
RESEARCH CENTER FOR APPLIED SCIENCES

VISION

To explore the new advances in various frontiers of Chemistry, Physics and Allied Disciplines through innovative research and collaborations with high ethical standards.

MISSION

Design and synthesize the molecules and materials that modulate biological processes. Besides, promote the development of innovative interdisciplinary research activities through collaborations.

Consolidate funding for the development of infrastructure facilities to carry out research work, which create new pathways to translate basic research to commercial products.

INTRODUCTION

The **Center for Applied Sciences** was established with a motto of promoting interdisciplinary research in the fields of Physics and Chemistry. Previously it was **Chemistry Research Lab** in 2013, executing research on basic synthetic chemistry problems. Presently, the center is upgraded to execute interdisciplinary collaborative research work. The faculty is provided with opportunities to carry out research in organic synthesis, Nano-materials, Polymers, enviro-analytical

techniques and developments in the existing research methodologies.

Four UGC-Minor projects are completed and two internal research funding projects are in progress. Recently, one more research project from DSIR was allotted. Further a good number of research papers are published in peer-reviewed journals with good impact factor.

OBJECTIVES

- ❖ Synthesize new organic bioactive molecules
- ❖ Design and develop optical fibers
- ❖ Synthesize new Nano-composite for energy storage applications
- ❖ Design and develop materials for sensor applications
- ❖ Develop new Green methodologies

THE TEAM

FACULTY

1. **Dr. Y. B. Kiran**, Asst. Professor of Chemistry (SL), BS&H-
COORDINATOR (Synthetic Organic Chemistry).
2. **Dr. G. Rambabu**, Assoc. Professor of Chemistry, B S & H,

(Synthetic Organic Chemistry).

- 3. Dr. A. Uma Ravisankar**, Asst. Professor of Chemistry, (Synthetic Organic Chemistry).
- 4. Dr. M. Varalakshmi**, Asst. Professor of Chemistry, B S & H (Synthetic Organic Chemistry).
- 5. Dr. V. Raju**, Asst. Professor of Chemistry, B S & H (Organo Analytical Chemistry, Chemosensors).
- 6. Dr. P. Meera**, Asst. Professor of Chemistry, B S & H (Physical Chemistry, Fuel Cells).
- 7. Mr. B. Hanumanthu**, Asst. Professor of Chemistry, B S & H (Organo Analytical Chemistry, Chemosensors).
- 8. Dr. Dadamiah PMD Shaik**, Asst. Professor of Physics, B S & H (Nanotechnology).
- 9. Dr. M. V. Sasi Kumar**, Asst. Professor of Physics, B S & H (Nanotechnology).
- 10. Mr. P. Naresh Kumar Reddy**, Asst. Professor of Physics, B S & H (Nanotechnology).

COLLABORATIONS

- ❖ **Prof. Luiz C. A. Barbosa**, Department of Chemistry, ICEX, Universidade Federal de Minas Gerais, Belo Horizonte, MG 31270-901, Brazil.
- ❖ **Prof. V. Vijayakumar**, Center for Organic and Medicinal Chemistry, VIT University, Vellore 632 014, Tamil Nadu, India.
- ❖ **Prof. O. M. Hussain**, Thin film Laboratory, S V University, Tirupathi.

- ❖ **Prof. Srinivasan Ambatipati**, Department of Chemistry, McNeese State University, Louisiana, USA.
- ❖ **Prof. Kirti M. Yenkie**, Department of Chemical Engineering, Rowan University, New Jersey, USA.
- ❖ **Prof. James Wright**, Department of Chemical Sciences, University of Auckland, New Zealand.
- ❖ **Prof. Absar Ahmad**, Director – Interdisciplinary Nanotechnology Centre, Aligarh Muslim University, Aligarh.
- ❖ **Prof. D.V.S. Sai Gopal**, Department of Virology, Sri Venkateswara University, Tirupati.
- ❖ **New Reka Greensynth Technologies Pvt. Ltd.**, Mumbai.
- ❖ **Mechemco Resins Pvt. Ltd.**, Mumbai.

ACTIVITIES

1. Synthesis of new organic compounds, study their structure and applications.
2. Development of new Chemosensors.
3. Synthesis of new nanomaterials and study their composition and applications.
4. Supporting M.Sc., (Chemistry) students in their project works.
5. M.Sc., (Organic Chemistry) students from *Sree Vidyanikethan Degree College* are working for their PG projects.

ATMOSPHERIC RESEARCH LAB (ARL)

Introduction:

Atmospheric Research Lab (ARL) is to predict the behavior of the atmosphere through Lidar and Radar observations that carries out fundamental and applied research in Atmospheric Sciences.

Objectives:

- To study atmospheric gravity waves and their spectral characteristics in troposphere, stratosphere and mesosphere using radar and Lidar facilities located at Gadanki, a northern hemisphere and lidar at Reunion islands, France, a southern hemisphere site.
- To study the wave coupling processes in the MLT region over a tropical station, Gadanki /Tirupati

Activities:

The study focuses on the following streams, such as

- Studying the gravity wave characteristics in terms of time (frequency) and height (wave number), associated Potential Energy and their seasonal dependences based on large data set (14 years) using Lidars located at Gadanki and Reunion Islands, France.
- Investigating the tropical cyclone generated GWs and their role in altering the MLT dynamics and mean circulation.

- Identifying the exact source for the generation of various GWs that are propagated to the MLT region using Ray tracing technique (vertical coupling).

Research Scholars:

- 1 Mr. P.Naresh Kumar Reddy
- 2 Mr. G. Venkata Chalapathi
- 3 Mrs. Kiranmai
- 4 Ms.M.Samatha Priyadarshini *
- 5 Ms. M.Sarvani *

* Both the above mentioned scholars worked **as JRF under DST - Fast Track Scheme for Young Scientists**

Achievements:

1. G Venkata Chalapathi , research scholar was awarded with – Ph.D degree by JNTUA, Anantapuram under the supervision of Dr.P.Vishnu Prasanth in the area of Atmospheric Physics.
2. First time quantification of high frequency gravity wave Potential energy in stratosphere and lower mesosphere

Outcomes:

Long term variability of gravity wave activity is achieved in the low latitudes which improved the perceptiveness of climatic models and atmospheric dynamics in the middle atmosphere. **This result was also useful in Global Mean Circulation.**