



**NATIONAL TEA RESEARCH FOUNDATION**

C/o. TEA BOARD 14, B. T. M. SARANI, KOLKATA - 700 001  
PHONE : 2235 1411 (11 Lines) Ext : 237, TELEFAX : 2234 1687  
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**N T R F**

NTRF:17(322)/2014/5421

Dr. Panchanan Pujari  
Asst. Professor  
Department of Chemical Sciences  
Tezpur University  
Tezpur, Assam - 784028.

✓  
20/04/16  
P.P.

13<sup>th</sup> April, 2016

439  
25/04/16

**Scheme : "Identification of efficient Semiconductor-Dopant combinations for selective chemi-adsorption of Tea-pesticides in Metal Oxide Semiconductor (MOS) sensor"**

Dear Sir,

I am pleased to inform you that the Governing Body of National Tea Research Foundation at its meeting held on 21<sup>st</sup> January, 2016 accorded approval based on the recommendation of the Research Advisory Committee for undertaking the aforesaid research project jointly by NTRF and Department of Chemical Science, Tezpur University, Jorhat, Assam (Partner Institute) with you being the Principal Investigator of the project.

The objectives, deliverables, budgetary support and the terms and conditions as approved by the Governing Body are given in **Annexure-1**.

The Governing Body has also accorded approval for engaging one Junior Research Fellow for the project work with a fixed fellowship @ Rs.20,000/- + 10% HRA (Rs.22,000/- p.m.) for the JRF.

You are requested to go through the Terms and Conditions and convey your formal acceptance of the same to the undersigned within 10 days from date of receipt of the letter.

You are also requested to submit your requisition of the fund towards procurement of capital items and the recurring expenditure for 1<sup>st</sup> year.

Yours faithfully,  
Sd/-

(P. Mohan Kumar)  
Adviser, NTRF

(P. Mohan Kumar)

Encl: Terms and Conditions

Copy to:  
The Registrar,  
Tezpur University  
Tezpur, Assam - 784028

20/04/16

Serial No... 4750  
Date of Receipt... 26.04.16  
Time... 11.30 AM

**Scheme : "Identification of efficient Semiconductor-Dopant combinations  
for selective chemi-adsorption of Tea-pesticides in Metal  
Oxide Semiconductor (MOS) sensor"  
Code No. NTRF:191/2016.**

**1) Objectives:**

1. Study of the interaction between selected tea pesticides and MOS with different dopants and at different temperature, using simple chemical technique for fabrication. MOS dopant combination with sensitive response to 3 pesticides will be identified.
2. High-tech fabrication of the MOS obtained through step-1.
3. Study of the cross reactivity of the developed pesticide sensor (MOS) towards tea aroma and that of tea aroma sensors towards pesticides.
4. Sensor integration with multiple sensing units selected based on above steps 1 to 3, in tandem with appropriate computational technique.

**2) Duration: 4 Years**

- 3) Deliverables:** The proposed study will develop a highly sensitive and highly efficient MOS based gas sensor (e-nose) for quality assessment of tea.

**4) Budgetary Support:**

**Financial Outlay (approved by the Governing Body of NTRF) (Amount in Rupees)**

Items	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> year	4 <sup>th</sup> year	Total
<b>A. Non-Recurring</b>					
Four probe conductivity meter	8,50,000/-	-	-	-	8,50,000/-
-20°C Deep Freezer	30,000/-	-	-	-	30,000/-
Rotavapour	4,00,000/-	-	-	-	4,00,000/-
<b>Total Non-recurring</b>	<b>12,80,000/-</b>	-	-	-	<b>12,80,000/-</b>
<b>B. Recurring</b>					
Salary for one Research Fellow @Rs.20,000/- + 10% HRA =22,000/-p.m. and @Rs.22,000/- + 10% HRA =24,200/-p.m.	2,64,000/-	2,64,000/-	2,90,400/-	2,90,400/-	11,08,800/-
Consumables	2,00,000/-	2,00,000/-	2,00,000/-	2,00,000/-	8,00,000/-
Travel	10,000/-	-	-	10,000/-	20,000/-
<b>Total Recurring</b>	<b>4,74,000/-</b>	<b>4,64,000/-</b>	<b>4,90,400/-</b>	<b>5,00,400/-</b>	<b>1,92,880/-</b>
Overhead charges @10%	47,400/-	46,400/-	49,040/-	50,040/-	1,92,880/-
<b>Grand Total</b>	<b>18,01,400/-</b>	<b>5,10,400/-</b>	<b>5,39,440/-</b>	<b>5,50,440/-</b>	<b>34,01,680/-</b>