Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University Estd. u/s 3 of UGC Act 1956, Category 'A' by MHRD
Re-accredited with 'A++" Grade by NAAC. CGPA 3.65/4, Category I by UGC
Coimbatore - 641 043, Tamil Nadu, India

Bharat Ratna Prof. CNR Rao Research Centre

Report of the Workshop on

"Thermogravimetric Analysis and its Advancements"

(PG students, Researchers of Science and Engineering disciplines of any institution)

Date: 08.09.2023 (Friday)

Time: 10.00 am to 1.30 pm

Venue: Gallery & Prof. CNR Rao Research Centre

Report on Workshop Thermogravimetric Analysis

A workshop for Thermogravimetric Analysis was organized by Dr. P. Lalitha (Coordinator), Dr. P. Arulpriya (Assistant Coordinator) and Ms. S. SubaSree (Lab Technician) of Bharat Ratna Prof. CNR Rao Research Centre and Master of Ceremony was delivered by Ms. R. Rajalakshmi (Research Scholar, Chemistry). The workshop was held on 08th September 2023 from 10.00 am – 1.00 pm at Gallery of our institution for Researchers of Science and Engineering disciplines of inside and outside institution.

The session began with a prayer song and it is followed by welcome address delivered by Dr. P. Arulpriya, Asst.Coordinator, Prof CNR Rao RC, and introductory talk delivered by **Dr. P. Lalitha**, Director, Research and Development Cell i/c. The facilities available at Bharat Ratna Prof. CNR Rao Research Centre and the various applications of Thermogravimetric Analyzer and its significance in day-to-day usage were also highlighted in the talk.

The theory session of the Thermogravimetric Analysis (TGA) was handled by **Mr. Sivakumar Ganapathy**, Manager- Material Characterization Products, inkarp Instruments PVT LTD, Hyderabad The theory session focused on the instrumentation, fundamentals, techniques, methodology, and instrumentation and applications of TGA for various fields of study. The precision, accuracy, resolution and various factors affecting TGA were illustrated. The diverse samples handled in TGA instrument and significant interpretations acquired are highlighted.

The theory part is followed by demonstration and Prof CNR RAO Research Center visit. During the visit the technician and scholars explained the instrumentation and facilities available to the participants. Hands-on training demonstration was handled by **Dr. P. Arulpriya**, the various instrument components of TGA, sample placing, operation and measurements were demonstrated for the participants. It includes TGA and DTA techniques, varying heat rate and crucible measurements, and interpretation of results are explained.

The conclusion of the workshop was with the question and answer session. The applications of TGA for textile-related studies, Crucible usage, difference between DSC vs DTA, interpretation of data and its use for fiber,

nanocomposites and fabric samples were clarified by the speaker **Mr. Sivakumar Ganapathy,** Researchers belonging to Chemistry, Zoology, Food Science and Nutrition from inside and outsiders from PSGR Krishnamal College for Women and Kalaignar Karunanidhi Institute of Technology of about **23 in numbers were the beneficiaries** of the workshop.


Ms. R. Rajalakshmi, Research Scholar of Chemistry delivered Master of Ceremony


Dr. P. Arulpriya, Assistant Coordinator Bharat Ratna Prof. C.N.R Rao Research Centre delivered the Welcome Address and Speaker Introduction

Dr. P. Lalitha, Director (i/c), Research and Development, Coordinator Bharat Ratna Prof. C.N.R Rao Research Centre delivered introductory talk

Mr. Sivakumar Ganapathy, Manager- Material Characterization Products, inkarp Instruments PVT LTD, Hyderabad delivered the talk about TGA and its usage

Dr. P. Arulpriya, Assistant Coordinator Bharat Ratna Prof. C.N.R Rao Research Centre gave TGA instrument Demonstration

Feedback Session at Gallery

Avinashilingam Institute for Home Science and Higher Education for Women,
Coimbatore-641043

Bharat Ratna Prof.C.N.R Rao Research Centre

Workshop on "Thermogravimetric Analysis and its Advancements"

Certificate

This is to certify that Manju Thomas, part time PhD

has successfully completed the Workshop on "Thermogravimetric Analysis and its Advancements"

organized by Bharat Ratna Prof.C.N.R Rao Research Centre on 08.09.2023

Asst.Coordinator
Prof.CNR Rao Research Centre

Coordinator
Prof.CNR Rao Research Centre

Registrar

Made for free with Certify'em

E-Certificate of participation (sample copy)

Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University Estd. u/s 3 of UGC Act 1956, Category 'A' by MHRD
Re-accredited with 'A++" Grade by NAAC. CGPA 3.65/4, Category I by UGC
Coimbatore - 641 043, Tamil Nadu, India

Bharat Ratna Prof.CNR Rao Research Centre

Workshop on

"Thermogravimetric Analysis and its Advancements"

On

08.09.2023 (Friday)

Time: 10.00 am to 1.00 pm

Dr.P.Lalitha
Director R&D i/c
Will deliver the introductory talk

Lecture
Mr. Sivakumar Ganapathy,
Manager- Material Characterization Products, inkarp Instruments PVT LTD, Hyderabad

Demonstration: Dr.P.Arul Priya

Asst.Coordinator, Prof.CNR Rao Research Centre

Registration Fee: Rs.50/-, E-certificate will be provided to registered participants

Eligibility – PG and Research scholars of relevant disciplines

****

Registration link: **http://tinyurl.com/2edx8twh**

AboutTGA

Basic Principles of Thermal Design: Thermal design is based on the basic theory of heat transfer and fluid mechanics. Where there's temperature difference, there's heat transfer from high temperature zone to low temperature zone. Heat transfer can be achieved through heat conduction, heat convection and heat radiation.

Thermogravimetric analysis (TGA) is a powerful technique for the measurement of thermal stability of materials including polymers, fabrics. In this method, changes in the weight of a specimen are measured while its temperature is increased. Moisture and volatile contents of a sample can be measured by TGA.

The two main thermal analysis techniques are thermogravimetric analysis known as TGA which measures the change in weight with temperature and Differential thermal analysis known as DTA which detects changes in heat content.

Thermal analysis is important as it is able to accurately predict the stability, durability and strength of a material and this has wide impacts on cutting-edge industry, technology and construction. It helps chemists to recognize how certain properties of materials are significant to a given application.

Key Uses of Thermal Analysis

Thermal gravimetric analysis can be used as a quality control or assurance tool to guarantee that products meet their material specifications. For example, in fiberglass reinforced circuit boards thermal analysis can be used to determine the level of resin and fiberglass in the material by monitoring decomposition.

Thermal analysis can also be used to determine carbon content, for example in an ethyl cellulose sample gas switching can be used to find the sample gas purge rate and then the gas switch can be triggered to find the carbon content of the material.

Thermal analysis is frequently used in the analysis of nanomaterials in the manufacture of carbon nanotubes. It is used as a quality control tool and characterizes the levels of metallic catalytic residue that stay on the CNT as CNT are categorized by recent purity.

Thermal gravimetric analysis can also be used to:

Identify a counterfeit product
Identify safe operating temperatures in a range of gases
Enhance product formulation processes, as a better understanding of the occurrence of thermal events means a process can be optimized.
Reverse engineer a product
Increase laboratory productivity

PROGRAMME

10.00 am- 10.05 am	:	Prayer
10.05 am- 10.15 am	:	Welcome Dr.P.Arul Priya Asst.Coordinator Prof CNR Rao Research Centre Avinashilingam Institute for Home Science andHigher Education for Women
10.15-10.20 am	:	Dr.P.Lalitha Professor of Chemistry,Director R & D i/c, Coordinator, Prof CNR Rao Research Centre Avinashilingam Institute for Home Science andHigher Education for Women
10.20 am – 11.15 am	:	Theory Session Mr. Sivakumar Ganapathy Manager- Material Characterization Products, inkarp Instruments PVT LTD, Hyderabad
11.15 am to 11.30 am	:	Break
11.30 am to 12.45 pm	:	Demonstration & Feedback Session / Interaction
12.45 pm to 1.30 pm	:	Vote of Thanks Any one scholar-voluntary basis

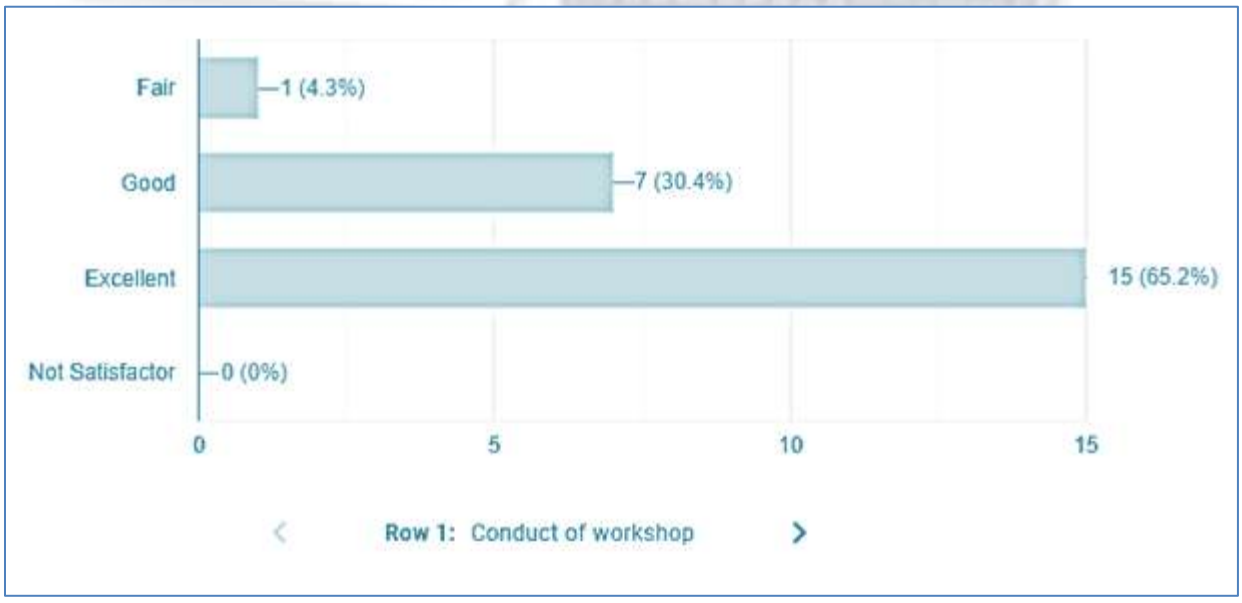
Registration link : http://tinyurl.com/2edx8twh

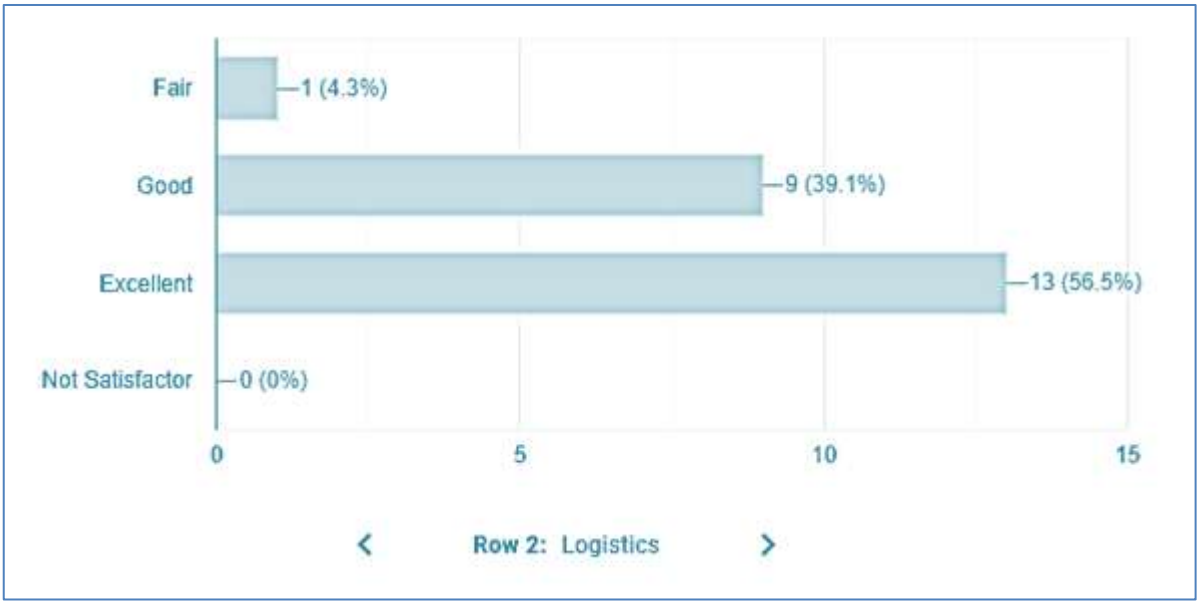
Registration Fee : Rs.50/-

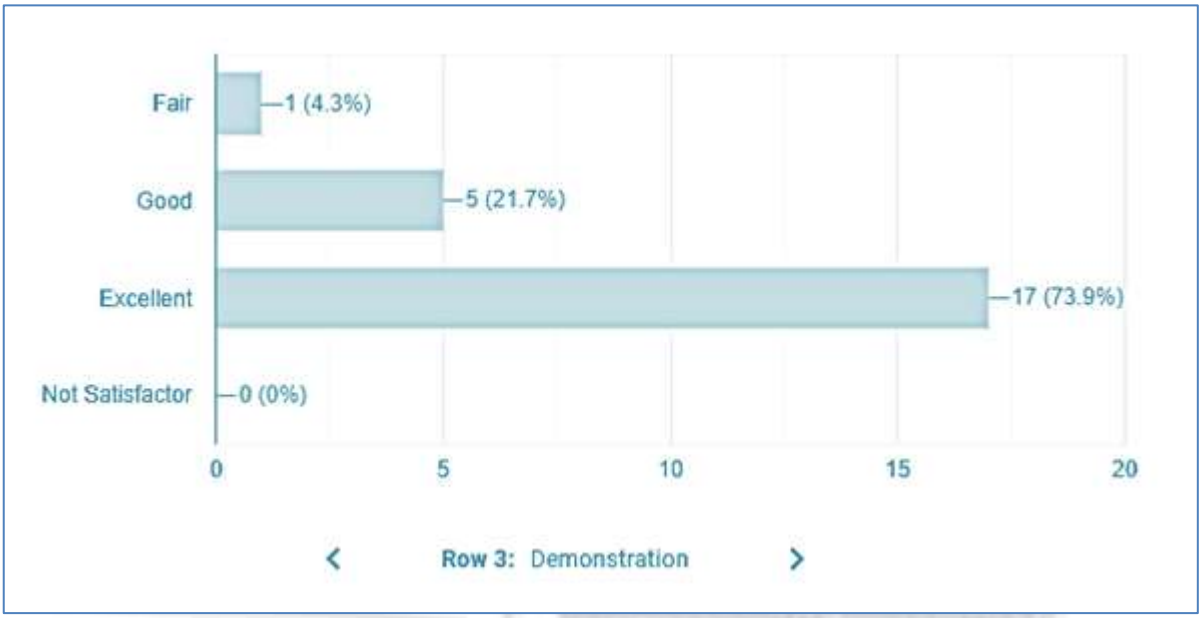
Theory session : Gallery

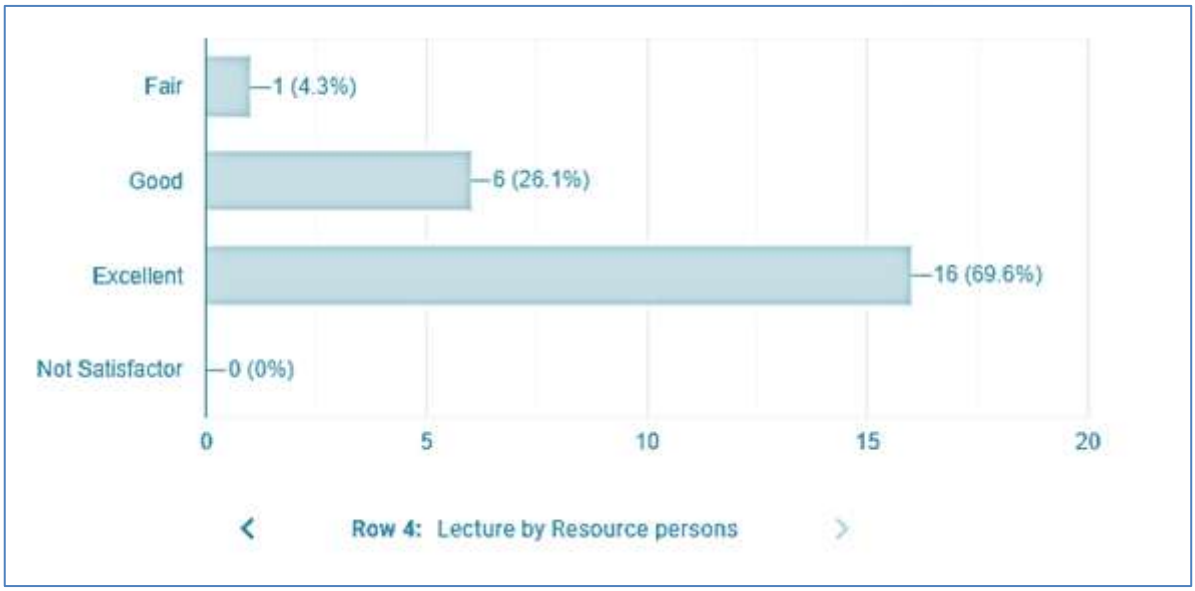
Demonstration session : Prof. CNR Rao Research Centre in batches of 10

Feedback about the event




Fair
1 (4.3%)
Good
9 (39.1%)
Excellent
13 (56.5%)
Not Satisfactor
0 (0%)
0
5
10
15
Row 2: Logistics

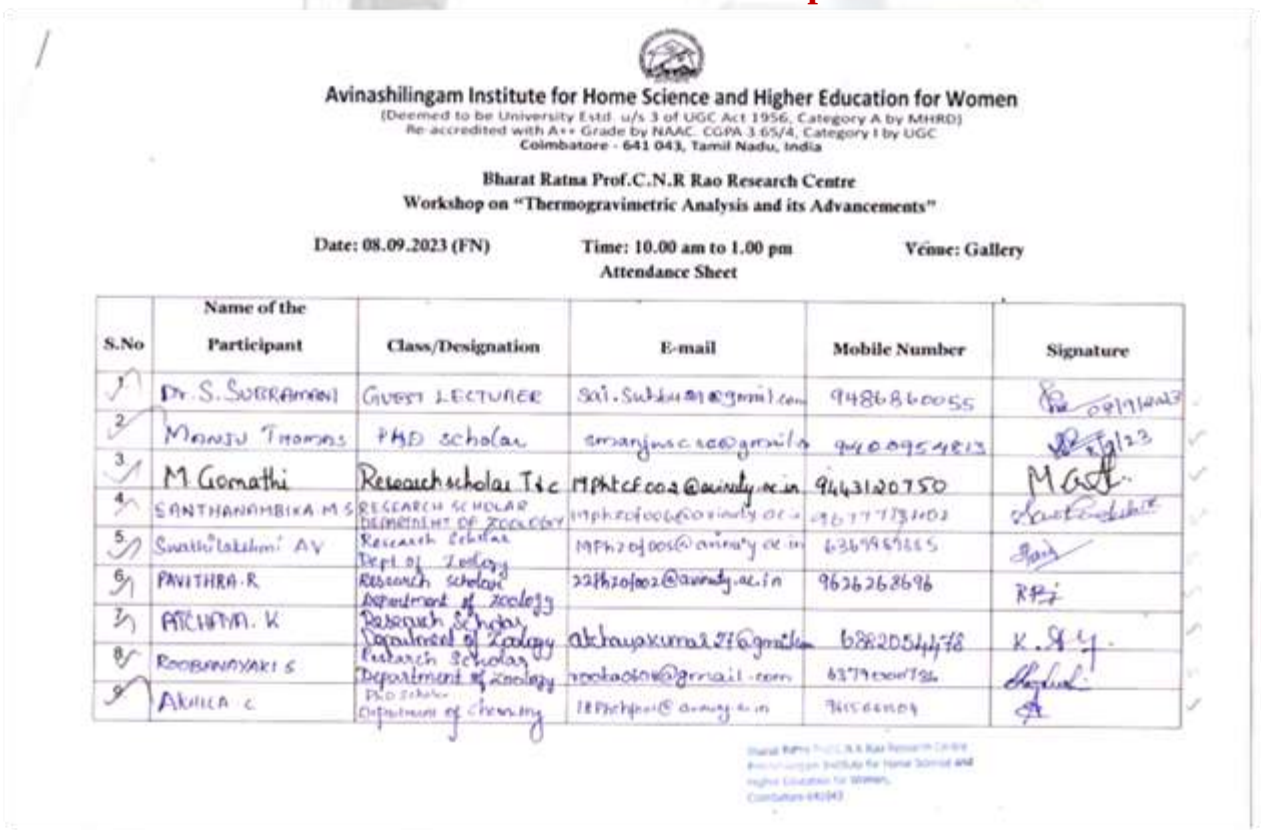

Fair
1 (4.3%)
Good
5 (21.7%)
Excellent
17 (73.9%)
Not Satisfactor
0 (0%)
0
5
10
15
20
Row 3: Demonstration


Fair
1 (4.3%)
Good
6 (26.1%)
Excellent
16 (69.6%)
Not Satisfactor
0 (0%)
0
5
10
15
20
Row 4: Lecture by Resource persons

Suggestion given by participants

Nil
No
Thank you for giving me the opportunity to participate the work shop
No Thankyou
No
Was informative and useful
Overall session is very useful.
Demonstration was good and informative
Informative workshop
Good
Mam, we would like to have exclusive interpretation session for not only TGA but also few other instrumentations.
Informative Session
It was really, nice experience.
Thank you for the session. Would like to attend more detailed session on the same
Expecting more informative resource talk mam
INFORMATIVE
Overall session is very informative

Attendance Sheet of the Participants



Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University Estd. u/s 3 of UGC Act 1956, Category A by MHRD)
Re-accredited with A++ Grade by NAAC, CGPA 3.65/4, Category I by UGC
Coimbatore - 641 043, Tamil Nadu, India

Bharat Ratna Prof.C.N.R Rao Research Centre
Workshop on "Thermogravimetric Analysis and its Advancements"

Date: 08.09.2023 (FN) Time: 10.00 am to 1.00 pm Venue: Gallery

Attendance Sheet

S.No	Name of the Participant	Class/Designation	E-mail	Mobile Number	Signature
1	Dr. S. SUBRAMANI	GUEST LECTURER	sai.subbu91@gmail.com	9486860055	
2	MANJU THOMAS	PHD scholar	smanjuscc@gmail.com	9400954813	
3	M Gomathi	Research scholar T&C	MPhtcf003@avinuty.ac.in	9443120750	
4	SANTHANAMBIKA M S	RESEARCH SCHOLAR DEPARTMENT OF ZOOLOGY	mphzof006@avinuty.ac.in	9677773402	
5	Swathilakshmi AV	Research Scholar Dept of Zoology	MPhzof005@avinuty.ac.in	6369955855	
6	PAVITHRA.R	Research scholar Department of Zoology	22Phzof002@avinuty.ac.in	9626268696	
7	ARCHANA. K	Research Scholar Department of Zoology	akthayakumar27@gmail.com	6382054478	
8	ROOBANAYAKI S	Research Scholar Department of Zoology	roobas604@gmail.com	6379600736	
9	AKILA C	PhD Scholar Department of Chemistry	18phchpol@avinuty.ac.in	9655660804	

10	Nivedha K	Ph.D Scholar Department of T&C	21phtcf003@avinuty.ac.in	78456102[illegible]	[signature]
11	PARIMALA D	Asst Prof [illegible]	[illegible]@gmail.com	9344376096	[signature]
12	HARINIVASHINI R	Ph.D Research Scholar Chemistry [illegible]	22phchf[illegible]@avinuty.ac.in	7397174947	[signature]
13	PON NIVETHA A	Ph.D. Chemistry, [illegible]	20phchf005@avinuty.ac.in	637[illegible]	[signature]
14	M.[illegible]	Ph.D T&C	[illegible]	7094752043	[signature]
15	T.Thabeertha	I Msc chemistry	23MCH07@psgrkcw.ac.in	90258017[illegible]	[signature]
16	C.Rajanandhini	I-Msc chemistry	23MCH06@psgrkcw.ac.in	[illegible]	[signature]
17	Kavi Priya A	I-Msc chemistry	23MCH05@psgrkcw.ac.in	6374182287	[signature]
18	Darshika K.C	I-Msc chemistry	23mch04@psgrkcw.ac.in	9597724151	[signature]
19	Priyadharshini M	I. Msc chemistry	23mch066@psgrkcw.ac.in	9025643950	[signature]
20	PAPITHA T	I Msc chemistry	23mch065@psgrkcw.ac.in	7010204557	[signature]
21	HARSINI N	I Msc chemistry	23mch052@psgrkcw.ac.in	[illegible]	[signature]
22	NITHYA R	I M.Sc chemistry	23MCH053@psgrkcw.ac.in	[illegible]	[signature]
23	R.Rajalakshmi	Research Scholar Ph.D Chemistry	19PHCHF003@avinuty[illegible]	[illegible]	[signature]
24					
25					
26					
27					

Bharat Ratna Prof.C.N.R Rao Research Centre
Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore 641043

Receipts of the Workshop

(Total Amount: Rs.1150/-)

Avinashilingam Institute for Home Science and Higher Education for Women

Coimbatore 641 043, Tamil Nadu, India

Miscellaneous Receipt

Original

Receipt No	:REM1233/2023-24
Receipt Date	:12-09-2023
Name*	:C.Akhila
Department Name	:Chemistry
Account Type	:Research and Consultancy
Towards	:Prof.CNR Rao Res.Centre
Description	:TGA workshop as on 08.09.23 (No of students 23 x Rs.50)_Ref.no:6289312531/08.09.23
Mode of Payment	:NEFT
Amount	:₹ 1150.00/-

(Received One Thousand One Hundred and Fifty rupees only)

Cashier

Permission Letter

249

Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University Estd. u/s 3 of UGC Act 1956, Category A by MHRD)Re-accredited with 'A++' Grade by NAAC.
Recognised by UGC Under Section 12 B Coimbatore-641 043, Tamil Nadu, India

GUIDELINES/PROFORMA FOR ORGANISING CONFERENCES, WORKSHOPS, SEMINARS, WEBINARS OR OTHER EVENTS MARCH 2022 and onwards

Name of the applicant: Dr.P.Lalitha, Department: Prof. CNR Rao Research Centre School: R & D

1. Activity : **Workshop**
2. Geographical Coverage : Institutional Level
3. Name of the Event : **Thermogravimetric Analysis and its Advancement**
4. Date(s) : 01.09.2023 Total number of days: One
5. Venue : Gallery/Prof. CNR Rao Research Centre
6. Name & Designation of Convenor/Organizing Secretary and Team
   Convenor : Dr. P. Lalitha, Director R&D i.c, Coordinator, Prof. CNR Rao RC
   Organizing Secretary : Dr. P. Arulpriya, Asst. Coordinator, Prof. CNR Rao RC
   Organizing Member : Ms. S. Suba Sree, Lab Technician, Prof.CNR Rao RC
7. Financial Assistance Required : **No**
8. Details of assistance sought from other sources : **Nil**
9. Details of collaborating institution, if any : **Nil**
10. Detailed Proposal of the Activity
    A. Aims/Objectives :
    To learn about the advanced material characterization in Thermo Gravimetric Analysis (TGA) for the students and research scholars of Science and Engineering division
    B. Target audience/participants with expected number: 30
    C. Details of Sessions:
    The Session covered the advancement of TGA Instrument, Material Characterization and its effective usage in the field of science and Engineering
    D. Please mention themes/topics to be covered under each Technical Session and names of Resource Persons:
    Demonstration : Mr. Sivakumar Ganapathy, Manager- Material Characterization Products, inkarp Instruments PVT LTD, Hyderabad
    E. Expected outcome: Understand the concept and material characterization involved in TGA
11. In case of an International Conference and collaboration, kindly give resources for International travel and a letter from the concerned head of the collaborating body
12. Registration fee: Yes Rs.50 per participant.

05436
01 SEP 2023
P NO 036

P. Arulpriya 30.08.2023
Asst Coordinator

Coordinator

30/8/2023
Director R&D

Finance Officer
1.9.23

Registrar
1/9/23

02/09/2023
Vice Chancellor

Date: 30.08.2023
Place: Coimbatore

Recd 2/9/23 VCH/264 2/9/23

Acknowledgement

The organizers thank the authorities of the Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore for the necessary approvals and opportunity to conduct this event.

Signature of the Coordinator