

# CRG Bulletin

Issue-1

Rabindranath Tagore University

May-2018

## Core Research Group

*Making things obsolete which were latest till yesterday*

### ● **CRG - Most Innovative Initiative to promote Research**

Research plays a key role in the academic pursuit of higher education. As a matter of fact, research environment in a university is the barometer of its academic health. Research is a long drawn affair and demands heavy capital expenditure with quite uncertain Returns on Investments (RoI). For private universities, which normally have very little support from the government, research becomes a double edged weapon; no immediate returns from research on one side and students general apathy towards research, clubbed with their calculated focus on the degree alone, on the other side. Yet there are few universities like Rabindranath Tagore University (RNTU) who are very keen on research and ready to take the risk of large investment. Core Research Group (CRG) is a unique initiative of RNTU. With a corpus of Rs. 1 Crore, CRG has been established in the University as an independent group with an annual budget of Rs. 1 Crore for Research related activities. Currently this group is handling 8 Research Projects funded from its own resources. There are 3 ongoing international projects too and many more activities and events on going and in the pipeline. The first issue of CRG bulletin provides the glimpses of research related activities.

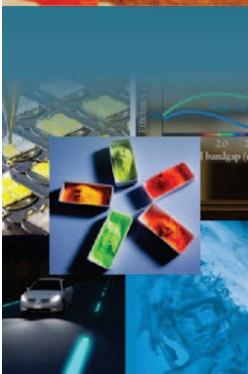
### ● **The Group Composition**

Chairman	-	Shri Santosh Choubey Chancellor RNTU
Director	-	Prof. Vijay Kant Verma Founder VC of RNTU
Member	-	Prof. AK Gwal VC, RNTU Madhya Pradesh
Member	-	Prof. SK Shrivastav VC, AISECT University Jharkhand
Member	-	Prof. RP Dubey VC, CVRU Chhattisgarh
Member	-	Prof. AS Zhadgaonkar Founder VC, CVRU, CG
Member	-	Prof. R.K. Pande VC, CVRU Bihar
Member	-	Maj. Gen Ajay Chaturvedi VSM, AVSM
Member	-	Prof. Murali Mantrala
Member	-	Prof. Anurag Seetha
Member	-	Prof. Sandhya Chaturvedi
Member	-	Prof. CK Ghosh

### ● **Navratn Centers of Excellence**

Taking deviation from normal protocol, nine Centers of Research Excellence have been set up which though come under respective Departments, cut across all the other departments in the University and enjoy certain autonomy also in research operations. visit [www.aisectuniversity.ac.in](http://www.aisectuniversity.ac.in) for more

□ Center for Renewable Energy (CRE)	- Director	- <b>Dr. Anil Kurchania</b>
□ Advanced Material Research Lab (AMRL)	- Head	- <b>Dr. Sudeshna Ray</b>
□ Center for Space & Earth Science (CESS)	- Head	- <b>Dr. Suryanshu Choudhary</b>
□ Agriculture Research Complex (ARC)	- Head	- <b>Dr. Pragya Shrivastava</b>
□ Tagore International Center for Arts & Culture (ICAC)	- Head	- <b>Mr. Vinay Upadhayay</b>
□ Center for IoT and Advanced Computing (CIOTAC)	- Head	- <b>Dr. Preeti Maheshwary</b>
□ Center for Incubation for Entrepreneur & Startups (CIES)	- CEO	- <b>Mr. Nitin Vats</b>
□ Center for Environmental Science (CES)	- Head	- <b>Dr. R.N. Yadav</b>
□ Dr.CVR Center for Science Communication	- Director	- <b>Mr. Rag Telang</b>



## Research Collaborations

*Individually one drop, together a ocean*

### ● The Current International Collaborations

- ❑ **NCTU Taiwan**  
(Area of Work- material science joint Indo Taiwan DST project is ongoing)
- ❑ **Benaka Biotechnologies Inc USA**  
(Area of Work- Air Foil wind turbine and solar reflective materials)
- ❑ **ICEWaRM Adelaide Australia**  
(Area of work –Water resources, water management. Organised jointly international conference on 15-18 March 2016 with 20 countries coming out with a charter for reforms and roadmap)
- ❑ **TSN University of KYIU Ukraine**  
(Area of Collaboration- Earth Quack Prediction)
- ❑ **Mol University, Eldoret Kenya**  
(Area of Work- Climate Change, Water bodies & Environment.)
- ❑ **RPI New York USA**  
(Area of work- Renewable Energy)
- ❑ **Tribhuvan University Kathmandu Nepal**  
(Area of Interest – Joint Research in environmental and earth science)
- ❑ **A & M Texas University USA**  
(International Conference on Water, Energy, Environment and Society ICWEES-2018 at Tunisia being jointly organised in which 25 countries are participating.)
- ❑ **RPI, New York USA**  
(Collaboration research in the field of renewable energy, faculty exchange and joint publication of research work)

### ● Some of The Indian Collaborations

- ❑ **RTM University Nagpur** - In the area of material science
  - ❑ **Gujarat Forensic Sciences University Gujarat** - In the area of Earth & Space Sciences
  - ❑ **CRISP Bhopal** - In the area of automation and communication
  - ❑ **BSSS Bhopal** - In the area of social sciences
  - ❑ **S-VYASA Bangalore** - In the area of Yoga and Meditation
  - ❑ **BSNL Jabalpur** - In the area of wireless communication
  - ❑ **Kwality Photonics Pvt Ltd Hyderabad** - In the area of LED Technology
  - ❑ **National Institute of Solar Energy (SEC) Gurgaon** - In the area of solar energy
  - ❑ **JCI Project Solution** - In the area of renewable energy
- Plus more than 20 important organizations.

### ● Some Recent Collaborations for Research Related Work

- ❑ University of Florida
- ❑ BSE Bombay
- ❑ Tata Motors
- ❑ Mahatma Gandhi International University Wardha
- ❑ TEPL Bangalore



MoU with Nepal



Collaboration with NAARI



MoU with Australia



Collaboration with USA

## Patents for Ideas, Process and Products

*Converting hard work, perseverance and patience to patent*

### ● IPR by RNTU

Following IPR's have been registered by RNTU in the year 2017-18 for various innovative processes and products developed during the research work

- ❑ **An Afterglow Material for Cold-Tracer and a Process for the Preparation Thereof.**  
The material developed and process worked out has a very significant application in the defence.  
**Reg No.** 201721036125
- ❑ **A Multipurpose Solar Dryer for Rural Application.**  
The low cost efficient system has vast potential for use in remote agriculture sector and commercial application.  
**Reg No.** 201721034865
- ❑ **A Transformer Fault Detection Device.**  
This remote detection system has very significant application in preventing heavy losses and break downs.  
**Reg No.** 201721034866
- ❑ **A Novel System and Method for Automatic Attendance Marking using IoT.**  
The system has effective application in education sector.  
**Reg No.** 201721040690
- ❑ **Intelligent Solar Street Pole based on luminous level and traffic.**  
This cost effective and efficient system provides significant smart application.  
**Reg No.** 201721040691
- ❑ **Dual Axis Fault Resistant Solar Tracking Device.**  
The system makes the solar system more efficient.  
**Reg No.** 201721042400
- ❑ **Smart Solar Panel Cleaning Device to improve efficiency and economy in water usage.**  
The smart system has dual purpose of improving overall solar power system.  
**Reg No.** 201721042401
- ❑ **A Novel Blue Color Emitting Phosphor for application in agriculture.**  
This product has very important role in improving the yield and quality.  
**Reg No.** 201821003809



Cold Tracer



Solar Dryer



Solar Tracking



Agriculture Project

## Ongoing Research Projects

*The real research is when one doesn't know what he/she is doing*

### ● Government Funded Projects

- ❑ Synthesis and Characterization of Lanthanide for efficiency enhancement of Solar Cells  
**Indo Taiwan** joint Project in collaboration with IIT Delhi funded by **DST**  
Investigator – **Dr. Sudeshna Ray**
- ❑ Development of corrosion resistive Technique in electronic devices  
**DST** funded Project  
Investigator – **Dr. Jyotsna Mishra**
- ❑ Research Project KA-1 for 2017-2020 with PM University Romania  
Project funded by Government of **Romania**  
Investigator – **Dr. Shalini Yadav**
- ❑ Investigator on AB03 and A2 x 3 compounds for extreme condition  
Project funded by **Spanish Government**  
Investigator – **Dr. Sudeshna Ray**

### ● CRG Funded Projects

- ❑ Design & Development of Ecofriendly Pervious Concrete Blocks  
Investigator – **Dr. Shalini Yadav**
- ❑ Research Project on Parvati River Pollution Check and Remedial Measures  
Investigator – **Mr. SK Sharma**
- ❑ Estimation of Pesticide in Fruits & Vegetables in Chhattisgarh Area  
Investigator – **Dr. Manish Upadhyay**
- ❑ Development of a smart Lab and smart innovative system for class room with IoT and application of IoT in agriculture  
Investigator – **Dr. Preeti Maheshwary**
- ❑ Development of an Innovative Solar system for Rural Application  
Investigator – **Mr. Anurag S.D.Rai & Ms. Rita Pawar**
- ❑ Master Slave Dual Axis Tracking System Proto type on one set of existing solar panel at RNTU  
Investigator – **Mr. Shrikant Vaishnav**
- ❑ Study on Financial Literacy in Youth and develop system to improve participation  
Investigator – **Dr. Sangeeta Jauhari**
- ❑ Development of a working model for vertical axis sail type wind mill for water pump in stand along mode for rural application.  
Investigator – **Dr. SR Awasthi**



Solar System for Rural



Solar Tracking Project



Indo-Taiwan, DST Project



Smart Lab with IoT

## Projects in the Pipeline

*Waiting is part of the process for good things to happen*

### ● Projects Awaiting Approval from External Agencies

S. No.	Title	Investigators	Funding Agency	Remarks
1.	Solar Chimney Power Plant with vertical axis wind turbine	<b>Dr. SR Nigam (AU)</b>	DST	
2.	Waste Management and its Utilization for Development of Composite materials.	<b>Dr. Shalini Yadav (AU)</b> <b>Dr. Peer Ole Mallow</b> Vienna, Austria	DST (Indo Austria)	Indo Austria Project
3.	Water resources planning and water quality management for Shipra Sub-Basin of Ganga Basin in India and Aley Sub- Basin of Ob-Irtysk Basin in Russia	<b>Er. Ravi Galkate</b> NIH Bhopal <b>Dr. Shalini Yadav (AU)</b> <b>Dr. Irina Rybkina</b> Russia	DST (Indo Russian)	Indo Russian Project
4.	Solar thermal pumping system with dual axis Tracking System	<b>Dr. SR Awasthi (AU)</b>	DST	
5.	Waste water Treatment with integrated UASB-MFC and UASB-RH based adsorption systems and Energy Recovery	<b>Dr. S. Suresh</b> , MANIT Bhopal <b>Dr. Shalini Yadav (AU)</b> <b>Dr. Tiezhen Ren</b> , China <b>Prof JA (Kobus) Du Plessis</b> South Africa	DST	BRICS Project
6.	Waste water Treatment and Sludge Utilization for Energy Recovery	<b>Dr. Shalini Yadav (AU)</b> (Five International and Three National collaborators) DST	DST (Indo-EU Project)	Indo- European Project
7.	Development of Water Resources management plan in India and Iran with special reference to Water Quality	<b>Dr. Shalini Yadav (AU)</b> (Professor from Iran and Tehran)	DST (Indo – Iran Project)	Indo Iranian Project
8.	Generation of Green Energy for rural application using thermal power of solar energy	<b>Dr. SR Nigam (AU)</b>	MNRE	
9.	Development of Master Slave Dual Axis Tracking System for arrays of solar PV module	<b>Dr. SR Awasthi (AU)</b>	MNRE	
10.	Fabrication of Ultra high efficacy phosphor converted Blue & Red LED for agriculture use	<b>Dr. Sudeshna Ray (AU)</b>	MPCST	
11.	IoT based environmental monitoring and alert system for smart city application	<b>Dr. Preeti Maheshwary (AU)</b>	MPCST	
12.	Development of Pyrophoric metal ceramic composite material for smart flare as IR counter measure	<b>Dr. Sudeshna Ray (AU)</b> <b>Ms Prachi Tadge (AU)</b>	BARC	
13.	Study of emission associated with seismic activity in and around Narmada –San Lineament	<b>Dr. Suryanshu Choudhary (AU)</b>	MES	

## Publications

*We strongly believe in three words-Work, Finish, Publish!*

### ● Research Publications

Research publications produced in a university by its faculty and scholars provide true image of the available research talent and the kind of motivation and resources that the university offers. In a short period the amount of research publication done by the RNTU speaks volumes about the research environment.

### ● In-House Research Journals Published by RNTU

RNTU thought of launching its own journal. Anusandhan a six monthly journal on Engineering Science and Technology came up with its inaugural issue in 2012. **Shodhatyan** – a biannual journal on Education, Commerce, Language and Humanities came up with its first issue in 2014. Both the journals are approved by UGC and indexed by Copernicus. In 2017 they were made online with e-ISSN numbers.

- **ANUSANDHAN** – UGC Approved online and print biannual journal on Engineering, Science and Technology indexed by Copernicus (7 years un interrupted publication)
- **SHODHAYTAN** – UGC Approved on line and print biannual journal on Education, Commerce, Law and Humanities indexed by Copernicus (5 years uninterrupted publication)

### ● In-House Books Publication

RNTU encourages its faculty members to author text books and also publish edited books. The Science Communication Center launched publication of popular science books series in Hindi under project name Anusrijan. For Anusrijan its co-opted writers are from outside also. The Chair for Arts and Culture **Vanmali Srijan Peeth** and **Center for Arts & Culture** produced collection of representative stories of writers from MP for last 100 years in a six volume research work titled **Katha Madhya Pradesh**. The same team is now working on 100 years of representative stories of Hindi writers from India under project **Kath Desh**.

- |                                 |                          |
|---------------------------------|--------------------------|
| □ BOOKS BY FACULTY OF RNTU      | - 46                     |
| □ BOOKS UNDER PROJECT ANUSRIJAN | - 50                     |
| □ KATHAMADHYA PRADESH           | - 6 Volumes              |
| □ KATHADESH                     | - Research work on going |

### ● Research Papers by the Faculty

- |   |              |
|---|--------------|
| □ RESEARCH PAPERS INTERNATIONAL AND NATIONAL JOURNALS   | - About 1000 |
| □ PAPERS IN INDEXED DATA BASE                           | - Above 100  |
| □ RESEARCH PAPERS IN SCI JOURNAL/WEB SCIENCE/GOOGAL/UGC | - Above 200  |

### ● Proceedings of International Conference

The University organises at least more than one Research related events in a year of International and National Level. Proceedings are published.

Springer has published proceedings of International Conference held in March 2016 in 7 volumes.



A portion of publication by RNTU Authors on Display in Central Library



## Advanced Material Research Lab (AMRL)

*Creating new materials that really matters*

Head – Dr. Sudeshna Ray

### ● Lab Objectives

Material Science is one of the signature thrust area of research at RNTU. For the execution of research in this area Advanced Material Research Lab has been established. The Lab is well equipped with several modern instruments for the synthesis of materials. The lab also explores new chemical frontiers in the life sciences, physical sciences, materials, environmental sciences and agricultural sciences through visionary research, innovation and collaboration.

### ● The Current Research Interests

Design, solution synthesis, characterization and luminescence study of New Inorganic Phosphor Materials for the application in the following devices:

- Fabrication of Phosphor Converted White Light Emitting Diode using the phosphors.
- Design of 'Up conversion' and 'Quantum Cutters' as Spectral Converters in Solar Cell.
- Exploration of persistent phosphors for the glow in the dark road.
- Defense application for National Security.

### ● Ongoing Projects

- Synthesis, Characterization of Lanthanide-based Phosphors as Spectral Converters in Solar Cells in collaboration with IIT Delhi and NCTU Taiwan.  
Investigator **Dr. Sudeshna Ray**
- Investigations on ABO<sub>3</sub> and A<sub>2</sub>X<sub>3</sub> compounds under extreme conditions of pressure and temperature (HIGHPRESMAT) in collaboration with the Spanish Govt.  
Investigator **Dr. Sudeshna Ray**
- Design and Synthesis of Persistent Phosphors for the fabrication of One Way Luminescence Cold Tracer in collaboration with DRDO.  
Investigators **Dr. Sudeshna Ray, Dr. Prachi Tadge**

### ● Publications by AMRL

- 16 Research papers in International Journals with Impact Factor of over 2

### ● International Collaborations

- National Chiao Tung University, (NCTU) Taiwan Prof. Teng Ming Chen
- Universitat Politècnica de València (UPV) Spain Prof. Francisco Javier Manjon Herrera
- Universidad de La Laguna (ULL) Spain Prof. Victor Lavin Della Ventura

### ● National Collaborations

- |  |   |
|--|---|
| ● IIT Delhi <b>Prof. Sameer Sapra</b>              | ● BHU <b>Prof. S. B. Rai</b>  |
| ● IISc Bangalore <b>Prof. Abhishek Kumar Singh</b> | ● RTM Nagpur Univ. <b>Prof. Sanjay Dhoble</b>                         |
| ● BARC, Mumbai <b>Dr. D. K. Koul</b>               | ● Sri Venkateswara University, Tirupati <b>Prof. C. K. Jayasankar</b> |



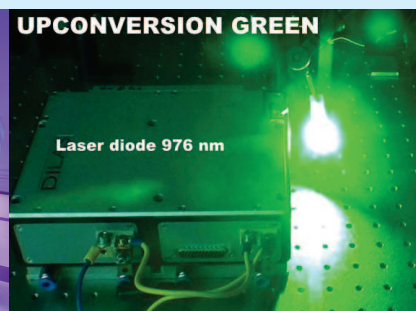
AMRL Research Team



Defence Application Project



Vertical Farming



Up conversion and Quantum cutters

AISECT organises national seminar on sustainable growth

आईसेक्ट विश्वविद्यालय का उच्च शिक्षा परिषद

आईसेक्ट यूनिवर्सिटी

**AISECT varsity makes a mark**

**Breaking News**  
NEETI AYOGE Awards  
ATAL INCUBATION CENTER  
to RNTU  
only 2 universities selected from MP

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आईसेक्ट में हिन्दी विज्ञान लेखन कार्यशाला का शुभारंभ

जॉब फेयर में दिखा उत्साह

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आईसेक्ट यूनिवर्सिटी को जुटेंगे देशभर के

**आईसेक्ट में माइक्रोसॉफ्ट का रिसर्च सेंटर शुरू**

**ई-वेस्ट का उपयोग बिल्डिंग निर्माण में**

केन्द्रीय संचार तथा आईटी मंत्री द्वारा आईसेक्ट विवि पुरस्कृत

AISECT's MoU with Taras Shevchenko National University Ukraine

Evening o

**आईसेक्ट करेगा 13 लाख**

National seminar kicks off at AISECT University

AISECT Un

युवाओं को प्रेरित

**Breaking News**  
RNTU  
the only University in MP selected for GREEN CAMAPUS grant by MNRE

आईसेक्ट विश्वविद्यालय

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पूरक



Sharma, Dr. Shalini, Vaishnav, Dr. Deepti, Prof Verma, Dr. Jauhari, Anurag, Reeta, Dr. Awasthi,

Dr. Preeti, Dr. Yadav,

Investigators of CRG Funded Projects



सेंटी को मिला  
सर्च प्रोजेक्ट

एक नई उड़ान देने का काम कर रहा आईसेक्ट विश्वविद्यालय

## विज्ञान पर्व पर खले कई नए आयाम

Journal included in UGC

holds skill development camp

आईसेक्ट स्किल इंडिया का शानदार आगाज

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क एक्सपर्ट At Aisect-20 Countries Participating

## हो आइसेक्ट को स्टेट आईटी अवॉर्ड

of Indo-European fusion

University signs

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और पश्चिम के साजों पर गूंजा दोस्ताना संगीत

Breaking News  
MHRD awards  
UNNAT BHARAT Project  
to RNTU

लाइब्रेरी ऑनलाइन  
ce on 'Advances  
try' begins

, इंटेल और सीमेंस के  
र काम करेगा आईसेक्ट  
आईसेक्ट विवि में इंडस्ट्री एकेडेमिया इंटरैक्शन कार्यक्रम का किया आयोजन

MoU signed between BSSS & AISECT  
University आईसेक्ट और गुजरात फॉरेंसिक  
साइंस में एमओयू

आईसेक्ट विवि में स्किल कोर्सस  
करना भी पाठ्यक्रम का हिस्सा

AISECT signs MoU with Nepal varsity

बैजोलॉजी कार्यशाला

Breaking News  
Springer  
publishes  
7 Volumes Proceedings  
of International Conference  
held at RNTU

## Varsity holds awareness me on 'Green Initiative'

आईसेक्ट के छात्र आईआईएम  
कलकत्ता कार्पेडियम हेतु चयनित

2 day national seminar on radiation



Dr. Pragya, Prof.Khan, Dr. Pathak, Dr.Choudhary, Prof Verma, Prof.Vats, Dr. Sudeshna, Dr. Anil, Ravitesh, Prof.Telang, Dr. Prachi



## Center For Renewable Energy (CRE)

*Supporting the vision of next generation by Energy Reforms*

Director – **Dr. Anil Kurchania**

### ● Objectives

- To facilitate research projects, innovative work and experiments in the field of energy
- To develop facility for Skill development in solar photovoltaic and other RE systems
- To create awareness on Energy conservation
- To endeavor for Green campus

### ● Highlights 2018

- Ongoing Research on use of reflecting nano materials to enhance efficiency of Solar Cells
- Ongoing Research on Solar Tracking, Sail Type Wind Mill
- Established two RE Labs for Suryamitra solar PV installation
- Imparted Skill Trainings – 11 Batches
- Capability on all types of RE and registered with Skill Council of Green Jobs, (MNRE)
- The only campus in MP selected by MNRE as the Green Campus with financial grant
- Innovative product development: Strong collaboration abroad and India

### ● Major Resources & facilities

- Solar Photovoltaic Training & Research System
- Solar Thermal Training & Research Unit
- Various kind of modules and system for investigation examination and research on solar system
- All resources for training on various systems of RE

### ● Publications by CRE

International Journals	:	15
National Journals	:	21
Books/Book-Chapters	:	08
Technical Bulletins/Reports	:	14
Popular Articles	:	05
International/National Conference Proceedings	:	08



Hybrid Power Project



Solar Training



Replicating Nano Material



Current Investigation



## Center for Earth & Space Science (CESS)

*Working on today's Science for tomorrow's technology*

*Head – Dr. Suryanshu Choudhary*

### ● Objectives

This Research Center carries out research in the field of dynamics of earth in order to provide. The research activities in this center attempts to solve the mystery of Earth & Space Sciences by generating valuable scientific reports of natural disaster and their prediction. Such early warning can certainly help in a big way in mitigation, restoration, reconstruction and other relief measure activities. CESS activity covers the entire gamut of Earth & Space Science and it also includes state disaster management preparedness activities. Centre for Earth & Space Sciences has all the resources to carryout research in the area of natural disasters which are mainly occurred in the central region of Asia. Natural disaster like Earthquake, Flood, Drought, Industrial Hazards and many more that causes great damage or loss of life come within the sphere of monitoring and warning plan of CESS. Early warning detection system through interface between academic, industry and the society

### ● Ongoing Projects

- **Study of Atmosphere Chemical Potential with reference to Nepal Earthquake occurred in April 2015**

The Study is being done in collaboration with the Russian Space Agency. The study is likely to improve the scientific method of examination of electromagnetic phenomenon for earth quake prediction

- **Remote Sensing of Disaster based on Noise Measurement**

The center had set up on research enclosure at Kumbh Mela and the project is continuing to develop a system

### ● Collaboration

- Taras Shenchenko University, Kyiv, Ukraine
- Russian Space Agency
- Institute of Seismological Research, Gandhinagar, Gujarat

### ● Chair For Science

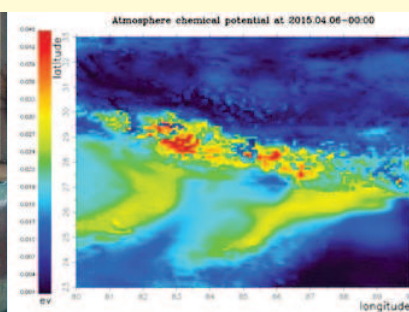
- Dr. CV Raman Chair
- Chairman – Dr. KML Jain A renowned Scientist who has authored several books and done research work

### ● Activities of the Chair

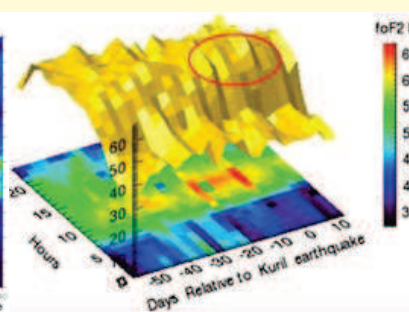
The Chair promotes activities related to scientific research and organises research events. This year under banner Bhartiya organised lecture series on Vivekanand Science and Idea of new India.



Collaboration with Ukraine



On line Analysis



Record Examination



Poland Conference



## Agriculture Research Complex

*Research in agriculture is research for civilization*

Head- **Dr. Pragya Shrivastava**

Coordinator- **Mr. ME Khan**

Agriculture Research Complex (ARC) has been established in an 8 acre farm land. The objectives of ARC will be as follows-

### ● Objectives

- ❑ **Research & Field Trials-** Research work and field trials on organic farming, crop upgradation, soil improvement and suitability, food processing techniques, manures and pesticide testing, irrigation and cultivation techniques, horticulture Floriculture and dairy farming.
- ❑ **Practical Workplace for Students to do experiments and research-** It provides facilities for practical work and hands on training for students of Agriculture discipline and facilitate their research and project work.
- ❑ **Multi Skill Center-** Develop ARC as Multi Skill Center for Agriculture Students as well as students of other branches and farmers/youth from adopted villages. Skill will be delivered on aspects like silage making, warm compost manure, hay making, urea treatment, care and maintenance of milk animals' farm machine maintenance and irrigation, Crop cultivation, Horticulture green house technologies etc.
- ❑ **Technology Transfer-** To develop ARC as nodal center for technology transfer to farmers, provide consultancy services and operate help and information center on all matters related to agriculture.

### ● Ongoing Projects

- ❑ Nano materials to enhance agriculture yield.
- ❑ Remote sensing of moisture and temperature of the soil using IoT.
- ❑ Organic farming at low cost with higher yield.
- ❑ Developing cultivation area comprising Crop Area, Floriculture Area and Medicinal Plant Area which will be spread in 3 acres including experimentation area.
- ❑ A Poly house with facilities for experiments and research.
- ❑ Model Fruit Garden with experimental areas spread in 2.5 acre land.
- ❑ A dairy unit with 20 cows of different breeds.

### ● Roadmap

- ❑ For dairy unit finances will be obtained from NABARD.
- ❑ ARC will develop in to a model of pure organic farm certified by Govt of MP.
- ❑ ARC will become self sustaining by end 2018, and generate its own fund for growth.



Research Team on Field



Poly House



Crop development



Oganic Farming



## Center for Internet of Things & Advanced Computing (CIOTAC)

*Making difficult things simple and complex things possible*

Head - Dr. Priti Maheshwary

### ● Lab Objectives

- ❑ To create innovative applications and domain capability across verticals for country's needs such as Smart City, Smart Health, Smart Manufacturing, Smart Agriculture, etc.
- ❑ To build industry capable talent, start-up community and entrepreneurial ecosystem for IoT.
- ❑ To provide an ecosystem for innovation to thrive and embrace entrepreneurship.
- ❑ To provide end-to-end solution in engineering space with multidisciplinary approach.
- ❑ To provide environment and eco-system in support to university CIES for product creation, testing and also for validation & incubation as if needed.
- ❑ Innovative use of cloud computing facilities

### ● Ongoing Projects

The center is first of its kind in central India which has been set up with the help of Intel, Frugal and Microsoft. We are the only University which was selected by Govt of MP to establish a Research Encloser at Simhasth-2016 to conduct experiments on Crowd Management with the help of IoT.

- ❑ Simhasth-16 - Project continues to develop IoT based crowd management system
- ❑ Smart Agriculture - To measure temp and humidity centrally for effective irrigation
- ❑ Smart Dustbin - Sends an alert on remote places for smart city project
- ❑ Smart Home - Management of gazettes and security of house by IoT based system
- ❑ Smart Attendance - Part of smart class room project
- ❑ Smart Pole - Conserves electricity based on traffic density
- ❑ Smart Security - Reduces security risk many fold

### ● Collaborations

#### ❑ Intel

The Intel® IoT Platform is an end-to-end reference model and family of products from Intel that provides a foundation for seamlessly and securely connecting devices, delivering trusted data to the cloud, and delivering value through analytics. RNTU has entered in to collaboration for systems establishment.

#### ❑ Frugal Labs

Frugal Labs is an Internet of Things (IoT) technology company. It provides business solutions, specializes in end-to-end product development and is also involved in corporate, academic as well as online IoT training. With RNTU they have established first IoT lab for research and training in MP.

#### ❑ Microsoft

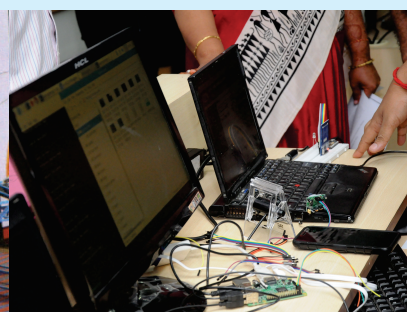
Under the project Eduavantage Microsoft has established advanced cloud computing facilities at CIOTAC which provides training and research development resources.



Training Session



IoT Project in Kumbh



IoT in Agriculture



Project Development



## Centre for Science Communication

*Making Science Simple, Interesting and Enjoyable*

Director – Mr. RN Telang

At RNTU a Center for Science Communication (CSC) has been established which aims at creating scientific perspective in each person of the society without insisting for his/her scientific background. This includes all students irrespective of their discipline. The center is keen that scientific culture penetrates all departments of the RNTU and transform RNTU into a scientifically thinking entity and also propagate this culture in villages adopted by the University.

### ● Objectives

- ❑ Generate interest and facilitate development of scientific perspective in students & faculty through various events like seminars, exhibition, displays etc.
- ❑ Organise visits of students to important places, exhibitions, learning centers etc to provide scientific exposure.
- ❑ Generate scientific temper in students through debates, film shows expert lecture.
- ❑ Publish science material in simple language.
- ❑ Create an interactive platform for scientists to do brain storming among them and with students.

### ● Highlights -2014-18

- ❑ Under the banner 'Bhartiyam' a lecture series was organised So far 4 lectures have been delivered. The last lecture was by Dr. Jayant Sahastrabudhe, from Vigyan Bharti on "Vivekanad & Science".
- ❑ Organised large number of film shows stage shows, Nukked Natak.
- ❑ Developed a library of books, DVD's films etc currently the CSC has over 500 books and large number of films.
- ❑ The center held several workshops and facilitated about 50 authors to write book to explain various scientific phenomena/principles/process. The center has published more than 50 books in Hindi.
- ❑ Electroniki Aapke Liye' a popular science magazine published regularly.
- ❑ Compilation of Science fiction stories titled "Super Nova Ka Rahasya" & experts' lectures on various occasions by renowned science communicators like Shri Devendra Mewadi, Dr.Arwind Mishra, Dr.Irfan Human, Shri Manish Mohan Gore, Dr.Zakir Ali Rajneesh, Dr.Arshiya Ali, Venkatesh Shukla etc.

### ● Collaborations

- ❑ Vigyan Bharti
- ❑ Regional Science Center
- ❑ Sanchi Vishwavidyalay
- ❑ Manav Sangrahalay

### ● Road Map

During the current year, Centre for Science Communication, has planned to conduct various programmes focusing on works & Scientific journey of great Indian Scientists i.e. Prafull Chandra Ray, Visvasvaraya, S.Chandrashekhar, Homi J.Bhabha, A.P.J.Abdul Kalam, Saalim Ali, Birbal Sahni, C.V.Raman, J.C.Bose, Srinivasa Ramanujan, Satyendra Nath Bose, Raja Ramanna, Hargovind Khurana. A special programme on the Journey of Man (Manushya Mahabali kaise Banaa ?) Exhibition, Lecture & excursion to Bhimbetka, have also been planned. Apart from these activities Centre for Science Communication, will make all out efforts on the various art & culture platforms to popularize the Science (Viz contributing articles in various Magazines & newspapers, Discussion in electronic Media like AIR, DD, FM channels etc.)

- ❑ We plan to institute Science Communication Awards every year in various categories.



Bhartiyam Lecture Series



Telescope Making



Expert Lecture



Science Drama

## Center for Incubation for Entrepreneurship Startup (CIES)

*Transforming innovators to job providers for building New India*



**CEO- Mr. Nitin Vats**

Incubation Cell- **Mr. Anurag SD Rai**, industry Academia Cell- **Dr. SR Awasthi**,  
Entrepreneurship Cell- **Preeti Shrivastava & Ravitesh Mishra**

### ● Objectives

- Identify potential entrepreneurs in initial stages of their academic career and groom them.
- Provide Incubation, Entrepreneurship development and Start up support under one roof.
- Support innovative ideas with administrative, legal, financial and mentoring guidance, training & support.
- Hand holding to establish during teething stages of start up.
- Impart plug and play facility, co-working space and other basic amenities.

### ● Major Sectors of Entrepreneurship Development Support

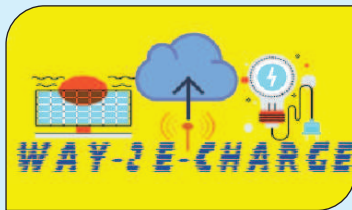
- |   |                                 |                                      |
|---|---------------------------------|--------------------------------------|
| <input type="checkbox"/> ICT                          | <input type="checkbox"/> Energy | <input type="checkbox"/> Education   |
| <input type="checkbox"/> Environmental Sustainability | <input type="checkbox"/> IOT    | <input type="checkbox"/> Agriculture |

If potential candidate has strong innovative idea in any other sector also, CIES will provide full.

### ● Regular Major Events

- Annual state & national level Dream Start up Challenge regularly from 2015 to 2017.
- Felicitation at annual start up competition in Service, Manufacturing and Agriculture.

### ● Working RNTU Incubates of CIES



### ● Collaborations

- |   |  |
|---|--|
| <input type="checkbox"/> Micro, Small & Medium Enterprises, GoI | <input type="checkbox"/> Bhopal Management Association |
| <input type="checkbox"/> PM Yuva Yojna                          | <input type="checkbox"/> Head Start                    |
| <input type="checkbox"/> Wadhvani Foundation                    | <input type="checkbox"/> IPET                          |
| <input type="checkbox"/> Swan Finance Partners                  | <input type="checkbox"/> My Skill                      |



Training Session



Mentor in Action



Presentation by Aspirant



Deliberation

## Tagore International Research Centre For Arts & Culture (TICAC)

*Discovering something extraordinary about ordinary*  
 Head- **Mr. Vinay Upadhyay & Dr. Sangeeta Pathak**



It is the interdisciplinary study and research center for Arts, Literature and Culture. The Center is actively involved in organising & conducting research activities, workshops, conferences, literacy discourses, film and audio developments. The center also undertakes publication and digitalization.

### ● Activities Highlights

- **“Katha Madhya Pradesh”**. This is a massive research work of ICAC, to select compile, edit with critical reviews and publish entire work of story writers of Madhya Pradesh for last 100 years in six volumes. It has been acclaimed at international level..
- **Release of Books**. The center has extended help in publication of several books on literature and arts. Last two such books are- 'Jal Tarang' by Shri Santosh Choubey and 'Satyakatha Kahi Nahi Jati' by Shri Mukesh Verma.
- **Katha Desh**. Currently TICAC is working on literature of 100 year by Hindi writers at national level for 100 years. The project is likely to be completed by 2019.
- **Seminar and Conference on Literature**. Large number of conferences and interactive sessions have been organised in which renound literary figures came on different occasions. This includes big names like. Rahat Indori, Ashok Bajpayee, Rajesh Puri, Mukesh Verma, Pradeep Choubey, Malti Joshi, Dhanajay Verma, Chitra Mugdal, Mamta Kaliya, Ashok Mishra, Pankaj Mishra, Rohini Agrawal, Suarabh Mishra, Jayprakash, Ramesh Chand Shah, Dr. Gyan Chaturvedi, Mehrunnisa Parvez etc.
- **Workshop and Training** the Center held several workshops on theater, drama and other forms of performing art, which inculcates a positive feeling in students and provide opportunity to hon. their talent.
- **Stage Shows** TICAC organised many stage shows with the help of professional groups and university students based on our rich literacy treasure, folk music, historical events etc and promote culture of exploration and research. TICAC has Collaboration with Romania Theater Group.

### ● Chair for Promotion of Literature, Culture & Arts

- **Vanmali Srijan Peeth**
- Chairman Mr. Mukesh Verma a renound literary figure of India
- The Chair is engaged in organising several programmes, award ceremonies, hold seminars, conferences, Work shops etc. It has published large number of books and organized literary events.



Experiment on Folk Songs



Romania Collaboration



Live Stage Show



Literary Celebration