuric acid will be used as a catalyst and for the acid resistance test; polyethylene glycol 600 was used as a plasticizer; and acetone was used as a solvent. Sodium hydroxide, lead acetate, ferrous sulfate and tri- sodium orthophosphate were used for testing acids, alkalis and salts to the produced CA's resistance.

### Procedure of manufacturing cellulose acetate

Colors, dusts, and fats were removed from flax fibers and cotton linters by washing with water and bleaching with 120 mL of household bleaching agent (5% NaOCl & 5% NaOH),

thoroughly washing and, then, was followed by drying. A sample of 35 g of each raw material was used. Acetic anhydride (100 mL), glacial acetic acid (100 mL) and sulfuric acid (10 mL) were mixed and the mixture was cooled to 7 °C. Flax fibers or cotton linters were added slowly to the previous mixture with agitation to bring about the acetylation process; this step produced the primary CA. Hydration of the primary CA (viscous fluid) was achieved by diluting with 30 mL of equal parts of concentrated acetic acid (99.8%) and sulfuric acid (98%) and, then, the primary CA was allowed to age for 15 h. The resulting viscous fluid was centrifuged in order to separate the final product. Plasticizer (polyethylene glycol 600) was added as 25% by volume of the viscous CA with agitation; this formed the final product which was dried in an oven at 60 °C until a constant weight in order to get the product ready for use. Before being shaped, the product was diluted with acetone to bring it into the form of a viscous fluid which could be poured in a mold or on a smooth surface for shaping.

### **Characterization of the produced cellulose acetate has to be done by**

#### **1) X-ray diffraction (XRD)**

This test was performed to obtain information about the crystallinity of the produced CA by using an X-ray diffractometer to collect (at room temperature) XRD patterns of the prepared cellulose acetate sample.

#### **2) Fourier Transform Infrared (FTIR)**

FTIR was used to confirm the structure of cellulose acetate

#### **3) Gel Permeation Chromatograph (GPC)**

The information about the molecular weight of CA was obtained by using Gel Permeation Chromatograph .

Biodegradable tests and chemical tests has to be performed to know the resistance against acids, alkalies and salts.

## PROFORMA FOR BIODATA OF INVESTIGATOR (Young Scientist & Mentor)

A. Name Dr.O.S.S.Chandana

B. Date of Birth:21-09-1982

C. Institution: Aditya  
college of engineering

Whether belongs to  
D. SC/ST:NO

E. Academic and professional career:

Academic career (From Graduation to highest qualification level indicating subject and area of specialization – Enclose copy of certificate of highest qualification):

- Ph. D in chemistry from GITAM University in the year 2017
- M. Phil in chemistry from GITAM university with aggregate of 72% in the Year 2008
- M. Sc (Applied chemistry) from GITAM College of Science, Affiliated to Andhra University, Visakhapatnam with aggregate of 65% in the year 2005
- B. Sc (Botany, Zoology and Chemistry) from B.V.K. College of Arts & Sciences, affiliated to Andhra University, Visakhapatnam with aggregate of 75% in the year 2003

Professional career:

- ❖ Three years experience as a Lecturer in M.V.R. P.G. College, Visakhapatnam(2005 June to 2008 May)
- ❖ Seven years experience as Asst. prof in Adarsh college of Engineering, Chebrolu (2009 June to 2016 June )
- ❖ One year experience as Assoc. prof in Kits college of Engineering, Divili from 2016 July to Aug 2017).
- ❖ Now working as Assoc. Prof in Aditya college of Engineering, Surampalem (2017 Dec to till now).

F. Award/Prize/Certificate etc. won by the investigator:

G. Five best publications in the proposed area of work:

- 1) Paper publication on Assay Method Development and Validation for Celecoxib Dosage Forms by High Performance Liquid Chromatography. Research J. Pharm. and Tech 2016; 9(11): 1951-1956.
- 2) Paper publication on Method Development and Validation of Eprosartan Mesylate and its Impurities using reverse phase high-performance liquid chromatography Int J Curr Pharm Res, ,2016; Vol 8, Issue 4, 49-53.
- 3) Paper publication on Stability indicating HPLC method for celecoxib related substances in solid dosage forms. Int J Res Pharm Sci 2017, 7(1); 10 – 18.
- 4) Paper publication on Assay Method Development and Validation for Thalidomide using High Performance Liquid Chromatography.IJIRMF 2018; Vol - 4, Issue– 5.
- 5) Paper publication on HPLC determination of Sildenafil Tartrate and its related Substances along with some Supportive Studies using MS, XRD and NMR. Research J. Pharm. and Tech. 11(5): May 2018

H. Publication (Numbers only) 11paper publications

Books	Research Papers, reports	General articles
Patents	Others (please specify)	

H. (1) List of completed and ongoing projects none

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Sl. No.	Title of Project	Duration From to	Total Cost	Funding Agency
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(2)List of projects submitted none

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Sl. No.	Title of the project	Name of Organization	Status
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## CERTIFICATE FROM THE INVESTIGATOR

**PROJECT TITLE: PREPARATION OF BIODEGRADABLE PLASTIC AGRICULTURE WASTE**

1. We agree to abide by the terms and conditions of the DST grant.
2. We did not submit this or a similar project proposal elsewhere for financial support.
3. We have explored and ensured that equipment and basic facilities will actually be available as and when required for the purpose of the project. We shall not request financial support under this project, for procurement of these items.
4. We undertake that spare time on permanent equipment will be made available to other users.
5. We have enclosed the following materials:

### ITEMS

### NUMBER OF COPIES

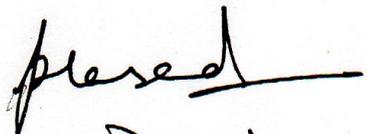
- |     |   |     |
|-----|---|-----|
| (a) | Endorsement from the Head of the Institution (on letter head)                             | One |
| (b) | Certificate from Investigator   | One |
| (c) | Certificate from Investigator regarding conflict of interest                              | One |
| (d) | Name and address of experts/institution interested in the subject/ outcome of the project | One |
| (e) | Copies of the proposals   | One |

Date : 19/11/21

Place: Surampalem

  
Dr. O. S. S. Chaudane

Name & Signature of  
Principal Investigator

  
N. V. V. D. Prasad

Name & Signature Of  
Co-Investigator(s)

**DEPARTMENT OF SCIENCE AND TECHNOLOGY**  
**POLICY ON CONFLICT OF INTEREST**

**FOR REVIEWER & COMMITTEE MEMBER or APPLICANT or DST OFFICER ASSOCIATED/ DEALING WITH**  
**THE SCHEME/ PROGRAM OF DST**

Issues of Conflicts of Interest and ethics in scientific research and research management have assumed greater prominence, given the larger share of Government funding in the country's R & D scenario. The following policy pertaining to general aspects of Conflicts of Interest and code of ethics, are objective measures that is intended to protect the integrity of the decision making processes and minimize biasness. The policy aims to sustain transparency, increase accountability in funding mechanisms and provide assurance to the general public that processes followed in award of grants are fair and non-discriminatory. The Policy aims to avoid all forms of bias by following a system that is fair, transparent and free from all influence/ unprejudiced dealings, prior to, during and subsequent to the currency of the programme to be entered into with a view to enable public to abstain from bribing or any corrupt practice in order to secure the award by providing assurance to them that their competitors will also refrain from bribing and other corrupt practice and the decision makers will commit to prevent corruption, in any form, by their officials by following transparent procedures. This will also ensure a global acceptance of the decision making process adopted by DST.

**Definition of Conflict of Interest:**

Conflict of Interest means "any interest which could significantly prejudice an individual's objectivity in the decision making process, thereby creating an unfair competitive advantage for the individual or to the organization which he/she represents". The Conflict of Interest also encompasses situations where an individual, in contravention to the accepted norms and ethics, could exploit his/her obligatory duties for personal benefits.

**1. Coverage of the Policy:**

- a) The provisions of the policy shall be followed by persons applying for and receiving funding from DST, Reviewers of the proposal and Members of Expert Committees and Programme Advisory Committees. The provisions of the policy will also be applicable on all individuals including Officers of DST connected directly or indirectly or through intermediaries and Committees involved in evaluation of proposals and subsequent decision making process.
- b) This policy aims to minimize aspects that may constitute actual Conflict of Interests, apparent Conflict of Interests and potential Conflict of Interests in the funding mechanisms that are presently being operated by DST. The policy also aims to cover, although not limited to, Conflict of interests that are Financial (gains from the outcomes of the proposal or award), Personal (association of relative / Family members) and Institutional (Colleagues, Collaborators, Employer, persons associated in a professional career of an individual such as Ph.D. supervisor etc.)

**2. Specifications as to what constitutes Conflict of Interest.**

Any of the following specifications (non-exhaustive list) imply Conflict of Interest if,

- (i) Due to any reason by which the Reviewer/Committee Member cannot deliver fair and objective assessment of the proposal.
- (ii) The applicant is a directly relative# or family member (including but not limited to spouse, child, sibling, parent) or personal friend of the individual involved in the decision making process or alternatively, if any relative of an Officer directly involved in any decision making process / has influenced interest/ stake in the applicant's form etc..
- (iii) The applicant for the grant/award is an employee or employer of an individual involved in the process as a Reviewer or Committee Member; or if the applicant to the grant/award has had an employer-employee relationship in the past three years with that individual.
- (iv) The applicant to the grant/award belongs to the same Department as that of the Reviewer/Committee Member.
- (v) The Reviewer/Committee Member is a Head of an Organization from where the applicant is employed.
- (vi) The Reviewer /Committee Member is or was, associated in the professional career of the applicant (such as Ph.D. supervisor, Mentor, present Collaborator etc.)
- (vii) The Reviewer/Committee Member is involved in the preparation of the research proposal submitted by the applicant.
- (viii) The applicant has joint research publications with the Reviewer/Committee Member in the last three years.
- (ix) The applicant/Reviewer/Committee Member, in contravention to the accepted norms and ethics followed in scientific research has a direct/indirect financial interest in the outcomes of the proposal.
- (x) The Reviewer/Committee Member stands to gain personally should the submitted proposal be accepted or rejected.

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# The Term "Relative" for this purpose would be referred in section 6 of Companies Act , 1956.

**3. Regulation:**

The DST shall strive to avoid conflict of interest in its funding mechanisms to the maximum extent possible. Self-regulatory mode is however recommended for stake holders involved in scientific research and research management, on issues

pertaining to Conflict of Interest and scientific ethics. Any disclosure pertaining to the same must be made voluntarily by the applicant/Reviewer/Committee Member.

#### 4. Confidentiality:

The Reviewers and the Members of the Committee shall safeguard the confidentiality of all discussions and decisions taken during the process and shall refrain from discussing the same with any applicant or a third party, unless the Committee recommends otherwise and records for doing so.

#### 5. Code of Conduct

##### 5.1 To be followed by Reviewers/Committee Members:

- (a) All reviewers shall submit a conflict of interest statement, declaring the presence or absence of any form of conflict of interest.
- (b) The reviewers shall refrain from evaluating the proposals if the conflict of interest is established or if it is apparent.
- (c) All discussions and decisions pertaining to conflict of interest shall be recorded in the minutes of the meeting.
- (d) The Chairman of the Committee shall decide on all aspects pertaining to conflict of interests.
- (e) The Chairman of the Committee shall request that all members disclose if they have any conflict of interest in the items of the agenda scheduled for discussion.
- (f) The Committee Members shall refrain from participating in the decision making process and leave the room with respect to the specific item where the conflict of interest is established or is apparent.
- (g) If the Chairman himself/herself has conflict of interest, the Committee may choose a Chairman from among the remaining members, and the decision shall be made in consultation with Member Secretary of the Committee.
- (h) It is expected that a Committee member including the Chair-person will not seek funding from a Committee in which he/she is a member. If any member applies for grant, such proposals will be evaluated separately outside the Committee in which he/she is a member.

##### 5.2 To be followed by the Applicant to the Grant/Award:

- (a) The applicant must refrain from suggesting referees with potential Conflict of Interest that may arise due to the factors mentioned in the specifications described above in Point No. 2.
- (b) The applicant may mention the names of individuals to whom the submitted proposal should not be sent for refereeing, clearly indicating the reasons for the same.

##### 5.3 To be followed by the Officers dealing with Programs in DST:

While it is mandatory for the program officers to maintain confidentiality as detailed in point no. 6 above, they should declare, in advance, if they are dealing with grant applications of a relative or family member (including but not limited to spouse, child, sibling, parent) or thesis/ post-doctoral mentor or stands to benefit financially if the applicant proposal is funded. In such cases, DST will allot the grant applications to the other program officer.

#### 6. Sanction for violation

##### 3.1 For a) Reviewers / Committee Members and b) Applicant

Any breach of the code of conduct will invite action as decided by the Committee.

##### 3.2 For Officers dealing with Program in DST

Any breach of the code of conduct will invite action under present provision of CCS (conduct Rules), 1964.

#### 7. Final Appellate authority:

Secretary, DST shall be the appellate authority in issues pertaining to conflict of interest and issues concerning the decision making process. The decision of Secretary, DST in these issues shall be final and binding.

#### 8. Declaration

**I have read the above "Policy on Conflict of Interest" of the DST applicable to the Reviewer/ Committee Member/ Applicant/ DST Scheme or Program Officer # and agree to abide by provisions thereof.**

I hereby declare that I have no conflict of interest of any form pertaining to the proposed grant \*

I hereby declare that I have conflict of interest of any form pertaining to the proposed grant \*

\* & # (Tick whichever is applicable)

Name of the Reviewer/ Committee Member or Applicant or DST Officer

*(Strike out whichever is not applicable)*

  
19/11  
(Signature with date)

# ADITYA COLLEGE OF ENGINEERING

Approved by AICTE, Permanently Affiliated to JNTUK & Accredited by NAAC

Recognized by UGC under section 2(f) of UGC Act 1956

Ph: (0884) 2326224, 99631 76662, Email: office@acoe.edu.in, Website: www.acoe.edu.in

## ENDORSEMENT FROM THE HEAD OF INSTITUTION (TO BE GIVEN ON LETTER HEAD)

PROJECT TITLE: PREPARATION OF BIODEGRADABLE PLASTIC AGRICULTURE WASTE

1. Certified that the Institute welcomes participation of Dr. **O.S.S.CHANDANA** as the Investigator and **Shri N.V.V.D.PRASAD** as the Mentor for the project and that in the unforeseen event, the Mentor will assume the responsibility for the fruitful completion of the project (after obtaining consent in advance from DST).
2. Certified that the equipment, other basic facilities and such other administrative facilities as per terms and conditions of the grant, will be extended to investigator (s) throughout the duration of the project.
3. Institute assures financial and other managerial responsibilities of the project.
4. Certified that the organization has never been blacklisted by any department of the State Government or Central Government.

Name and Signature of Head of Institution

Date: 19/11/21....

Place: Susrampalem

### REMARKS

In regard to research proposals emanating from scientific institutions/laboratories under various scientific departments the Head of the institution is required to provide a justification indicating clearly whether the research proposals fall in line with the normal research activities of the institution or not and if not, the scientific reasons which merit its consideration by DST.

# The National Scientific Instruments Co.

Manufacture & Exporter of Scientific Instruments

44 U.B. Jawahar Nagar, Delhi - 110007

Tel: +91 (0) 11 23853874 Mob: +91 (0) 9810146878 Fax: +91 (0) 11 2385 5111 Email:info@nisco.co.in

Q/168/19-20

Date:16/11/2021

To The Principal,  
Aditya College of Engineering,  
Aditya Nagar, ADB Road,  
SURAMPALEM - 533437 (A.P.).

Enquiry No: email

Enquiry Date: 17/11/2021

Dear Sir,

In response to your query, please find below our best offer for your requirements.

Serial No.	Particulars	Unit	Rs.	P.
01	FTIR - Fourier Transform Infrared Spectography	1	1700000	00
02	Gel permeation Chromatography	1	500000	00

GSTN No: 07AACPD8370L1ZK

## General Conditions:

1. Specifications subject to change by the manufactures.
2. GST Extra as per applicable rates.
3. The goods offered are from stok, but are subject to prior sale.
4. It is the option of the supplier to supply the order in full or in pat.
5. All disputes will be settled in Delhi courts only.
6. Quotions are valid only for 60 days from the date of issue, unless otherwise stated.
7. The instruments manufactured by us carry one year's guarantee.