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Report submitted to

**The Member Secretary  
Tamil Nadu State Council for Science and Technology  
DOTE CAMPUS  
Chennai – 620 025**



**TNSCST**

Scheme : Improvement of S & T Infrastructure facilities at Government Colleges.

Reference No. : TNSCST/ S&T INFRA/BATCH I& II /2019/ 5948 Dated 05.03.2019



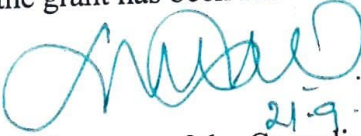
Submitted by

**Dr. T. Balakrishnan  
Associate Professor and Head  
PG & Research Department of Physics  
Periyar EVR College (Autonomous)  
Race Course Road,  
Khajamalai  
Tiruchirappalli – 620 023**

## UTILISATION CERTIFICATE

01	Name of the Scheme	<b>Improvement of S &amp; T Infrastructure facilities at Government Colleges.</b>	
02	Name and address of the College	<b>Periyar EVR College (Autonomous) Race Course Road, Khajamalai Tiruchirappalli – 620 023</b>	
03	Name and Address of the Coordinator	<b>Dr. T. Balakrishnan Associate Professor and Head PG &amp; Research Department of Physics Periyar EVR College (Autonomous) Race Course Road, Khajamalai Tiruchirappalli – 620 023</b>	
04	Council sanction letter No & date	<b>TNSCST/ S&amp;T INFRA/BATCH I&amp; II /2019/ 5948 Dated 05.03.2019</b>	
05	Amount sanctioned	<b>Rs. 6 lakhs</b>	
		<b>Amount allotted</b>	<b>Amount spent</b>
		<b>(Rs.)</b>	<b>(Rs.)</b>
	Physics	<b>2,00,000-00</b>	<b>2,00,349-00</b>
	Chemistry	<b>2,50,000-00</b>	<b>2,40,041-00</b>
	Botany	<b>1,50,000-00</b>	<b>1,50,000-00</b>
	Travel to Chennai to attend the Meeting	<b>--</b>	<b>9,610-00</b>
	<b>Total</b>	<b>6,00,000-00</b>	<b>6,00,000-00</b>

It is certified that a sum of **Rs. 6 Lakhs** sanctioned vide council letter No. **TNSCST/ S&T INFRA/BATCH I& II /2019/ 5948/05.03.2019** has been utilised for improvement of laboratory / equipment facilities of our college. The balance grant of **Rs. NIL** is returned / there is no balance grant under the above scheme. The conditions of the grant has been fulfilled/ being fulfilled.

  
21.9.20  
Signature of the Co-ordinator

(With date and seal)

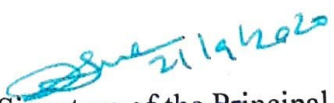
**Dr T. BALAKRISHNAN,**

M.Sc., M.Phil., B.Ed., Ph.D.

Associate Professor of Physics **Head**  
Department of Physics +

Periyar E.V.R. College (Autonomous)

Tiruchirappalli- 620 023

  
21.9.2020  
Signature of the Principal  
**PRINCIPAL**  
**PERIYAR E.V.R. COLLEGE**  
**TIRUCHIRAPPALLI - 620 023**  
**D.O.CODE CI.102**

## REPORT

01 Name of the Scheme	Improvement of S & T Infrastructures facilities at Government Colleges				
02 Name and address of the college	Periyar EVR College (Autonomous) Race Course Road, Khajamalai Tiruchirappalli - 620 023				
03 Name and Address of the Coordinator	Dr. T. Balakrishnan Associate Professor and Head PG & Research Department of Physics Periyar EVR College (Autonomous) Race Course Road, Khajamalai Tiruchirappalli - 620 023				
04 Council sanction letter No & date	INSCST S&T INFRA BATCH I & II /2019/ 5948/05.03 2019				
05 Amount sanctioned	Rs. 6 lakh				
06 Details of laboratory facilities/Equipments purchased (Photographs may be enclosed)	Refer Annexure				
07 No. of UG / PG science students and research students utilizing the facility.	Department	UG	PG	M.Phil	Ph.D.
	Physics	--	25	12	02
	Chemistry	80	25	15	20
	Botany	60	50	--	--
08 A brief report on how above equipments / facility is being used.	<b>PHYSICS</b>  M.SC., students have to submit a project report at the end of their course i.e. fourth semester. Students can utilize this equipment to prepare thinfilms. After thin film preparation using spray pyrolysis set up they can characterize the				

film using different techniques such as X – ray diffraction, electrical measurements, SEM and TEM.

Similarly M.PHIL students have to submit a thesis at the end of the second semester. They can start their research career in thin films. Preparation of thin film is hot area of research in Material science.

Ph.D., students can do their research work in the PG and Research.

### **CHEMISTRY**

Equipments purchased in this fund are very useful for UG, PG and M.Phil students. The instruments are needed to complete the Practical papers. Orbital shaker and water bath are used for the synthesis of new compounds. Ph.D., scholars need digital electronic weighing machine with third decimal accuracy for their research work.

### **BOTANY**

Our curriculum has plant Physiology and Biochemistry practical papers at both UG and PG levels. Most of the experiments in it involve

		extraction in high speed centrifugation under cool conditions to preserve the bioactivity. Hence the instrument is being used routinely and has become basic necessity in our lab.
09.	Any relevant information	NIL

  
Signature of the Coordinator

21-9-20

(with date and Seal)

Dr. T. DALAKRISHNAN,  
M.Sc., M.Phil., B.Ed., Ph.D.  
Associate Professor of Physics  
Department of Physics  
Periyar E.V.R. College (Autonomous)  
Tiruchirappalli - 620 023

  
Signature of the Principal

PERIYAR E.V.R. COLLEGE  
TIRUCHIRAPPALLI - 620 023  
D.O. CODE CI.102

# EQUIPMENTS PURCHASED FOR PHYSICS

## SPRAY PYROLYSIS SET UP

### A. EQUIPMENT STRUCTURE

1. Shell size  $\approx 700 \times 700 \times 900$  mm
2. Shell Construction: High quality fabrication of M. S. Body and M. S. Angle's structure with proper stiffeners and neat powder coat painting.
3. Door Construction : Sophisticated system to view the operation made by high quality Acrylic.
4. Model : Double deck, top used for the equipment's and the bottom will be used for the shelf model with door.
5. Door: Top - Acrylic door Bottom - Metal door.
6. Suction fan: 0.25HP suction fan will be provided.

### B. HEATING SYSTEM (ELECTRICAL)

1. Heating elements : APM grade Kanthal
2. Operation : Single phase / AC
3. Power : 2 kW
4. Insulation (Furnace): Mechanically pressed zirconia blend ceramic fiber.  
(Max) Surface temperature of the hot plate
5. Working temperature:  $450^{\circ}\text{C}$ .
6. Work area :  $150 \times 150$  mm

### C. SPRAYING SYSTEM PUMP

1. Pump : Peristaltic pump, Motor : 24v PMDC motor Pressure: Upto 2 Kg/Sq.Cm
2. Spray rate controlling : Digitally the peristaltic pump RPM will be controlled from 10-100 RPM
3. Spray rate :  $\approx 1$  ml to 65 ml /min
4. Tubing : 3mm ID tubing
5. Tube Material : Silicon transparent Hose

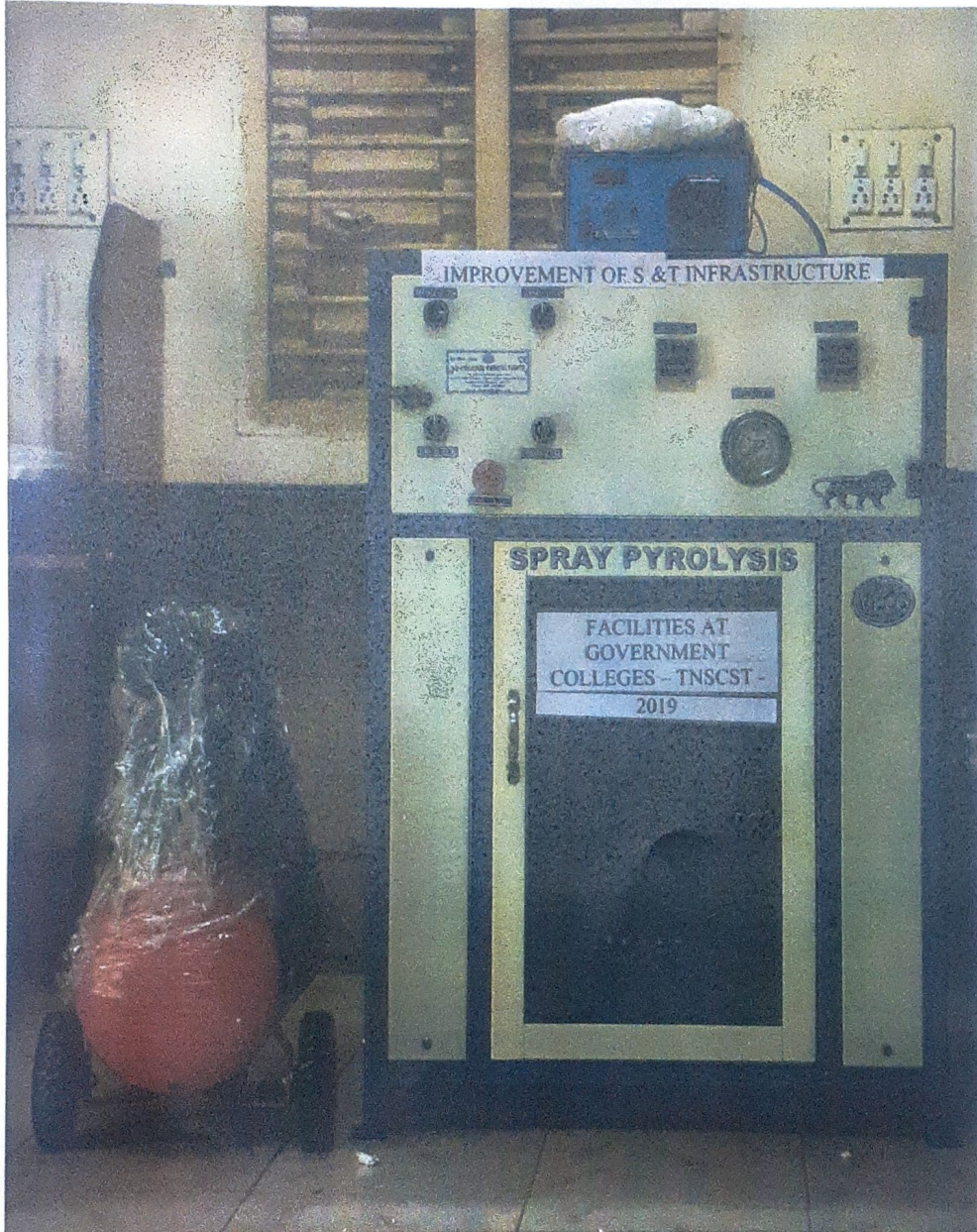
### D. SPRAY GUN

1. Nozzle : Glass Gun (1mm dia)
2. Spray gun : Made by glass with special design
3. Spray gun and hotplate height: 260 mm E.AIR COMPRESSOR: 1. Working pressure at outlet of spray gun : Adjustable 1.5bar 2. Air Compressor : 0.25hp  
In built compressor 3. Air tank capacity : 10 liter
4. Air delivery : 25 CFM
5. Receiver Tank : Fitted with Safety Valves, Pressure Gauge, Drain Valve
6. Fittings : Pressure Relief Valve, Automatic Pressure Switch, Suction Filter will be provided.

### F. CONTROL SYSTEM

1. Temperature control: TAIE PID Temperature programmer.
2. Temperature sensor: K type thermocouple to control the furnace.
3. Temperature sensor: Non contact sensor for specimen (furnace temperature)  $\pm 1^{\circ}\text{C}$
4. Accuracy

5. Indications : a) Ammeter and Voltmeter b) Mains Indicator c) Output Indicator .
6. Control switches : Mains on, out put on
7. Pressure: Analogue pressure indication.



**SPRAY PYROLYSIS SETUP - THIN FILM  
COATING UNIT**

# EQUIPMENTS PURCHASED FOR CHEMISTRY

## DEPARTMENT

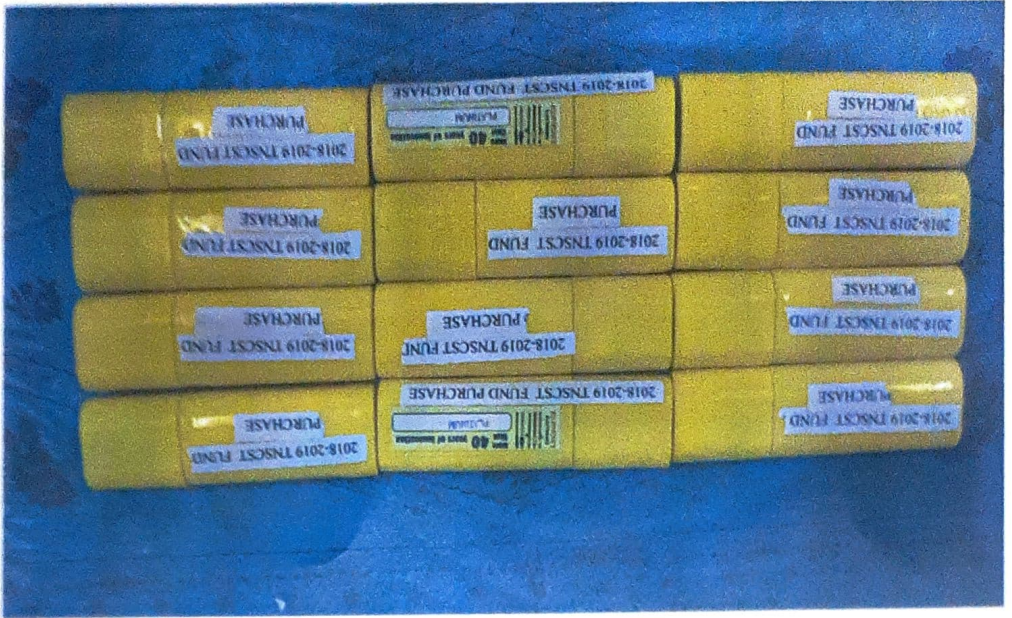
1. PHOTOELECTRIC CALORIMETER
2. CALOMEL ELECTRODE
3. DIGITAL POTENTIOMETER
4. PLATINUM ELECTRODE
5. ORBITAL - ROTARY SHAKER
6. ELECTRIC WATER BATH
7. DIGITAL ELECTRONIC BALANCE (0.001mg)
8. MELTING POINT APPARATUS



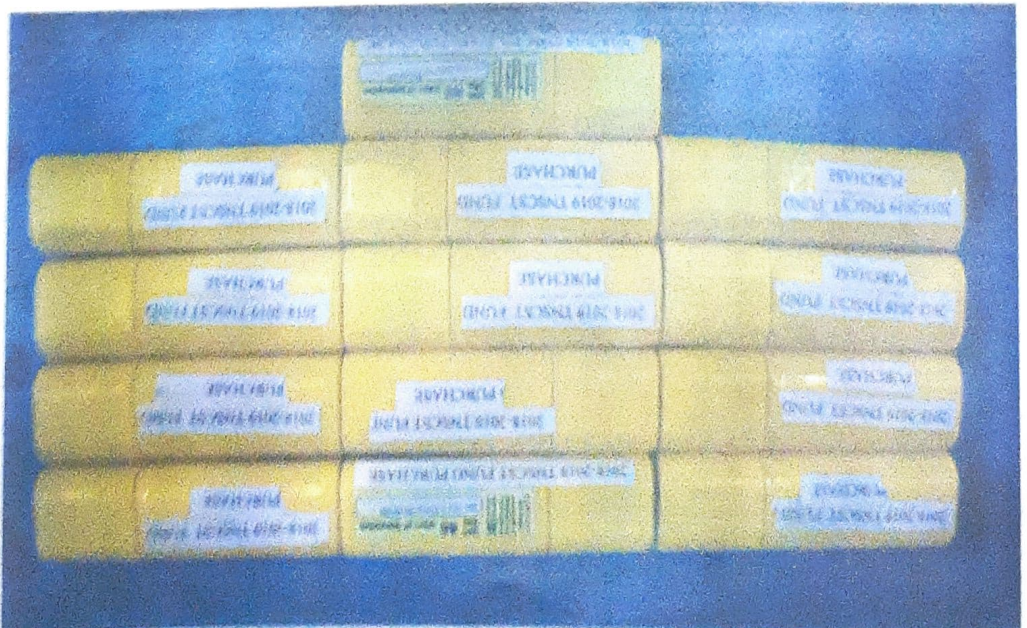
**DIGITAL CALORIMETER**



# PLATINUM ELECTRODE



# CALOMEL ELECTRODE







ORBITAL SHAKER

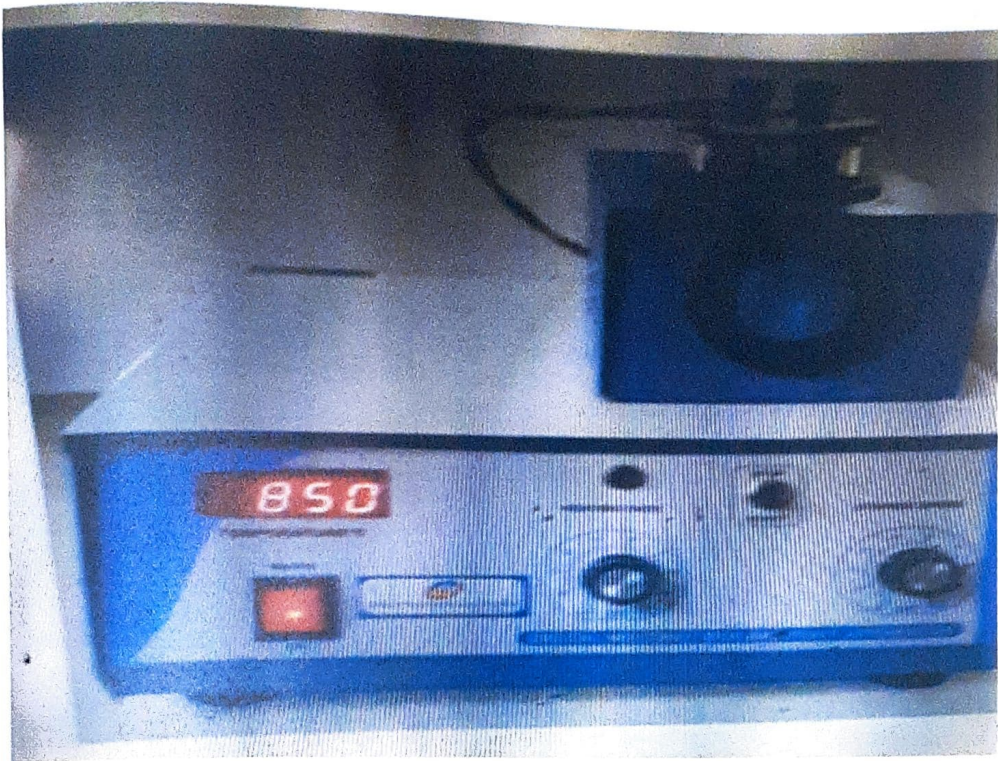


ELECTRIC WATER BATH



**DIGITAL ELECTRONIC BALANCE**

# MELTING POINT APPARATUS



EQUIPMENT PURCHASED FOR BOTANY DEPARTMENT

REMI COOLING TABLE TOP CENTRIFUGE



BENCH TOP CENTRIFUGE

From

Dr. T. Balakrishnan  
Co-ordinator  
Associate Professor and Head  
PG & Research Department of Physics  
Periyar EVR College (Autonomous)  
Race Course Road, Khajamalai  
Tiruchirappalli – 620 023

To

The Member Secretary  
Tamil Nadu State Council for Science and Technology  
Directorate of Technical Education Campus  
Chennai – 600025

Through

The Principal  
Periyar EVR College (Autonomous)  
Race Course Road, Khajamalai  
Tiruchirappalli – 620 023

Sir,

Sub.: Submission of Utilisation certificate and Final Report of scheme – “Improvement of S&T infrastructure facilities at Government Colleges” - reg.

Ref.:(1). TNSCST/S&T INFRA/VR/04/2016-17/2320/ Dated 31.05.2017.

(2). TNSCST/ S&T INFRA/BATCH I& II /2019/ 5948/05.03.2019

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Herewith I am submitting the Utilisation certificate and Final Report of scheme entitled “Improvement of S&T infrastructure facilities at Government Colleges” awarded to Science Departments of Periyar EVR College.

Thanking You

Yours sincerely



(T. BALAKRISHNAN)

Dr. T. BALAKRISHNAN  
M.Sc., M.Phil., B.Ed., Ph.D.  
Associate Professor of Physics  
Department of Physics  
Periyar E.V.R. College (Autonomous)  
Tiruchirappalli - 620 023

Forwarded



PRINCIPAL

PERIYAR E.V.R. COLLEGE  
TIRUCHIRAPPALLI - 620 023  
D.O.CODE CL102