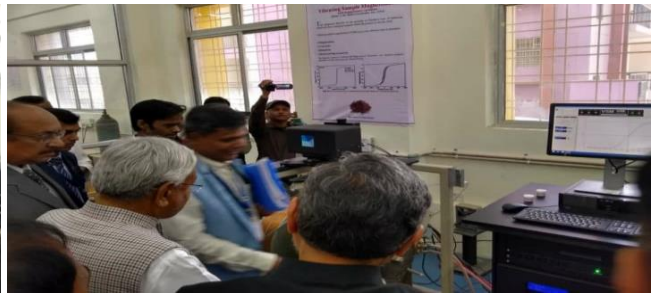

**About 17 year work Experiences in the field Nanotechnology/ Physics
and
Certificate of Excellence awarded by Hon'ble Chancellor as Best Young teacher
with Contributions in Modern field of Nanoscience**

**Contributions/Engagement/ outstanding performance in the field of Physics
/Nanotechnology in Agriculture, Food, Magnetic nanomaterials as Electronics
Materials, Ayurvedic Bhasma as nanomedicine , Ancient Indian Wisdom and related
nanomaterial's research activities etc.**

Build a Glorious legacy of Innovation in Frontiers of Science Education and Cutting-Edge research in Bihar

Establishment of Centre for Nanoscience and Nanotechnology : Innovation-1

Hon'ble C.M Sri Nitish Kumar Ji, Dy. CM Sri Sushil Kr Modi Ji; Education minister Sri Krishnan dan Pd Verma Ji, Advisor to CM Sri Anjani Kr Ji appreciated the nanotechnology labs Established and research work carried out under supervision and leadership of **Dr. Rakesh Kumar Singh**, dated-21st Feb. 2019. **Dr. Rakesh interactions with dignitaries are shown as follows.**



This is the 1st frontier areas of subject of 21st century as cutting-edge Research Centre in university of Bihar, which was initiated by Department of Education, Govt. of Bihar. Dr. Rakesh has been taking responsibilities as a founder teacher from the period of foundation of Aryabhata Knowledge University, Patna.

Certificate of excellence is awarded to Dr. Rakesh Kr Singh, for his outstanding performance in the category of Best Young Teacher with research contributions in Modern field of Nano Science” as per recommendation of the selection committee constituted by Hon’ble Chancellor, Universities of Bihar. Dated 23 Nov 2021.


Innovation- 2

Chancellor's (Governor) Award for Best Young Teacher of Bihar with Research Congratulation in Modern Field of Nano Science



Serial Number 9- Best Teacher Award for his outstanding performance in the field of Nanoscience

हिन्दुस्तान पटना • मंगलवार • 16 नवंबर 2021 **16**


Govt. of Bihar

GOVERNOR'S SECRETARIAT, BIHAR
RAJ BHAVAN, PATNA-800022
CHANCELLOR'S AWARD 2019-2020

In continuation of PR-08308 (Governor Secretariat) 2021-22 this is to inform that due to some unavoidable circumstances the Chancellor's Award which was scheduled to be held on **16.11.2021** at Raj Bhavan is postponed.

Further, the Hon'ble Chancellor after due consideration has been pleased to fix **23.11.2021 at 12:00 noon** at Rajendra Mandap, Raj Bhavan Patna for holding the Chancellor's Award Ceremony for conferring Awards to the winner in the following nine categories who have made diligent efforts in their domain, i.e.

- 1. Chancellor's Award for Best Students in Academics (Boys & Girls)**
 - (i) Vishwabandhu Upadhyay, T.M. Bhagalpur University (Boys Category)
 - (ii) Sonam Kumari, T.M. Bhagalpur University (Girls Category)
- 2. Chancellor's Award for "Best Students in Sports (Boys & Girls)"**
 - (i) Sankit Kumar, T.M. Bhagalpur University (Boys Category)
 - (ii) Ankita Kumari, Patna University (Girls Category)
- 3. Chancellor's Award for "Best Students in Cultural Activities (Boys & Girls)"**
 - (i) Acharya Bhaskar, L.N.M.U., Darbhanga (Boys Category)
 - (ii) Sweta Bharti, Patna University (Girls Category)
- 4. Chancellor's Award for "Best Teacher"**
 - (i) Dr. Shahla Yasmin, Patna University
 - (ii) Dr. Tanuja, Patliputra University } Both recommended
- 5. Chancellor's Award for "Best College"**
 - (i) A.N. College, Patna (Patliputra University)
- 6. Chancellor's Award for "Best Lady College"**
 - (i) Patna Women's College (Patna University)
- 7. Chancellor's Award for "Best Principal"**
 - (i) Prof. S.P. Shahi, A.N. College, Patliputra University
- 8. Chancellor's Award for "Best Vice-Chancellor"**
 - (i) Prof. Surendra Pratap Singh, LN Mithila University, Darbhanga
- 9. Chancellor's Award for "Best Young Teacher with Research contribution in Modern Field of Nano Science"**
 - (i) Dr. Rakesh Kumar Singh, ACNN, Arybhatta Knowledge University, Patna

PR- 08779(Governor Secretariat) 2021-22
(Raj Kumar Sinha, I. A. S.)
Joint Secretary

किसी भी तरह आपदा की जानकारी अथवा सुझाव हेतु आपदा प्रबंधन के हेल्पलाइन नं. 1070 पर सम्पर्क किया जा सकता है

Hon'ble Chief minister Sri Nitish Kr Ji, specially appreciated research activities of Nano science and Nanotechnology center of AKU Patna, during his video conference program of establishment of statue of Aryabhatta in campus. Constant motivation to Dr. Rakesh by Hon'ble CM, and Dept. of Education commendable.

Innovation-3



मुख्यमंत्री ने आर्यभट्ट की प्रतिमा का वीडियो कॉन्फ्रेंसिंग के माध्यम से किया अनावरण

पटना (एसएनबी)। मुख्यमंत्री नीतीश कुमार ने वीडियो कॉन्फ्रेंसिंग के माध्यम से आर्यभट्ट ज्ञान विश्वविद्यालय भवन परिसर में महान गणितज्ञ, खगोलशास्त्री आर्यभट्ट की आदमकद प्रतिमा का अनावरण किया। मुख्यमंत्री ने आर्यभट्ट के नाम से इस विश्वविद्यालय की स्थापना तथा नाम में ज्ञान शब्द जोड़े जाने के मुख्य उद्देश्य का स्मरण कराते हुए विश्वविद्यालय द्वारा किए गए कार्यों

की सराहना की। मुख्यमंत्री द्वारा यह भी बताया गया कि यह विश्वविद्यालय अन्य

नीतीश कुमार ने की विवि द्वारा किये गए कार्यों की सराहना की

विश्वविद्यालयों से अलग है। मुख्यमंत्री द्वारा विश्वविद्यालय अंतर्गत शैक्षणिक केन्द्र आर्यभट्ट नैनो विज्ञान एवं नैनो प्रौद्योगिकी द्वारा किए जा

रहे शोध की सराहना करते हुए अन्य नए शैक्षणिक केन्द्रों को खोले जाने के लिए परामर्श दिया गया। इस मौके पर विश्वविद्यालय परिसर में कुलपति डॉ. (प्रो) अरुण कुमार अग्रवाल, प्रतिकुलपति प्रो. एस एम करीम, कुलसचिव सह परीक्षा नियंत्रक ई. राजीव रंजन, उप कुलसचिव डॉ. कुमारी अंजना, उच्च शिक्षा, शिक्षा विभाग की निदेशक डॉ. रेखा कुमारी तथा विवि पदाधिकारी एवं कर्मचारी उपस्थित थे।

Innovation- 4

Research Finding related to different area of nanoscience of about 150 Published /reported in International/National Journals.

List of publications attached in relevant sections/ Globally available on following link

Scientific activities citation-www.drrakeshsingh.com

Google scholar Research profile- <https://scholar.google.com/citations?user=gOZNJ-oAAAAJ&hl=en>
(Total citation more than 600, till Jan 2022)

Research gate profile- https://www.researchgate.net/profile/Rakesh_Singh44

Materials Science and Engineering B 263 (2021) 114871



Contents lists available at ScienceDirect

Materials Science & Engineering B

journal homepage: www.elsevier.com/locate/mseb



‘Synthesis and properties of amorphous nanosilica from rice husk and its composites

Atul Jyoti^a, Rakesh Kr Singh^{a,*}, Nishant Kumar^a, Abhay Kr Aman^a, Manoranjan Kar^b

^a Aryabhatta Center for Nanoscience and Technology, Aryabhatta Knowledge University, Patna 800001, India

^b Department of Physics, Indian Institute of Technology, Bihra, Patna 801103, India

Applied Physics A (2021) 127:183
<https://doi.org/10.1007/s00339-020-04233-7>

Applied Physics A
Materials Science & Processing



Synthesis and characterization of non-molar lithium–magnesium nanoferrite material for its applications

Rakesh Kr. Singh¹ · Nishant Kumar¹ · Dinesh Rangappa²

Received: 20 October 2020 / Accepted: 21 December 2020

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Innovation-5

Awards/ Recognitions for Contributions to Knowledge in the area of Nanotechnology in Ayurvedic Science, at Stockholm, Sweden



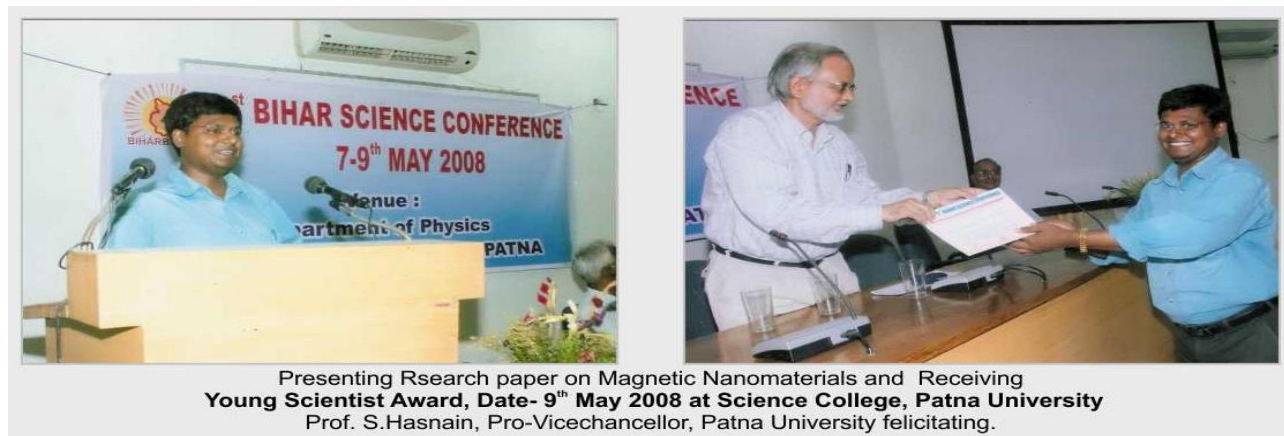
Honored by Executive Chairs of European Advanced Material Congress-2016, at Sweden: Prof. Hisatoshi Kobayashi (Left), National Institute for Material Science, Tsukuba, Japan cum President-International Association of Advanced Materials (IAAM) Sweden.

European Advanced Materials Congress-2016, Stockholm, Sweden

- **European Advanced Materials Congress (EAMC)-2016** is a three-day international event organized by **International Association of Advanced Materials, Linköping University Sweden, Govt. of Sweden and VBRI Press** during **23-25 August 2016 at Stockholm, Sweden**. The goal of congress is to provide a global platform for researchers and engineers coming from academia and industry to present their research results and activities in the field of fundamental and interdisciplinary research of materials science and technology.
- In this international conference total 58 country participated. Only 52% paper have been selected for presentation in this international Conference.
- In this Conference **Dr. Rakesh Kumar Singh** of Aryabhatta center for Nanoscience and Nanotechnology, Aryabhatta Knowledge university, Patna presented a paper on “Study of Ayurvedic Nanocrystalline *Tamra* and *Sankh* Bhasma physical Characteristics by Employing Modern Scientific tools and Applications”. **His presentation and his vision were highly appreciated by European Advanced Material Conference- Executive Chairs and honored to Dr. Rakesh.** This honor is for exploring the ancient Indian wisdom-Ayurveda Bhasma as Nanomedicine.

Contributions/performance/ Recognition related innovation-6

Young Scientist Award in 1st Global Bihar Science Conference for Exploring the Nanotechnology Research in state Bihar



- ❖ First Bihar Science Conference, 2008- A three days International level conference namely Bihar Science Conference, hosted by Science College, Patna university was held from May 07 – 09, 2008. Bihar Brains is a non-profit organization registered under society act with special focus on awareness building on education and creating environment for research and development in Bihar and is being run by NRI's, NRB's and educated people of Bihar.
 - ❖ The conference was inaugurated by Hon'ble C. M., Bihar, Shri. Nitish Kumar Prof S. N. Guha, Principal of Patna Science College 2008. Prof. (Dr.) S. E. Hasnain, member of Scientific this event. Advisory council of PM, India (SAC-PM) V. C. Hyderabad University.
 - ❖ Hon'ble CM Nitish Kumar while inaugurating the conference said that "The scientific research should break the new ground particularly to enrich the quality of human life. "He thanked organizers to organize such scientific events in state and hoped that this science congress will go a long way in creating scientific temperament among the youth. The eminent personalities who delivered a lecture.
 - ❖ In this conference Following academicians delivered lecture as key note speaker
 - Prof AnimeshJha, chair of Institute of Material Science Research at University of Leeds,
 - Prof M. K. Mishra, Head of the department of Building better atmosphere and for the development of Chemistry, Indian Institute of Technology Bombay,
 - Mr. Ashish Kumar of department of Bioinformatics, university of oxford, UK
 - Prof B.P.Singh, Advisor, Dept of Science and technology, Govt of India.
 - Dr. Ajay Kumar Jha, programme director international development, college of agricultural sciences, Colarado state university, USA
 - Prof Raman Jha of Sikkim Manipal University, Sikkim and some others
 - Prof. J.Thakur, former Vice Chancellor, Patna University was the chairman of this conference.
 - Dr. HimanshuShekhar, Dy. Director of HEMRL, DRDO, Pune and various other scholars
-

Innovation- 7

Outstanding Contributions- Doctoral (Ph.D.) Research Supervision **Guided/Thesis submitted/ Completed/ In final progress of 15 Ph.D. students in multidisciplinary area of Nanoscience and nanotechnology**

A. Detail of Doctoral Research (Ph.D.) Awarded/ Completed/ Thesis submitted

S.No	Research Scholar	Title of Doctoral Research/ Area of Research
1	Dr. Sanjay Kumar	Synthesis Characterization and Applications of some Ayurvedic bhasma as Nanomedicine”
2	Dr. AbhaykumarAman	Synthesis, Characterization of Nano size food materials and its applications”.
3	Mr. HarendraSatyapal	Hexa Ferrite Magnetic nanomaterials
4	Ms. ArchanaKumari	Superfine Food Nanomaterials of Ginger and Cinnamon
5	Ms. Swta Sinha	Ca based Ayurvedic Bhasma as Nanomedicine
6	Md. QamarTanbir	Spinel Ferrite Magnetic Nanomaterials
7	Mr. B.Bikramaditya	Garnet Nanomaterial for LED applications
8	Dr.Prabhat Kr Dwivedi	Iron oxide based Ayurvedic Bhasma as Nanomedicine

B. Detail of Doctoral Research (Ph.D.) completed their Ph.D. work, Doctoral research committee recommended for pre thesis submission presentation/ Submission of thesis, except 1 Ph.D. students. By April 2022 all thesis may be submitted/Awarded.

S. No.	Name of Scholar	Thrust area of Research
9	Ms. Pallavi Singh	Superfine Food Nanomaterials and their applications
10	Mr. AniketManas	Magnetic Nanomaterials for Hydroelectric Cell
11	Ms. Pushpa Sharma	Nanomaterials for Water purification
12	Mr. NamanNaik	Superfine food Nanomaterials and their applications
13	Mr. Vivek Kumar	Magnetic nanomaterials for Hydroelectric Cell
14	Ms. RituKumari	Superfine Herbal based materials as Nanomedicine
15	Ms. Navin Kumar	Nano-Biotechnology and Biomaterials

Impact of Doctoral Research- Ph.D. in the area of Nanotechnology in Ayurveda Science, Nanotechnology in Food technology, Magnetic Electronics materials and ancient wisdom, contributed to the world of Science and till date Scientists of more than 50 country of the world have cited the Doctoral research finding of Aryabhatta Knowledge University, Patna, guided by Dr, Rakesh . The countries cited the research are, Korea, China, Japan, USA, Romania etc. This research is well connected to the present need of the society and have practical Applications as an Ayurvedic Nano medicine, in Pharmaceutical industry and food sector and Electronics, Green energy sector.

Ph.D. Examiners- All Ph.D. these examined by Faculty of BHU, University of Lucknow, University of Allahabad, IIT-BHU, etc. Altogether, about 30 research papers published from doctoral research and about 15 is to be reported/being reported very soon in SCI/Wos/UGC care list Journals.

Innovation-8

Outstanding Contributions : 46 M.Tech Research Project/Dissertation, Supervision in the field of Nanoscience and Nanotechnology

Following Research Projects at PG level were conducted as a supervisor in different multidisciplinary area of Materials science and Nanotechnology. The area of research projects includes- Nanotechnology in Agriculture & Food, Magnetic Nanomaterial, and some others. Altogether, Total 30 M.Tech research projects/Dissertations have been guided and 16 M.Tech students have been working.

Sl.	Name of the Scholar	Research Project Topic/ Field of Research
1.	AkankshaKumari	Synthesis and characterization of Nano silica from Rice husk.
2	Kumar Shivam	Preparation of Nickel and Cobalt Ferrite and Evaluation of their Structural, Electrical and Magnetic properties.
3.	NeelamPrabha	Rare earth substituted ferrite Nano materials and investigation of their Electrical and Magnetic properties.
4	AbhishekhRanjan	Preparation of Nanosilica from Rice husk by different chemical methods and characterization by Modern scientific tools.
5	Atuljyoti	Synthesis of Nano silica from Rice husk and preparation of their composite.
6	Shubhra	Synthesis and characterization of Gadolinium substituted Cobalt and Nickel Ferrite Nanomaterials.
7	Nishant	Synthesis, Characterization of some alkali metal substituted Ferrite Nanomaterials and its correlation between properties and Applications
8	Amit kr	Synthesis and Characterization of Some Garnet nanomaterials.
9	Sampurnand	Synthesis and Characterization of Nickel Alumunate and Zinc Alumuntate at diferent annealing Temperature.
10	Saurav Kr Sharma	Synthesis and Characterization of Magnetium ferrite Nanoparticles.
11	Md. QamarTanvir	Synthesis and Characterization of Cr substituted Cobalt Ferrite nanomaterials.
12	Monalisha	Nano Electronics(Magnetic materials)
13	ArchanaKumari	Nano Silica from Rice husk(Agriculture Waste)
14	Farhan Khan	Synthesis and characterization of Nano fertilizer
15	Raj Aryan	Magnetic Materials(Nano-Electronics)
16	RakeshRanjan	Synthesis of TiO ₂ Nanomaterials for water purificationNanomaterials
17	Ayush Kumar Jha	Synthesis and characterization of Nano fertilizer
18	Abhishekh Kr	Magnetic Materials (Nano-Electronics)
19	Anurag Kumar	Nano-Silica from Rice husk
20	ZeeshanHasmi	Hexa Ferrite Nanomaterials
21	Ashutosh Kumar	Synthesis of TiO ₂ Nanomaterials for water purification of Nanomaterials

Innovation-8

46 M.Tech Research Project/Dissertation, Supervision in the field of Nanoscience and Nanotechnology conducted as a supervisor. The area of research projects includes- Nanotechnology in Agriculture & Food, Magnetic Nanomaterials and some others. Altogether, Total 30 M.Tech research projects have been guided and 16 have been working.

Sl.No.	Name of the Candidate	Name of the Supervisor	Area of Research project(proposed)
22.	Ms. Om Priya	Dr. Rakesh Kr Singh	Magnetic nanomaterials
23	Gaurav Kumar	Dr. Rakesh Kr Singh	Nanocomposite and Nano ceramics
24	Singh Sonu Kumar	Dr. Rakesh Kr Singh	Hexa ferrite Nanomaterials
25	SashankBhusan Das	Dr. Rakesh Kr Singh	Magnetic Nanomaterials
26	Anjali Kumari	Dr. Rakesh Kr Singh	Nano silica from Rice husk
27	ShamaFrozan	Dr. Rakesh Kr Singh	Multiferroic Materials
28	SazidHussain	Dr. Rakesh Kr Singh	Nanosilica from Rice husk
29	Golu Kumar	Dr. Rakesh Kr Singh	Magnetic Nano composite
30	Gokul Kumar	Dr. Rakesh Kr Singh	Magnetic Nanocomposite

Impact of M.Tech Research- M.Tech Research project. in the area of Nanotechnology in Agriculture Science, Magnetic Electronics materials contributed to the world of Science and till date Scientists of more than 15 country of the world have cited the Doctoral research finding of Aryabhata Knowledge University, Patna . The countries who cited the research of Nanotechnology center of Aryabhata Knowledge university, Patna are, Korea, China, Japan, USA, Romania etc. This research is well connected to the present need of the society and have practical Applications as an Ayurvedic Nanomedicine, in Pharmaceutical industry and food sector.

M.Tech Thesis. Examiners- All theses examined by Faculty of IIT Patna, NIT Patna, Patna University, BIT Patna and Patliputra University. Altogether, about 35 research papers published from M.Tech research project and about 15 is to be reported very soon.

Inspired Award to M.Tech topper of Nanoscience center of AKU

Govt. of India has launched a unique scheme “Innovation in Science pursuit for Inspired Research, fellowship in basic and applied research. Ashutosh kr shortlisted for final evaluation of the selection process. Evaluation of research area of Mr. Ashutosh Kumar by domain experts based on academic merit and research-based profile. Mr. Ashutosh Kumar worked on the topic’ Purification of water through nanomaterials ‘under the supervision of Dr. Rakesh Kumar Singh, Head-academic of the nanotechnology center of AKU and at present he is persuing doctoral research at NIT Patna.

Cited by Industry- One Indian based industry and One R & D based center requested for research/technology transfer about maximum purity percentage of Silica from rice husk as waste materials for its application in brick and rubber. Very soon, we will associate with them at industrial level.

Innovation-8

Outstanding Contributions : 46 M.Tech Research Project/Dissertation, Supervision in the field of Nanoscience and Nanotechnology

16 M.Tech Research Project/ Dissertation Supervision are in progress in the field of Nanoscience and nanotechnology **and all the theses are to be submitted by July 2022. While 30 M.Tech students have already awarded M.Tech degree**

SN	Registration No.	Name of Students	Proposed Research Area
1	19019601001	PRINCE KUMAR	Ni- Co substituted Barium Ferrite nanomaterials
2	19019601002	ASHWANI KANT BOSE	Cerium Doped Barium Hexaferrite nanomaterials with Biotemplate
3	19019601003	ASWANI KUMAR	Gadolinium Substitution Cobalt ferrite nanomaterials
4	19019601004	SHUBHAM KUMAR CHOUDHARY	Graphene and Nano Silica Composite
5	19019601005	ZULFEKAR ALI	Nanosilica composite of Brick
6	19019601006	MD MUZZAMMILUL HAQUE SIDDIQUI	Hydroelectric Cell based on nanotechnology
7	19019601007	SNEHA KUMARI	composite of nanosilica with ferrite nanomaterials
8	19019601008	MANU SHRESHTHA	Graphene and Nano Silica Composite for Defence
9	19019601009	SANTOSH KUMAR CHOUDHARY	Green Synthesis with Alovera in Zinc Ferrite nanomaterials
10	19019601010	NISHU NILAM	Nd substituted Zinc Ferrite nanomaterials
11	19019601012	PUSHP RANJAN	
12	19019601013	RAHUL KUMAR RAMAN	Silver Substituted Cobalt ferrite nanomaterials
13	19019601014	RAKESH KUMAR	Yttrium Substituted cobalt ferrite nanomaterials
14	19019601015	PIYUSH AMAN	Nanosilica composite of Cement
15	19019601016	ANURADHA MUSKAN	Nd Substituted cobalt ferrite Nanomaterials
16	19019601017	PANKAJ CHOUDHARY	Rare earth substituted ferrite nanomaterials

Innovation-9

Following Projects at UG level were conducted in **Nanoscience field** as a supervisor under **Basic Scientific Research (BSR)** of NAAC –'A' Grade and College with Potential for Excellence(CPE)* status Scheme of UGC, Govt. Of India, at Patna Women's College, Patna University

S.No	Title of the Project	Year of Competition	Name of the Scholar
1.	Synthesis and Study the effect of Annealing temperature on Structural & Magnetic properties of LiFe_5O_8 (Lithium Ferrite) Nanomaterials	2011 Basic Scientific Research	Vijeta Mishra and Rakhshan Noor
2.	Synthesis and Study of effect of size of divalent metal on structural and Magnetic Properties of MFe_2O_4 .	2011 Basic Scientific Research	Richa Sinha S. Kumari, Priya Tiwari
3.	Synthesis, Structural and Magnetic studies of Cu Substituted Cobalt Ferrite Nanomaterials annealed at 750°C .	2011 CPE*	Manisha Kumari , Divya Sharma, Trisha Raj,
4.	Low temperature synthesis of Ba-hexa ferrite Nanomaterials using Citrate Precursor Method	2010 CPE*	M.Wincet,K. D'Costa,Shanta Singh
5.	Structural and Magnetic study of Cu-substituted Cobalt ferrite Nanoparticles annealed at 650°C .	2010 Basic Scientific Research	Adhishree Abha and Arpana kumara
6.	Magnetic properties of Zn and Ni substituted Cobalt Ferrite Nanomaterials	2009 CPE*	Sonam Perveen and Puja Pandey
7.	,Growth , Structural and Magnetic studies of Rare earth element Ce substituted Zn Ferrite Nanoparticles	2009 Basic Scientific Research	Anjali Kumari, Nancy Goenka,
8.	Synthesis, structural & Magnetic studies Ni substituted cobalt Ferrite nanomaterials using Citrate Precursor Method.	2009 Basic Scientific Research	Shubhra Kumari Farheen Hayat,
9.	Synthesis, structural & Magnetic studies Rare earth elements La and Ce substituted Sn Ferrite nanomaterials.	2009 Basic Scientific Research	Pinkey singh, Sonam Perween
10	Growth and Characterization of Nano size CaFe_2O_4 by Nitrate reaction	2008- CPE*	M.Khemka, A Kumari,Swati Singh
11	Science and Technology of Nanomaterials: A Basic study	2007- CPE*	M.Srivastava, K. sweta and Ritika
12	Synthesis and Characterization of Mn-Zn ferrite nanomaterials	2006- CPE*	A..Shivani and R. Priya
13	Synthesis and effect of annealing temperature on structural and Magnetic study of Ni-Co/Cu ferrite nanoparicles	2012- CPE	Vijeta Mishra, Rakshan Noor and Priya Tiwari
14	Synthesis and effect of annealing temperature on structural and Magnetic study of Ni-Zn ferrite nanoparicles	2012 Basic Scientific Research	Tarbia Jamil, Rashmi Kumari , Priya Kumari

Innovation-9

College with Potential for excellence (CPE) and NAAC 'A' Grade- Research projects at Patna Women's College, Patna University- General Detail

Patna women's College, Patna University is 'A' Grade institution with a cumulative Grade point average (CGPA) of 3.51 out of 4 and also College with potential for excellence status (CPE) status accorded by UGC. Under these status UGC has given special grant for inculcate scientific research temper among Science graduate students. Under **Basic Scientific Research (BSR)** and College with potential for excellence status (CPE) status scheme group of students (2 to 3 in a group) undertake research project in a specific area or topic under the supervision of a teacher in the department. The students collect data/materials, organize these and after analysis and inference, present their finding in the form of a written report under the supervision of teacher in the Dept. Subsequently they modify the content of their research and finding in the form of a research paper and a PPT presentation. A panel of judges evaluate the quality of research and the best presentations will be reviewed by advisory committee and finally recommended their article for publishing in 'Explore' journal, www.w.patnawomenscollege/explore and patnawomenscollege.in/IRIS, peer reviewed journal

Impact Assessment of CPE and BSR projects of UGC-special scheme and Growth in higher education.

It was my observation during research work carried out by UG students under the supervision of a teacher at UG level, new properties, new Science and new applications changed the temperament of the students towards learning/ creating knowledge. I remember few of the students, who were under my supervision and worked only for receiving certificate, later changed their outlook towards scientific research and learning and now they are working in Premier institutions of national repute. Most of the scholars of UG level go in for higher studies before they opt for any Job or placement. I have supervised total 16 UGC sponsored Research projects from Year 2004 to 2011 under CPE (College with potential for excellence accorded by UGC) Scheme and Basic Scientific Research.



Innovation category -10
Outstanding Contributions

20 Research Project supervised/Conducted in about of 17 year of work Experience in the field of Nanoscience and Nanotechnology

S.No	Title of the Research Project/ Details	Name of the Funding Agency
1	Study of composition and annealing temperature effect On structural, Electrical and Magnetic properties of some rare earth substituted Ferrite nanoparticles.	UGC(Under Regular Faculty Scheme)
2-10	Conducted 9 project under College with Potential for Excellence(CPE) status, accorded by UGC	UGC
11-18	Conducted 7 project under Basic Scientific Research(BSR) scheme of UGC and NAAC-A grade scheme	UGC
19	Li substituted non-stoichiometric Mg Ferrite Nanomaterials	TEQIP-MHRD, Govt. of India
20	Establishment of 6 advanced Nanomaterials Research labs at Aryabhatta Knowledge University Patna as Head/Establishment officer/Academic-in charge	Dept. of Education, Govt. of Bihar

Total research publications/Progress is about 150 (in 18 year of work Experience)

- ✓ **Research Publications in the field of Nanotechnology in Food, Agriculture, Magnetic materials, Electronics with affiliation of Nano science centre of Aryabhatta Knowledge University**
From date of Joining at, AKU I have published/reported/being reported/in progress about 90 research paper reported/published/prepared in Journal indexed in Scopus/WOS/SCI/UGC care list.
- ✓ **Research Publications In multidisciplinary field with affiliations Patna Women's College (Autonomous Institute of UGC), Patna University.**

Before Joining to AKU, I have worked at NAAC accredited –A Grade & Potential for Excellence(CPE) status Institute- Patna Women's College(Autonomous) of Patna university, published about 50 research publication with the affiliation. Al together, I have published/reported/ in progress for publication of about 150 research publication

Patent File/In process in the field of Nanoscience

Dr. Rakesh Kr Singh and his research group including Ph.D students, Dr. Sweta Sinha, Dr. Abhay Kr Aman, M.Tech Student, Mr. Nishant Kumar applied 2 patents through Atal Incubation center, Nitiayag, Govt. of India. The technical draft preparation is in progress with the support of Technology Information Forecasting and Assessment Council (TIFAC), Govt. of India

Title of the invention/ Patent-1(Applied for its approval)

Synthesis of metal chloride nanoparticles and its cytotoxic effect on multidrug resistant (MDR) microbes and mycobacterium tuberculosis.

Abstract of the Invention-1

The present invention related to a method for the synthesis of Metal chloride nanoparticle using green approach from waste materials .It is the green synthesis and ecofriendly process from the waste product/excreta and acts as reducing agent to synthesis of metal chloride. Synthesized product is highly effective on multidrug resistant strain of mycobacterium tuberculosis. It also effective on different strain of *E. coli*, *K. pneumonia*, *P aeruginosa*, *Enterococcus faecium*, *A bauumannii*, and *Staphylococcus* which is disease causing bacteria isolated from urine, sputum, pus etc. The methodology of preparation is also unique and different.

Title of the innovation/ Patent-2

Synthesis of Metal oxide nanoparticles from waste materials without any chemical reagent and application of this Nps on arsenic and fluoride removal from water with high efficacy and as Ayurvedic Nano medicine.

Abstract of the Invention

The present invention related to a method for the synthesis of metal oxide nanoparticles from waste materials. .It is the green synthesis and ecofriendly process from the waste product/excreta human food material. Only heating and herbal product is used in this process. Synthesized product is in Nano matric range. This have high efficacy on removal of Arsenic and Fluoride. It also effective on strain of mushroom rust fungus. This product also acts as reduces the growth of microbes. So it used as an antiseptic material in hand wash and detergent. The method of synthesis is also a unique.

MOU/Collaboration with Industry- Agriculture/Food based nanotechnology industries establishment are proposed. We are constant touch with some related industries/sector, which are engaged in production of various nanomaterials for its applications in agriculture, food, Ayurveda, Electronics and green energy production

Frontiers subject related Contributions category -12

Nucleation Growth of Aryabhatta Knowledge University, Patna:

✓ Proposed new academic Centers.

In December 2020, Dr. Rakesh Kr Singh, as founder teacher of Naotechnology center meet with Hon'ble Vice Chancellor(i/c), Aryabhatta Knowledge University, Patna about vision of this university in next 3 year. In this meeting Dr. Rakesh proposed some establishment of some new academic centers, related to frontiers of 21st century. He has submitted the details of new proposed academic centers with letter no.008/AKU/NS-NT/Index/-104/2018(Vol-II) -4090, dated 18/12/2020. The name of the new frontiers of subject are following-

1. Center for Environmental Science and Climate change
2. Center for Astronomy
3. Center for Education for PG studies and Research
4. Center for Photonics
5. Center for Bioinformatics and Stem cell technology

The details and summary of objective of these centers also submitted to the university and Dept. of Education Govt. of Bihar in the last week of May 2021 and 11th July 2021. Most of the center approved by the Govt. of Bihar



Dr. Rakesh Worked/ Research Laboratory Exposure in Accredited Institute

I have worked in following National/International Research laboratories with my mentors/Collaborators

1. IIT Kanpur
2. CSIR-NPL, New Delhi
3. Nanotechnology center, University of Allahabad(Nano mission lab)
4. UGC-IUAC, Delhi
5. BHU-IIT

Contributions/performance-13

Research highlighted or cited with affiliation of Dr. Rakesh Kr Singh and his group Nanotechnology center, Aryabhata Knowledge University, Patna by more than 35 countries

Dr. Rakesh Kr Singh, has been working as Head/ Professor-in charge-Establishment/ Academic-in charge / Coordinator of Nanoscience center of AKU from the day of foundation. Till date, Dr. Rakesh and his research group published/reported/being reported of about 150 research publications in last 17 year in the field of Nanotechnology in Agriculture, Food, Electronics, Magnetic materials and Physics education. Till date his Research Publications was being cited by more than 100 world class Institutions: The name of the some of the following institutions are following-

- I. University of Duisburg-Essen, Germany
- II. Adekunle Ajasin university, Nigeria
- III. National Institute for Research and Developement of isotropic and Molecular Technologies, Romania
- IV. Semnan University, Iran
- V. Chiang Mai University, Thailand
- VI. Dalian university of Technology, China
- VII. Spanish Research Council, Spain Zagazig university, Egypt
- VIII. Adama Science and Technology university, Ethiopia
- IX. Federal university of Amazonas, Brazil
- X. Ukrainian university of Chemical Technology, Europe and some more than 10 institutions of international repute.
- XI. University of Degli Studi, Italy
- XII. Upasala University, Sweden
- XIII. University of Foreign Studies, Korea

Invited by scientific communities of countries, Spain, Boston-U.S.A, California and some others countries to deliver a talk on research topic on which research work carried out by Dr. Rakesh k Singh.

In addition to cited the research of AKU faculty member by global scientific communities, Dr. Rakesh was invited more than 25 various academic institutions to deliver a lecture in seminars/training programme. .He was also invited by scientific communities of countries, Spain, Boston-U.S.A, California and some others countries to deliver a **talk on research topic on which research work carried out by Dr. Rakesh Kumar Singh**

Contributions/performance-1.2

Build a Glorious legacy of Innovation in Frontiers of Science Education and cutting-Edge research in Bihar

Establishment of Centre for Nanoscience and Nanotechnology

- The dream of opening a new wing of scientific education in the field of Nanoscience and Nanotechnology by Prof. S.N.Guha, founder Vice Chancellor in AKU got vehement support and recommended by Hon'ble chief minister Sri Nitish Kumar Ji. At present Different affairs of Establishment, Administration and other academic, research & Development programme are in progress under the leadership of Dr. Rakesh Kumar Singh, as founder teacher from the day of foundation of AKU and officially from 1st April 2014 as Professor-in charge-Establishment/Head of the Center/In charge-Academic.
- 1st Proposal to establish this Nanoscience center was initiated by Dr. Rakesh Kr Singh on request of founder Vice Chancellor Prof. S.N.Guha. He was the 1st scholar completed his Doctoral research in nanotechnology field from 100 year old Patna University, Science College. The Doctoral research was carried out in collaboration with eminent academicians like- Prof. H.C.Verma, IIT Kanpur, Prof. Avinash C. Pandey, Nanomission center, University of Allahabad, Dr. R.K.Kotnala, CSIR-NPL Delhi and some others.



Hon'ble CM, Sri Nitish Kumar and Founder Vice Chancellor Hon'ble Prof. S.N.Guha on official inaugural day visit of Nanoscience center. This programme was coordinated by Dr. Rakesh Kr Singh



Officers of Technical education quality improvement programme from Delhi and IISc Bangalore visited nanoscience center and ongoing research activities, under the leadership of Dr. Rakesh Kr Singh

Nanotechnology Outstanding Contributions/performance-1.3

Build a Glorious legacy of Innovation in Frontiers of Science Education and cutting-Edge research in Bihar- Establishment of Centre for Nanoscience and Nanotechnology

The dreams of Hon'ble CM, Bihar are being fulfilled

- Such Frontiers centers are an identity in the field of Education supported by Dept. of Education, Govt. of Bihar. As a one of the output, research published in international journals, Dept. of education, Govt. of Bihar, is specially acknowledge for their functioning-establishing and taken keen interest. **Such research is also cited/read by more than 40 countries including countries Japan, U.S.A, U.K, Germany, etc.**
- Dr. Rakesh worked as an Assistant Professor in Science Dept. of Patna Women's College, Patna University. Where he worked on completed 17 research project on Nanomaterials research under College with Potential Scheme and NAAC-A grade scheme of UGC as regular faculty. Dr. Rakesh also completed his Post-Doctoral research in the field of Nanoscience under the supervision of Prof. Asheswar Yadav, Former Vice Chancellor and Prof. Science College, Patna University.
- My love for state Bihar enhances my enthusiasm for such frontiers center. Now this center is identity of state Bihar for budding scientist, School/Colleges/university students..

उपलब्धि विवि के नैनो साइंस व नैनो टेक्नोलॉजी सेंटर में हुआ रिसर्च

नये क्षेत्रों में रिसर्च करने वाली यूनिवर्सिटी बनी आर्यभट्ट

लाइफ रिपोर्टर @ पटना

ज्ञानवर्द्धन के लिए हर विश्वविद्यालय अपने स्तर पर पहल करता है. पहल इसलिए कि इससे छात्रों के साथ रिसर्च के क्षेत्र में भी नयी जानकारी को हासिल किया जा सके. आर्यभट्ट ज्ञान विश्वविद्यालय के नैनो साइंस सेंटर व नैनोटेक्नोलॉजी सेंटर में हाल के दिनों में कई नये क्षेत्रों में रिसर्च किया गया है. जिससे जीवन व साइंस के कई क्षेत्रों में सफलता के नये आयाम सामने आ सकते हैं. सेंटर के एचओडी डॉक्टर राकेश कुमार सिंह कहते हैं, आयुर्वेद, फूड प्रोसेसिंग, इलेक्ट्रॉनिक्स व कृषि जैसे क्षेत्रों में उल्लेखनीय रिसर्च हुए हैं. यह बिहार का यह पहला विवि है जिसमें नैनो साइंस व नैनो टेक्नोलॉजी की स्टडी होती है. विवि के दो पहले पीएचडी भी इसी सेंटर से हुए हैं.



आयुर्वेद से लेकर कृषि तक शामिल

विवि में हुए रिसर्च में आयुर्वेद के तहत आयुर्वेदिक भस्मों के विभिन्न आयामों पर रिसर्च किया गया है. इसके तहत ताम्र भस्म, शंख, लोह व अबरख पर काम हुआ है. जिसे ग्लोबल कम्युनिटी भी मान रहा है और इंटरनेशनल जर्नल में इसके पांच पब्लिकेशन हो चुके हैं. यह विवि का पहला पीएचडी वर्क था. फूड-प्रोसेसिंग में हल्दी व करैले के नैनो पार्टिकल बनाया गया है. ये भी इंटरनेशनल जर्नल में छप चुका है. इसी तरह इलेक्ट्रॉनिक्स के क्षेत्र में चुंबकीय नैनो मैटेरियल्स के क्षेत्र में काम हो रहा है.

हो सकते हैं कई लाभ

डॉक्टर सिंह बताते हैं, इन रिसर्च का विभिन्न क्षेत्रों में काफी लाभ हो सकता है. जैसे हल्दी, करैले के नैनो प्रोडक्ट के गण सामान्य पाउडर से अलग होते हैं. जिससे इसकी औद्योगिक डिमांड बढ़ सकती है. बिहार जैसे कृषि प्रधान राज्य में इस क्षेत्र में क्रांति हो सकती है. आयुर्वेद में जो भस्म अभी तक बाजार में उपलब्ध हैं, उनके वैज्ञानिक आधार साफ नहीं हो पाते थे. अत्याधुनिक उपकरणों से वैज्ञानिक विश्लेषण करने पर यह निष्कर्ष निकला कि यह आधुनिक नैनो मेडिसीन है जिसका मेजरमेंट व वैज्ञानिक आधार है. ऐसे ही इलेक्ट्रॉनिक्स के क्षेत्र में हुए रिसर्च पानी के शुद्धिकरण, क्वांटम कंप्यूटर में उपयोग व इलेक्ट्रॉनिक्स पाटर्स जैसे क्षेत्रों में बेहतर बदलाव ला सकते हैं. जबकि राइस हस्क का उपयोग रबड़ की कार्यक्षमता बढ़ाने, ड्राग उद्योग में क्षमता बढ़ाने व सीमेंट में मिलाने पर उसकी कार्यक्षमता को बढ़ाने में हो सकता है.

कई युगों के साथ होता है रिसर्च

डॉक्टर सिंह बताते हैं, यह बिहार का संभवतः पहला ऐसा विवि है, जहां इस तरह के रिसर्च कार्यों को किया गया है. एकेयू इन शोध कार्यों को आइआईटी पटना, आइआईटी कानपुर, एनपीएल दिल्ली के ग्रुप के साथ मिलकर कर रहा है. उद्देश्य यही है कि इससे हर किसी को लाभ मिले.



रिसर्च के क्षेत्र में एकेयू बेहतर कार्य कर रहा है. इस तरह के होने वाले रिसर्च इस बात का उदाहरण है. विवि के अत्याधुनिक तैब में इन कार्यों को किया गया है.

आगे भी रिसर्च होते रहेंगे.

डॉ राकेश कुमार सिंह, एचओडी, नैनो साइंस व नैनो टेक्नोलॉजी सेंटर, एकेयू

Contributions/performance-14

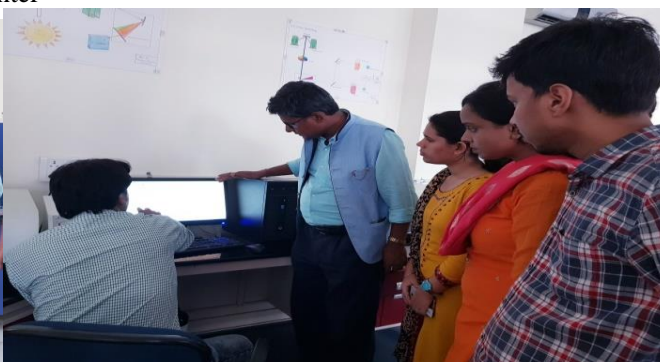
Source of Inspiration/Innovations for School Children & Teacher, Colleges & universities students and other educationists of Bihar. This was headed by Dr. Rakesh

This Advanced Nanotechnology research center are being visited by school children and Teachers, Students & faculty member of Colleges & Universities, NIT's, IIT's etc. Dept. of Education, Govt. of Bihar officially send a letter for visit of school children to this well-established Nanotechnology center.



Atal tinkering lab students(mentoring by DPS-Patna
Visited Nanoscience center of AKU.academic center

Hospital based Medical students also visited this












Preparation of nano-silica from rice huskby students of Bihar based Agriculture crop



Students/Children of different academic Institutions of Bihar is the regular visitors of this Nano science center

Advanced Nanotechnology Research laboratory- Established by Dr. Rakesh Innovation-1.4

<p>1. Automatic pH and Conductivity meter (Make: Mettler Toledo AG, Switzerland)</p>		<p>2. Water cooled bench top grinding machine (Planetary ball mill type) (Make: Retsch, Germany)</p>
		
<p>3. Microprocessor based High-Temperature Furnace (Temperature range: upto 1800°C) (Make: Nabertherm, Germany)</p>	<p>4. Dynamic Light Scattering Particle Size cum Zeta Potential Analyser (Make: Micromeritics Instruments Corp., USA)</p>	<p>5. X-Ray Diffractometer with temperature (lq. N₂ - 1200°C) variation facility (Make: Bruker, Germany)</p>
		
<p>6. Scanning Electron Microscope (Make: Carl Zeiss Microscopy Ltd., UK)</p>	<p>7. Digital Refractometer with temperature variation facility (Make: Mettler Toledo AG, Switzerland)</p>	<p>8. UV-Vis-NIR spectrophotometer with temperature variation facility (Make: PerkinElmer, UK)</p>
		

Advanced Nanotechnology Research laboratory- Established by Dr. Rakesh Innovation-1.4

<p>9. FTIR spectrophotometer (PerkinElmer, UK) (Make: PerkinElmer, UK)</p> 	<p>10. Photoluminescence measurement system with temperature variation facility (Make: PerkinElmer, UK)</p> 	<p>11-13. Atomic Force Microscope cum Scanning Tunnelling Microscope (Make: NT-MDT, Ireland)</p> 
<p>14. High Temperature ($lq. N_2$ - 1600°C) Simultaneous TG-DTA / DSC Analyser (Make: NETZSCH Technologies, Germany)</p> 	<p>15. High Precision Dilatometer (NETZSCH Technologies, Germany) (Make: NETZSCH Technologies, Germany)</p> 	<p>16. Impedance Analyser (40 Hz – 110 MHz) with temperature (up to 1000°C) variation facility. (Make: Keysight Technologies, USA)</p> 
<p>17. Precision Multiferroic Test System (P-E, piezoelectric, pyroelectric, magneto-electric for bulk and thin-films) with temperature variation facility (Make: Radiant Technologies Inc., USA)</p> 		
<p>19. Nanoparticle Tracking Analysis system (Make: Malvern Instruments, UK)</p> 	<p>20-21. Micro Twin Screw Extruder and Micro-Injection Moulding Machine(Germany)</p> 	

23. Microwave assisted hydrothermal technique for nanomaterial synthesis (Milestone, Italy)



Outstanding Contributions/performance-1.5

Dedication/Sacrifice of Dr. Rakesh for Scientific Infrastructure Development and Progress of nanotechnology laboratories at its new campus, Mithapur, Patna



GRANITE TABLE SETTING



EQUIPMENT SHIFTING THROUGH JCB/Forklift



GLASS- CABIN FOR EQUIPMENT



PREPARATION OF RAMP FOR FORKLIFT



PATH FOR EQUIPMENT ENTRANCE



HIGH END EQUIPMENT IS BEING SHIFTED

Preparation of Scientific infrastructure of advanced Nanoscience Research Laboratory (About 25 high end equipment's and their related accessories) and their Shifting completed in new campus of AKU under the leadership of Dr. Rakesh Kr Singh. This was challenging due to lack of men power, Teachers and supporting Technical staff. The whole processes of Establishment and again shifting in new campus completion require time is about 4 year. There was a zeal and is still full of enthusiasm that sate Bihar must have well advanced frontiers research center. The Hon'ble Vice Chancellor, AKU appreciated the contributions of Dr. Rakesh in Establishment of such advanced research center and also highlighted its academic achievements in all Convocations as one of the best laboratories of India.

Teaching and research activities Impact- 2.1

Eminent academicians of national-international repute/ Govt. officials/ Political leaders/media persons appreciated efforts of Dr. Rakesh for the development of sate Bihar.

In recent 6 years some more than 500 eminent academicians/Scholars of international/national repute Institutions visited the nano Science centre of AKU, interacted with students, research activities carried out by students and faculty. All of them appreciated such innovative practices for the sate Bihar and world of science. The name of some Institutions of the scholar/faculty , who visited are followings.

- Nalanda University Rajgir
- Indian Institute of Technology(IIT) Patna
- Riken, Japan
- Indian Institute of Technology(IIT) Kanpur
- Central University of Jharkhand
- BHU-IIT
- National Physical laboratory-CSIR, New Delhi
- Indian Institute of Information Technology and Managment, Jabalpur
- UGC-DAE-Indore and RMRI-Patna
- National Institute of Technology(NIT) Patna
- Birla Institute of Technology(BIT) Patna
- Indian institute of Technology, Dhanbad
- Bhabha Atomic research center , Mumbai
- IIT Dhanbad
- University of Allahabad
- JNU-Delhi
- Amity University
- RMRI, Patna and various others Institutions.
- IIT Indore, IISc Banglore and various others
- IISc Banglore and VTU Banglore
- University of Bourgogne, France
- GIFU university, Japan

Impact- Visited by Eminent academicians



Padam Shree Prof. K.L Chopra, Former director, IIT Kharagpur and president society for scientific Values, Delhi Visited Nanoscience center and delivered a Lecture on Ethics in research & academic activities.



Dr. R.K.Kotnala, Chief scientist, National Physical Laboratory(NPL) Delhi, visited and delivered a Lecture in Seminar Hydroelectric cell- Invention in Nanotechnology.

In addition to mentioned above- More than 50 eminent academicians visited this center and deliver a lectures.

Dy. Chairman Rajyasabha Hon'ble Sri Haribansh Sir appreciated of Dr. Rakesh innovations in Nanotechnology field and agreed to help of 6cr for Laboratory Development.



I.I.Sc Bangalore Faculty member, TEQIP officials from center and Head of nanotechnology center, VTU, Bangalore visited the Nanoscience lab of AKU.

Science and research awareness in Rural Bihar Outstanding Contributions/performance-15

20 Dec 2011, Mohania, Kamur, Sasaram, Bihar

ग्रामीण इलाकों से वैज्ञानिक निकालने की पहल

मोहनिया | एक संवाददाता

साईंस के बच्चों को कोचिंग संस्थानों के आक्रामक बाजारवाद से बचाने एवं उन्हें शोध तथा निर्माण आधारित साइंटिफिक सोच विकसित करने के उद्देश्य से स्थानीय एमपी कॉलेज में फिजिक्स की कार्यशाला आयोजित हुई। ग्रामीण क्षेत्र के कॉलेज में पहली बार इस तरह की कार्यशाला में इंटर, स्नातक एवं पीजी के छात्रों ने वेस्टेड मैटेरियल से फिजिक्स की प्रयोगशाला बनाने की जानकारी देश के जाने-माने वैज्ञानिकों से हासिल की।

आईआईटी कानपुर में फिजिक्स के प्रोफेसर डा. एससी बर्मा द्वारा गठित उत्साही फिजिक्स टीचर्स ग्रुप के सीनियर रिसर्चर्स पर्सन एवं पटना वीमेंस कॉलेज के प्रोफेसर डा. राकेश कुमार सिंह ने फिजिक्स के कठिन सिद्धांतों को दैनिक जीवन में उपयोग आने वाली वस्तुओं से

प्रायोगिक प्रदर्शन कर समझाया। गुरुत्वाकर्षण ध्वनि तरंग, विद्युत चुम्बकीय तरंग एवं प्रकाश के सिद्धांतों को आसान एवं रोचक ढंग से प्रदर्शित किया।

उनका कहना है कि बोतल, टूटी कलम, रस्सी, धागा आदि वस्तुओं को जिसे हम फेंक देते हैं उनकी सहायता से फिजिक्स के सिद्धांतों को समझा जा सकता है। मात्र सौ रुपये में फिजिक्स की प्रयोगशाला स्थापित की जा सकती है। चार घंटे तक चली कार्यशाला में बीएचयू एवं सासाराम के अलावा कैमूर के छात्र-छात्राओं ने भाग लिया।

भारत सरकार रक्षा मंत्रालय के अधीन डीआरडीओ में वैज्ञानिक रह चुके विद्यादान ईस्टीच्यूट ऑफ टेक्नोलॉजी के चेयरमैन डा. एसके सिंह ने कार्यशाला में बताया कि आज बच्चे मैनेजमेंट एवं प्रशासनिक सेवाओं में जाने को बेचैन हैं। यदि साईंस को नेच्यूरल



मोहनिया के एमपी कॉलेज में आयोजित कार्यशाला में फिजिक्स के सिद्धांत को समझाते युवा वैज्ञानिक व पुरस्कार से सम्मानित पटना वीमेंस कॉलेज के डॉ. राकेश कुमार सिंह

तरीके से सीखाया जाए तो वे वैज्ञानिक बनकर देश की सेवा कर सकते हैं। आज साईंस ग्लोबल बिजनेस बन गया है।

इसमें अपार संभावनाएं हैं। बस जरूरत है बच्चों में वैज्ञानिक प्रतिभा विकसित करने की। कार्यशाला की

अध्यक्षता कॉलेज के प्राचार्य डा. अनिल कुमार एवं संचालन डा. एलएस सिंह ने किया। मौके पर विज्ञान के शिक्षक डा. अभिराम सिंह, प्रो. ओपी सिंह, डा. केबी सिंह, डा. एसबी सिंह, प्रो. डीके उपाध्याय, डा. यूपी सिंह आदि मौजूद थे।

हिन्दुस्तान रविवार, 23 अगस्त, 2009, पटना



Prof.K.L.Chopra (Padamsri), Ex- Director, IIT Kharagpur Public Lecture on the topic 'From Atom to Tailored Materials' as Fellow of the Indian Academy of Science at VITM, Arion, Buxar, (Rural Bihar), 22 Dec 2012. Conducted this Rural India Science & Technology Mission as a Coordinator



National Seminar on 'Development of Nanotechnology Sensor for Defence Application' Conducted this seminar as a Convener at VITM, AKU, Buxar, Bihar



Contributions/performance-

Nanotechnology Science and research awareness in different region of Bihar-15



INSPIRE Camp at J.D.College, Chapra
Jayprakash University



Felicitated by Vice Chancellor, J.P.University

नैनो प्रौद्योगिकी से उत्कृष्ट उर्जा उत्पादन संभव

व्याख्यानमाला में वक्ताओं ने कहा

व्याख्यानमाला में भाग लेते भौतिकविद

बाँका (सं.सू.)। दैनिक जीवन में भौतिकी का अध्ययन एवं प्रयोग कर रोजगार के अवसर प्राप्त ही नहीं किये जा सकते, अपितु हम हजारों युवाओं के लिए रोजगार सृजन भी कर सकते हैं। जरूरत है दृढ़ विश्वास के साथ कड़ी मशक्कत की। यह बात सार्वजनिक महाविद्यालय, सर्वोदयनगर में साइंस फॉर सोसाइटी द्वारा आयोजित व्याख्यानमाला में पटना वीमेंस कॉलेज के प्राध्यापक भौतिकविद डा. राकेश कुमार सिंह ने कही। उन्होंने कहा कि छात्र विज्ञान विषय के प्रति जागरूकता होंगे तो हम एक-एक शहर में अमेरिका का निर्माण कर सकते हैं। हमारे एक-एक प्रोजेक्ट पर अमेरिया संचालित हो रहा है। मुख्यवक्ता के रूप में उपस्थित डा. सिंह ने कहा कि नैनो प्रौद्योगिकी के माध्यम से हम न्यूनतम इकाई से उर्जा के उत्कृष्ट रूप को तैयार कर सकते हैं। इसके पूर्व व्याख्यानमाला का उद्घाटन जिला शिक्षा पदाधिकारी रामप्रवेश सिंह ने दीप प्रज्ज्वलित कर किया। उद्घाटन भाषण में उन्होंने कहा कि बच्चों में विषय के नाम से चबराहट होती है। लेकिन विज्ञान एक बेहद रोचक विषय है। डर को दूर कर इसमें रुचि जागाएँ। भौतिकी वर्ष पर आयोजित इस व्याख्यानमाला में प्रो. एस.के.पी.सिंहा ने जीव विज्ञान एवं भौतिकी के संबंधों को रेखांकित किया। प्रो. जी.पी.श्रीवास्तव ने आइन्सटीन की जीवनी एवं वैज्ञानिक उपलब्धियों की चर्चा की। इसके पूर्व महाविद्यालय के सचिव महेश्वरी यादव ने अतिथियों का स्वागत किया तथा प्राचार्य प्रो. अंजय कुमार सहाय ने अध्यक्षीय भाषण दिया। व्याख्यानमाला में डा. राकेश ने छात्रों को अनेक वैज्ञानिक प्रयोग दिखाए। साइंस फॉर सोसाइटी के जिला संयोजक दीपक कुमार सहित प्रो. कमल किशोर प्रसाद, नवल कुमार घोष के अलावा महाविद्यालय के अनेक शिक्षक एवं छात्राएँ इस अवसर पर उपस्थित थे।



Nanotechnology in Hindi Language session at Muzaffarpur for young students

Impact of Nanotechnology Science and research in development of Bihar-16

Migration of Students from other state to Bihar for higher studies (Impact Assessment)

For 24 seats in M.Tech and Ph.D. program total no. of applications received about 76 in academic session-2018. Generally it is said that people are migrating from Bihar to other state, particularly to Delhi for higher education, but at Nanotechnology centre, AKU, students migrating AKU from taken degree from Central universities, NIT's, BIT's, state universities. The details of higher education Institutions from which students studied at Master/Graduate level and apply for M.Tech and Ph.D. course at Nanoscience centre of AKU. **The name of such institutions of higher education are followings-**

Punjab University Chandigarh, Anna University Chennai, Magadh University Bodh-Gaya, National Institute of Technology(NIT) Jaipur, Uttar Pradesh Technical University, National Institute of Technology(NIT) Agartalla, BijuPatnaik University of Technology Odisha, Jawaharlal Nehru Technological University Kakinada, Birla Institute of Technology(BIT) Mesra, Ranchi, Kalinga University, Chattisgarh, VinobaBhave University, Hazaribag, SRM University, Tamilnadu, Shivam University, Kolhapur, Integral University, Lucknow, West Bengal University of Technology, Lovely Professional University, Punjab, MaulanaAbulKalam Azad University of Technology, WB, Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal, Jiwaji University, Gwalior, Chhattisgarh Swami Vivekanand Tech. University, Bhilai, Central University of South Bihar, Sam Higginbottom Institute of Agriculture, Technology & Sciences, Allahabad, Jadabur University, Tezpur University, Tezpur, National Institute of Foundry and Forge Technology, Ranchi, Guru Gobind Singh Indraprastha University, Delhi, Sharda University, Greater Noida, Patliputra University, Patna & Patna University, Republique Francaise, Lyon-France, Central University of South Bihar, JamiaMilliaIslamia, New Delhi, Chhattisgarh Swami Vivekanand Tech. University, Bhilai and other some other state university.



Felicitated Dr. Rakesh as Resource Person in international and National Conference related to Nanotechnology

Contributions/performance/ Recognition-17

Invited to deliver a lecture/research presentation in International Conference on Nanotechnology

More than 100 countries/ Institutions invited Dr. Rakesh to deliver a lecture on research topic related to nanomaterials research, carried out by Dr. Rakesh. Thus he has raised the images of state Bihar at global level.



Felicitated as Resource Person in International Conference exploring the research activities of Bihar



Highlighting the Frontiers Research work of Bihar on Nanotechnology field in International Conference at Bangalore particularly among Japanese Scientists. In this International Conference I was accompanied with research students of Bihar also (dated 9-11 Sep. 2019)



Research presentation at Stockholm and Sweden

Contributions/performance/ Recognition- **Nanotechnology research culture in Young Minds of state Bihar**

All together at Ph.D. level, Master level, UG level, total no. of students supervised/working in the area of nanotechnology is about 95 by Dr. Rakesh . Most of them are contributing for society building programme. The research supervision also includes-Potential for Excellence scheme and Basic scientific research of UGC, TEQIP-AKU .



Impact -It was my observation during research work carried out by young students in Nanotechnology field. The new properties, new Science changed the temperament of the students towards learning/ creating knowledge. Due to excitement in nanotechnology research changed their outlook towards scientific research and learning and now they are working in Premier institutions of national/international repute. Most of them chosen a career for higher studies before they opt for any Job or placement.

Nanotechnology Education awareness for Mass people on the occasion of republic day-2006

Contributions/performance-16

To aware, Development and progress of Nanotechnology research among common people in state Bihar, Dr. Rakesh shown in the form of exhibition on Gandhi Maidan on the occasion of republic day 2006. This exhibition based presentation for mass people is highly appreciated by Hon'ble CM, H.E Governor, Bihar and other dignitaries present.



BIHAR COUNCIL ON SCIENCE & TECHNOLOGY

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No.

Date.....

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Rakesh Kumar Singh**, Department of Physics, Patna Women's College, Patna University; Patna has been working in Nanocrystalline Ferrite, prepared charts/display materials on the subject of '**Nanotechnology**', presented by **Bihar Council on Science & Technology, Patna** on the **Tableau (Jhanki)** brought out on the occasion of **Republic Day Celebrations – 26th January, 2006** at Gandhi Maidan, Patna.

I wish him success in his life.


(Dr. Amitabh Ghosh)
Project Director

Govt. sector invited as Expert for Nanotechnology based activities for the development of Bihar

BCST-DST, Govt. of Bihar invited Dr. Rakesh to deliver a lecture as key note speaker on the occasion of National science day, Sri Krishna Science center, Ministry of culture, Govt. of India invited several times on the occasion of National technology day, State Council of Educational research and Training (SCERT), Dept. of Education, Govt. of Bihar to deliver a lecture on new science-Nanotechnology for Schools students and teachers on different occasions.

Impact

Research Group developed for development of Bihar in the field of education including nanotechnology. Such groups also helped in various ways in the field of educations

Dr. Rakesh published about 125 research publications in the field of nanotechnology as authors/co-authors in different international/national peer reviewed journals/proceedings. His research group/mentors/Collaborators includes-Prof. H.C.Verma, IIT Kanpur, Prof. Avinash C. Pandey, University of Allahabad(At present, Director-IUAC-UGC-Delhi), Prof. A.Yadav, former Vice Chancellor &Professor at Science College, Patna University, Dr. Ragvendra Singh Yadav, Austrelia; Dr. Chandan Upadhyay, BHU-IIT, Dr. Amarendra Narayan, Patna University; Dr. R.K.Kotnala, CSIR-NPL-Delhi;Dr. ManoranjanKar, IIT Patna, Dr.M.K.Roy, IITM-Jabalpur, Dr. Prabhakar sharma, Nalanda University and several others. As impact his research finding was read/cited by countries-USA, japan, U.K, Germany, etc.On the other hand Dr. Rakeshalso written a M.Sc book on nanotechnology for Nalanda open university, Patna. NOU is an opertunity for science lovers, who can not reach to Colleges/universities. Average 350 students enrolled in M.Sc course.

Mentors for my academic activities: Thankful for Guiding/ Mentoring



Prof. H.C Verma
IIT Kanpur



Padmashri Prof. K.L Chopra,
Ex-Director, IIT Kharagpur



Prof. Avinsh C Pandey,
Vice Chancellor, Jhansi



Dr. Amarendra
Patna University



Dr. Sister Doris D' Souza
Principal, PWC, Patna



Dr. R. K Kotnala
NPL-CSIR Delhi



Prof. S.P Verma
Chairman- NCSTC-
Delhi Ex.Univ Prof
& Head, P.U



Prof
Asheshwar YadavForm
er Vice Chancellor



Prof. Ranjit K Verma
Vice Chancellor
MungerUniver



Prof. Dolly Sinha
Pro Vice Chancellor
Patna University



Prof. S.N.Guha, Founder VC, Aryabhatta Knowledge University, Patna

Organized More than 50 Conferences/ Seminars/Workshops for school/University students/faculty members of Bihar related to Nanotechnology



In this nanotechnology conference about 300 students and faculty member of state Bihar participated, held on 12 Aug 2008. Conducted this national conference at Patna as one of the **Organizing secretary**.



Conducting a National Seminar on “**Role of Nanotechnology for Development of Bihar**” Organized by-Aryabhatta Knowledge University, Patna as a **Jt. Organizing Secretary, 21 - 23Feb 2013**



Public Lecture on Nanotechnology at Patna



Lecture on Nanotechnology and welcome by J.P.U,V.C

Organized More than 50 Conferences/ Seminars/Workshops related to nanotechnology for school/University students/faculty members



Deliver a Lecture as a resource person on Nanoscience in National seminar at Chapra, Bihar



Faculty member of orientation course of Academic staff College, Patna University Visited Nano science center of AKU.

Visited by Young faculty/scholar of Colleges/universities of Bihar and then invited by director Academic staff college, Patna universities and Director state council of educational research and training, Deptt. of education, Govt. of Bihar, Vice Chancellors/principals/ head of the deaprtments to deliver a lecture for young faculty/students. So that young students can benefited from this research. In this regard I have addressed more than 500 faculty member and 5000 students across the state.



नैनो टेक्नोलॉजी का दैनिक जीवन में भरपूर उपयोग : प्रो. सिंह

पटना (आससे)। खचाखच भरे सभाकक्ष में विभिन्न रंगों की स्कूली ड्रेसों से सुशोभित छात्रों के बीच जब प्रो. एस. पी. वर्मा ने बच्चों से पूछा हम विज्ञान दिवस क्यों मनाते हैं, तो अधिकांश ने कहा- इस दिन देश के प्रसिद्ध वैज्ञानिक और नोबल पुरस्कार विजेता सी.वी. रमण का जन्म हुआ था। इसपर थोड़ा मुस्कुराते हुए प्रो. वर्माने बताया कि नहीं। वास्तव में इस दिन डा. रमण ने रमण प्रभाव का प्रकाश किया था। मौका था श्रीकृष्ण विज्ञान केन्द्र में आयोजित विज्ञान दिवस का। इस अवसर पर बच्चों के बीच प्रो. राकेश कुमार सिंह ने नैनो टेक्नोलॉजी : एक परिचय पर व्याख्यान दिया। उन्होंने अपने संबोधन में कहा कि इस तकनीक का दैनिक जीवन में भरपूर उपयोग हो रहा है। यह जहाँ कैंसर खत्म करने में मददगार साबित हो रहा है, वहाँ रेल डिब्बों की साफ सफाई, कपड़ा उद्योग में भी इसका इस्तेमाल हो रहा है। इस मौके पर साइंस मार्च के प्रदर्शक बाद आयोजित क्विज प्रतियोगिता के विजेता छात्रों को पुरस्कृत किया। प्रथम, द्वितीय और तृतीय स्थानों पर आरपीएस के छात्रों रोहित अंकित एवं रोहित कुमार को डा. के.बी. श्रीनिवासन ने पुरस्कार दिया। इस अवसर पर मिथिला विश्वविद्यालय के पूर्व कुलपति राजमणि प्रसाद सिन्हा, पद्मा श्रीनिवासन सहित अन्य वक्ताओं ने भी सी.वी. रमण के व्यक्तित्व के बारे में

विज्ञान दिवस पर कई कार्यक्रम आयोजित

बच्चों को जानकारी दी। इसके अलावा प्रेम यूथ फाउंडेशन द्वारा कदमकुआं स्थित भाभा सायंस क्लब में अलौकिक चमत्कारों की वैज्ञानिक व्याख्या की

तिवारी, अजय यादव, संतोष कुमार मौजूद थे। भारतीय सर्वेक्षण विभाग, बिहार भू-स्थानिक आंकड़ा केन्द्र में २२वाँ राष्ट्रीय विज्ञान दिवस मनाया गया।

नागरिकों को आमंत्रित किया गया। केन्द्र द्वारा मानचित्रण एवं सर्वेक्षण हेतु प्रयोग में लाये जाने वाले आधुनिक जी.पी.एस. यंत्र, टोटल स्टेशन यंत्र, थियोडोलाइट सहित



आयोजन किया। इस अवसर पर श्यासुंदर, जैनन्द्र कुमार चुनु, जी.एन. विद्यालयों के छात्र-छात्राओं सहित आम

अन्य यंत्रों का प्रदर्शन किया गया। इस वर्ष राष्ट्रीय विज्ञान दिवस का

मुख्य विषय वस्तु "प्लैनेट अर्थ-खोज शोध बोध" रखा गया। संस्थान के निदेशक ब्रिगेडियर ए.के. सिन्हा ने उपस्थित लोगों को सम्बोधित करते हुए राष्ट्रीय विज्ञान दिवस के महत्व पर प्रकाश डाला। ब्रिगेडियर सिन्हा ने कहा कि महान भारतीय भौतिकविद सर सी.वी. रमण ने स्पेक्ट्रोस्कोपी में ब्रिटिश रमण प्रभाव की खोज २८ फरवरी को की थी। जिसके २ वर्षों के बाद उन्हें भारत के लिए पहला नोबेल पुरस्कार ग्रहण किया था। सर रमण के इसी महान कार्य की याद में प्रत्येक वर्ष २८ फरवरी को राष्ट्रीय विज्ञान दिवस मनाया जाता है।

ब्रिगेडियर सिन्हा ने भारतीय सर्वेक्षण विभाग के महत्व को रेखांकित करते हुए कहा कि यह विभाग भारत का सबसे पुराना विभाग है तथा मानचित्रण के कार्य में इस विभाग के अधिकारी / कर्मचारी अपना सर्वस्व त्याग कर देश के महत्वपूर्ण दायित्वों को निभाते हैं। ब्रिगेडियर सिन्हा ने वर्तमान प्रदूषण, बढ़ती जनसंख्या, घटते जंगलों आदि के दुष्प्रभावों को धरती के अंतर पर वैज्ञानिक दृष्टिकोण की व्याख्या की तथा धरती के भविष्य पर चिंता व्यक्त करते हुए कहा कि आज सम्पूर्ण विश्व को एक मत से धरती की घटती उम्र पर विचार करते हुए धरती के बचाव के लिए उपाय करने होंगे।

नैनो टेक्नोलॉजी से आएगी समाज में क्रांति

पटना (हि.प्र.)। नैनो टेक्नोलॉजी ऐसी तकनीक है जिससे समाज में क्रांति आएगी। यह पदार्थों के उस छोटे-छोटे कणों के गुणों को बताता है जिसका उपयोग कर पदार्थों के पूरे गुणों को ही बदला जा सकता है। राष्ट्रीय विज्ञान दिवस के अवसर पर श्रीकृष्ण विज्ञान केंद्र में आयोजित पापुलर साइंस लेक्चर में 'नैनो टेक्नोलॉजी : एक प्रारंभिक परिचय' विषय पर पटना वीमेंस कॉलेज के भौतिकी विभाग के शिक्षक राकेश कुमार सिंह ने कहा कि यह तकनीक समाज में क्रांति ला सकती है।

इस तकनीक का उपयोग चिकित्सा, विज्ञान व उत्पादन के क्षेत्र में किया जा रहा है। इस मौके पर बच्चों को बताया गया कि इसी दिन डा. सीबी रमण ने प्रकाश के प्रभावों की खोज की थी और इस कारण

यह दिन विज्ञान दिवस के रूप में मनाया जाता है।

इस मौके पर प्रो. देवेन्द्र प्रसाद ने कहा कि विज्ञान को समझने की जरूरत है। इसे हम चमत्कार के रूप में प्रस्तुत करने के बजाए प्रयोगशाला से बाहर लाने का प्रयास

विज्ञान दिवस पर कार्यशाला आयोजित

करें। इस मौके पर आयोजित क्विज प्रतियोगिता में साइंस फॉर सोसाइटी के अध्यक्ष केवी श्रीनिवासन ने प्रथम स्थान पर आए आरपीएस रेसिडेंसियल स्कूल के छात्र रोहित कुमार, यहीं के अंकित कुमार को दूसरा व रोहित कुमार को तीसरे स्थान के लिए पुरस्कार प्रदान किया। सुबह में बच्चों

ने साइंस मार्च भी निकाला। कार्यक्रम में प्रो. एसपी वर्मा, प्रो. राजमनी प्रसाद सिन्हा, डा. पद्मा श्रीनिवासन ने भी अपने विचार रखे।

प्रेम यूथ फाउंडेशन में भी विज्ञान दिवस के अवसर पर भाभा साइंस क्लब, कांग्रेस मैदान में अलौकिक चमत्कारों की वैज्ञानिक व्याख्या का आयोजन किया गया। फाउंडेशन के महानिदेशक श्यामसुंदर ने हाथ ही सफाई से हवा में हाथ हिलाकर सामान निकालना, जीभ में आर-पार त्रिशूल चुभोना, चमड़ी में धागा के सहारे नींबू टांगना, आंख में पट्टी बांधकर साइकिल चलाने जैसे वैज्ञानिक चमत्कारों को दिखाया। इस मौके पर डा. जैनन्द्र कुमार चुनु, डा. जीएन तिवारी, शास्त्री कात्यान, रामजन्य शर्मा, संतोष कुमार समेत सैकड़ों लोग उपस्थित थे।

Potential for excellence status scheme of UGC peer team interaction about Nanotechnology Research development in Bihar - Impact

The premier institute of India Patna Women's College, autonomous unit of Patna university invited me to explore the research contributions made by me in the field on nanotechnology during 9 year of work experience during visit of potential for excellence status scheme of UGC peer team team in year 2014. This College is the 1st College of Bihar in higher education field having excellent CGPA 3.58/4 in NAAC-Accredited



Patna Women's College
Patna University
NAAC Re-accredited – A Grade with CGPA 3.51/4
'College with Potential for Excellence' (CPE)
status accorded by UGC



Ref No. Misc. 137/14
Date : 23.08.2014

To,
The Vice Chancellor
Aryabhatta Knowledge University
Patna

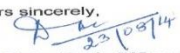
Sir,

A four member UGC CPE Expert Committee is visiting Patna Women's College, Patna University on 25th and 26th August, 2014 to assess the progress made by the College from 2010 – 2014. Therefore, may we request you to kindly allow Dr. Rakesh Kumar Singh, Assistant Professor, Centre for Nanoscience and Nanotechnology, Aryabhatta Knowledge University, Patna to be present in Patna Women's College on 25th August, 2014 from 10:30 a.m. – 01:00 p.m. Dr. Rakesh Kumar Singh had worked as an Assistant Professor (Management Appointee) in the Department of Physics from August, 2004 – 2013. During this period he has conducted 17 Research Projects under 'College with Potential for Excellence' (CPE) scheme and 'Basic Scientific Research' (BSR), UGC's special scheme at Patna Women's College. Dr. Rakesh has also worked on UGC Sponsored Minor Research Project on **Nanomaterials**. Hence, his valuable presence in the College on 25th August, 2014 will help us a great deal to explain to the team all about teaching and Nanomaterial Research.

Thanking you,


With kind regards,

Yours sincerely,


(Dr. Sister Doris D'Souza A.C.)
Principal
Patna Women's College
Bailev Road, Patna - 1

Handwritten notes:
Smt. Manoj 23/8/14
30/8/14
30/8/14
H-OC, ACN, ARU, Patna
23-08-14

Awarded Doctoral degree in the field of Nanotechnology and invited for Post-Doctoral Research by Federal Minister of Education and Research, Berlin, Germany


Department of Science & Technology
Ministry of Science & Technology and Earth Sciences
Government of India

Kapil Sibal
Minister for Science & Technology and Earth Sciences
Government of India

Requests the pleasure of your company at the

Session with
Dr. APJ Abdul Kalam
President of India

at
Interactive Meet on
Motivation of Youth in Science
On the occasion of India-European Union Ministerial Science Conference
at 1200 hrs on Thursday, 8 February 2007
at Vigyan Bhawan, Maulana Azad Road, New Delhi


RSVP :
Shree Ramul, CB, Gurgaon
Tel : 8124-401490-67, 4014915
Email : ramul@vsnl.com


Please carry this card with you
Detailed programme attached
This card is non-transferable

Hindustan Times
February 6, 2007

PWC faculty to interact with Nobel laureates

RAKESH KUMAR Singh, a faculty of Physics in Patna Women's College, has got a rare opportunity of interacting with the Nobel laureates and eminent scientists from Europe and Germany at the Vigyan Bhawan in New Delhi on February 8. The meet has been convened by the Department of Science and Technology (DST) in collaboration with the embassy of Germany and the European Union delegation of the European Commission in India. The DST had invited applications from registered Indian Ph.D. scholars. Rakesh, who has done his doctorate on 'nano materials' in collaboration with IIT, Kanpur, was selected for the meet. He was also the master resource person for the World Year of Physics.


R K Singh


Annette Schavan

International Meet of नोबेल Laureates, Science icons of यूरोप, जर्मनी, भारत - Vigyan bhawan, नई दिल्ली
Invitation for Higher Research By Dr. Annette Schavan, (Federal Minister of Education & Researchs) Berlin, जर्मनी


**Bundesministerium
für Bildung
und Forschung**

Dr. Annette Schavan, MdB
Bundesministerin für Bildung und Forschung

HAUSANSCHRIFT Hannoversche Straße 28-30, 10115 Berlin
POSTANSCHRIFT 11055 Berlin

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FAX +49 (0)30 18 57-55 00
E-MAIL annette.schavan@bmbf.bund.de
HOMEPAGE www.bmbf.de

DATUM Berlin, 15. August 2007

POSTANSCHRIFT Bundesministerin für Bildung und Forschung, 11055 Berlin

Mr. Rakesh Kumar Singh
C/o Dr. A Narayan,
Deptt. of Physics, Patna University,
Patna, Science College Campus,
Patna-5
INDIEN

Liebe Studierende,
liebe Schülerinnen und Schüler,

im Rahmen meines Besuchs in Indien im Februar dieses Jahres war es mir eine besondere Freude, am 8. Februar 2007 gemeinsam mit Forschungsminister Kapil Sibal und EU-Kommissar Potočnik am „Interactive Meet on Motivation of Youth in Science“ („Science Icons Meeting“) in Delhi teilgenommen zu haben. Es hat mich insbesondere gefreut, dass sich so viele junge Menschen aktiv an der Veranstaltung beteiligt und ihr großes Interesse an Wissenschaft und Forschung gezeigt haben.

Mit einigen Informationsbroschüren des Deutschen Akademischen Austauschdienstes (DAAD) möchte ich Sie gerne auf die vielfältigen Fördermöglichkeiten, die für Reisen nach und Aufenthalte in Deutschland zur Verfügung stehen, aufmerksam machen. Der DAAD fördert alle Bereiche rund um Wissenschaft, Forschung, Sprache und Lehre und ist mit einer Außenstelle auch in Delhi vertreten.

Ich würde mich sehr freuen, wenn Sie für Ihren Bildungsweg auch einen Forschungsaufenthalt in Deutschland in Erwägung ziehen würden. Für Ihren weiteren Lebensweg wünsche ich Ihnen viel Erfolg.

Mit freundlichen Grüßen

Annette Schavan
Dr. Annette Schavan
Bundesministerin für Bildung und Forschung


Annette Schavan

Awards and Recognitions of Students in seminar at Rajbhawan-18

Worked under my supervision at Aryabhata Knowledge University Patna-
Achievement of Nanotechnology research Center of Aryabhata Knowledge University



Students of Nanoscience center of AKU, working under the supervision of Dr. Rakesh Kr Singh, receiving 1st prize at Rajbhawan Patna in a state level programme” Innovations and Entrepreneurship in Science Education and Research.



Research presentations by M.Tech Students in international Conference at Bangalore and

Planning and Development: Nucleation growth of the Nanotechnology center and visionary plan of Nanotechnology, activities category-19

✓ Simulation lab in nanomaterial research establishment are in progress under the supervision of Dr. Rakesh

Govt. of Bihar, Dept. of education supported the fund for simulation laboratory in nanomaterials research laboratory, which are being established under the coordinator ship of Dr. Rakesh Kr Singh. The software, which are being procured are Molecular Dynamics Simulation(COGNAC, VSOP), Multiphase Materials Simulation(MUFFIN), Visual TCAD and Genius Devices Simulator.

M.Sc course in Nanoscience

M.Sc in nanoscience courses is to be start very soon. For this under the coordination of Dr. Rakesh Kr Singh, academic-head, ordinance, syllabus etc. are being prepared and submitted to the University for necessary approval and further action

AMC/ Sustainability of Nanoscience laboratories

There are 6 Nanomaterials Research laboratories at Nanotechnology centre of Aryabhata Knowledge University, Patna. They are Structural Characterization, Magnetic, Optical, Optical, Synthesis, Microstructural, Electron microscopy laboratory. The establishment and procurement processes were almost completed in the year 2016. After that warranty period completed. All the details of AMC, terms & Conditions, related proposals are being prepared for R & D activities.

Special lecture/ Invited by National/International Conferences and highlighted the status of Aryabhata Knowledge University, Patna

Delivered a Talk as Resource person in International Conference ‘ Business Risk in Changing Dynamics of Global Village-2020(A global Platform for business and Academic Cooperation). **This international level activity was organized with universities of Applied Sciences-Poland, Galati University Romania and Patna university. Date-24th Nov. 2020.**



Dr. Rakesh Kr Singh, Participated as Resource person in this International Conference and delivered a talk on Nanotechnology and their applications . In this Conference more than 50 eminent academicians across the world shared his innovations.

Special Lecture/ Talk delivered/ Invited by National/International Conferences and highlighted the status of Aryabhatta Knowledge University, Patna

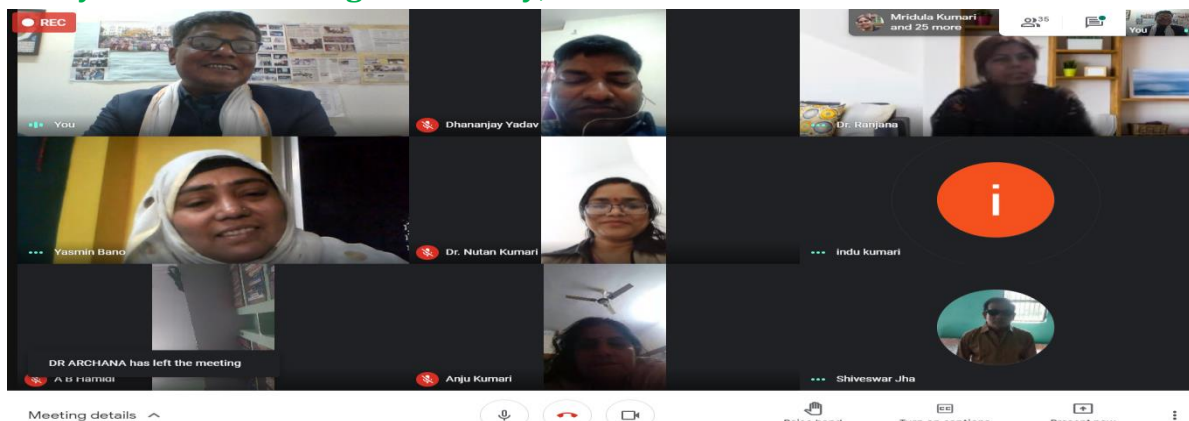


Dr. Rakesh Kr Singh, participated as Panel discussion member on intellectual property right at Chankya Law University, Patna. On this occasion, Hon'ble Justice Smt. *Mridula Mishra*, Vice Chancellor , Prof. R.B.P.Singh, Former Vice Chancellor, Patna University, Prof. Sunita Rai, Director, Women's Study center, Patna University, Prof. S.C.Roy, Dean, Research together with more than 10 eminent dignitaries participated.



Dr. Rakesh delivered a talk on Ayurveda Nanomedicine in National webinar

Talk delivered/ Invited by National/International Conferences and highlighted the status of Aryabhata Knowledge University, Patna



Dr. Rakesh delivered a talk on Embracing cutting-edge interdisciplinary Education for the development in society in **Refresher course of faculty of Universities/Colleges**, invited by director, UGC-HRD, Patna University. In this refresher course about 50 faculty members of different universities of India participated.



Participated as Resource person on Intellectual property right seminar, organized MSME, Govt. of India and Atal Incubation center, Bihar Vidyapeetham, Patna.



Dr. Rakesh Kr Singh of Nanotechnology center of AKU, felicitated as resource person by Prof. A.k.Singh, former director, IIT Bombay in National conference.

Developing Strong Scientific Human resource in Society-21
Learning Science through low cost experiment at all levels of Study
Under supervision of Padam Shree Prof. H.C.Verma, IIT Kanpur-



Prof Verma felicitated by Hon'ble Sri Nitish Kr Ji, CM, Bihar in year 2018 as Molana Abul Kalam Azad Award

- **Dr.Rakesh Kr Singh, developed about 500 low cost science experiment at all levels of study, under the supervision of eminent academician Prof.H.C.Verma, IIT Kanpur.** He demonstrated these experiment under various situations including classrooms/ conferences, public lecture, School and university students in different district of Bihar. We have conducted more than 200 workshops with such low cost experiments, including in **RashtriyaAviskarAbhiyan programme &Unnat Bharat Abhiyan -Initiative of Govt. of India**
The main objective of this programme highlights-
- Youth must be made to understand the beauty of doing science, the pleasure of doing science, and the ultimate bliss when results of science make you understand nature, master it, control it, and finally make things that improve the quality of life of humankind.
- These workshops have attracted attention of students and encouraged them to ask relevant questions in science at all levels of study. Such efforts have also helped in demystifying scientific research and developing scientific thinking in students/ faculty members.
- The present Government has taken several steps for developing research within the country in frontline areas such as Nanotechnology, Biotechnology and Information technology. Such innovative practices supplement this move by helping create interest in basic understanding in science without which cutting edge research is not at all possible.
- Dr. Rakesh Kr Singh invited by different Govt. organizations and academic institutions to conduct training programme to almost district of Bihar/ Indian students and faculty member. SCERT- Dept. of Education, Govt. of Bihar; Kilkari, Dept. of Education, Govt. of Bihar, Bihar School Examination board, Patna, Science for Society Bihar, College/Universities including IIT's, NIT's, BIT invited me to explore such low cost science teaching-learning methodologies.

Activities presented by Hon'ble Vice Chancellor in Chancellor Office appreciated-21

In Year 2017, Hon'ble Vice Chancellor, AKU presented the low cost based teaching methodology of Dr. Rakesh Kr Singh in meeting with all Vice Chancellors of Universities of Bihar. Chancellor office appreciated this practices and also mentioned in the proceeding.



Patna Women's College



HRD, Govt. of Bihar



DPS Patna



Varsnasi



IIT, Kanpur



Mohaniya, Kamur, Sasaram



National Conference

Contributions- Impact

Research highlighted or cited with affiliation of Dr. Rakesh Kr Singh and his group Nanotechnology center, Aryabhatta Knowledge University, Patna by more than 35 countries

Dr. Rakesh Kr Singh, has been working as Head/ Professor-in charge-Establishment/ Academic-in charge / Coordinator of Nanoscience center of AKU from the day of foundation. Till date, Dr. Rakesh and his research group published more than 60 research publications in last 6 year in the field of Nanotechnology in Agriculture, Food, Electronics, Magnetic materials and Physics education with affiliation of AKU, Patna. Till date his Research Publications was being cited by more than 100 world class Institutions: The name of the some of the following institutions are following-

- XIV. University of Duisburg-Essen, Germany
- XV. Adekunle Ajasin university, Nigeria
- XVI. National Institute for Research and Devlopement of isotropic and Molecular Technologies, Romania
- XVII. Semnan University, Iran
- XVIII. Chiang Mai University, Thailand
- XIX. Dalian university of Technology, China
- XX. Spanish Research Council, Spain Zagazig university, Egypt
- XXI. Adama Science and Technology university, Ethopia
- XXII. Federal university of Amazonas, Brazil
- XXIII. Ukrainian university of Chemical Technology, Europe and some more than 10 institutions of international repute.
- XXIV. University of Degli Studi, Itly
- XXV. Upasala University, Sweden
- XXVI. University of Foreign Studies, Korea

Contributions

Invited by scientific communities of countries, Spain, Boston-U.S.A, California and some others countries to deliver a talk on research topic on which research work carried out by Dr. Rakesh k Singh.

In addition to cited the research of AKU faculty member by global scientific communities, Dr. Rakesh was invited more than 15 various academic institutions to deliver a lecture in seminars/training programme.He was also invited by scientific communities of countries, Spain, Boston-U.S.A, California and some others countries to deliver a **talk on research topic on which research work carried out by Dr. Rakesh Kumar Singh**

Special Seminar series- on Career on Nanotechnology Research and Cutting edge Research with NRI based in Japan, France, and Singapore-22

Research activities of Nanotechnology centre of AKU includes – Synthesis, characterization and nanomaterials for Knowledge creation and its applications in Medicine, Electronics, water purification etc. We have worked on various such type of research finding and we feel that such research should linked to industries also. For this, we have started a special online seminar in one day in a month for igniting young minds for set up industry and incubations. In this series, 1st seminar was held on 6th March 2021 on Opportunities in Nanotechnology & Cutting edge research in which scientists/entrepreneurs from Japan, France, Singapore, and India shared his vision for the progress of Nanotechnology research.

ZOOM Meeting

Opportunities in Nanotechnology & cutting-edge research

Secrets of Getting Future Career in Nanotechnology

Organised by
Nanotechnology Center,
Aryabhata Knowledge University
Bihar Innovation, Patna, Bihar

Prof, Rakesh Kr. Singh
Aryabhata Knowledge University, Patna, Bihar

Rupesh Singh, PhD
Researcher, KIOXIA, Japan

Ravi Kumar, PhD
Co-founder, Atomionics, Singapore

Upkar Kumar, PhD
R&D, Project Manager, ELDIM, France

Amit Shukla, PhD
Researcher, Singapore Bihar Innovation

Bikas Ranjan, PhD
Researcher, RIKEN, Japan Bihar Innovation

Saturday, March 06th | 03 PM IST



Dr. Rakesh Kr Singh address on Cutting edge research(Online mode)

Special Seminar series- on Innovations to Enterprises with NRI based in Japan, France, and Singapore-22

In this second series, we have started nurturing session for enterprises session for ongoing created knowledge. In this session, Scientists/academicians from France, Japan, and Singapore shared their innovative ideas for shaping the society.

Innovation to Enterprise

Online Webinar

20th March 2021
12PM Ist

Speakers



Vijoy Prakash
Chairman Cum CEO,
AIC BV Foundation



Dr. Prof. Rakesh kr. Singh
Head-Academic, Nanotechnology Center,
AKU Patna



Ajay Singh
IT Director Asia Region
Founder of Bihari NRIs Group



Atul Kumar
IIM Alumni
Co-founder Ren Ventures



Natasha Gupta
Global business JAPAN
BIHAR INNOVATION



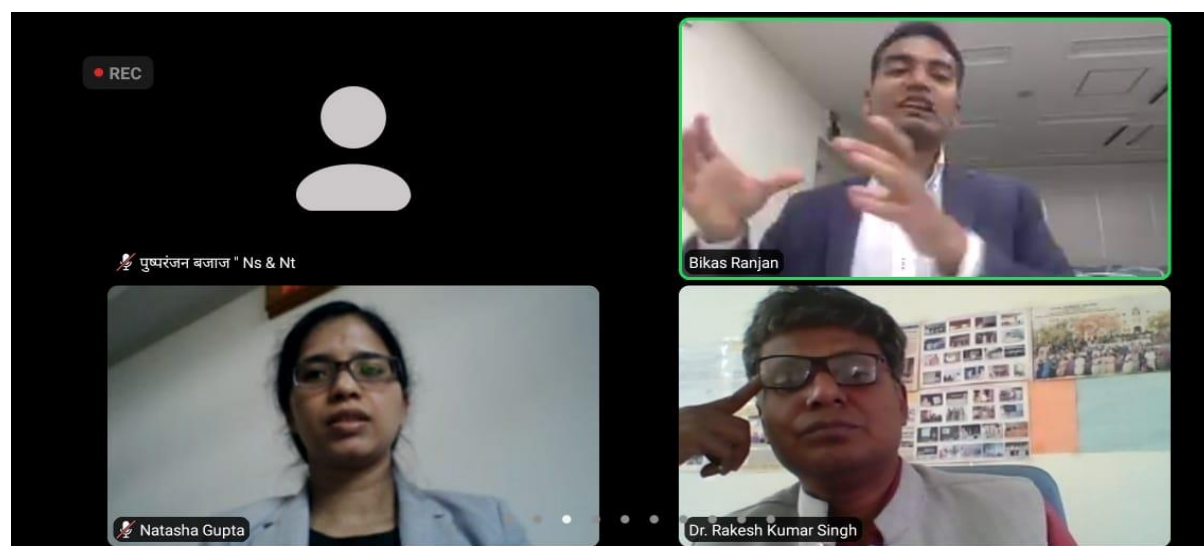
Pramod Karn
Chief Operating Officer
AIC BIHAR VIDYAPITH



Dr. Prashant Kumar
Research scientist UK
Member of Bihari NRIs Group



Dr. Bikas Ranjan
Research scientist JAPAN
BIHAR INNOVATION



Award/Recognition of Nanoscience and Nanotechnology center, AKU

Invitation in Children Science Congress and Orientation Programme of school Teachers

A programme of DST-Govt. of India and Bihar-23

The Children Science Congress is unique programme that motivates children in the age group of 10-17 years, to take-up scientific project on local specific issues of their choice under broader themes, instead of imposing issues on them. This programme is an actively towards promoting congenial team work, correlating science with everyday life situation and has been organizing such scientific programme in different districts of Bihar by DST-Govt. of Bihar in collaboration with Science for Society, Bihar and State Council of Educational Research and Training, Dept. of Education, Govt. of Bihar. In this congress, I have been invited the chairperson of the congress to interact with budding scientists



Counseling of teachers for students project



Session with Child scientist at Sitamarhi



Session with Child Scientists at Begusarai



Contributions-24

Making higher education institutions provide solutions for problems in Villages and Science Education interesting and Joyful



Rashtriya Avishkar Abhiyan & Unnat Bharat Abhiyan activities

- In pursuance of the focus on connecting innovative knowledge to life outside the class room and making learning of Science Mathematics a joyful and meaningful activity, to bring focus on innovation and use of technology, the **Ministry of Human Resource Development, Govt. of India** has set up the **Rashtriya Avishkar Abhiyan (RAA)** - a convergent framework to encouraged and supported to heights of academic excellence and research. While the **Unnat Bharat Abhiyan** — a scheme of the Centre aimed at making higher education institutions provide solutions for problems of villages and much wider participation from many higher educational institutions. In these programme.



Prof. P. Bhatthacharya(2nd from left), Director , IIT Patna inaugural session in Aug. 2018. Dr. Rakesh Kr Singh participated as a local coordinator and Resource person.

. Rakesh Kr Singh delivered a Lecture as an expert/resource person at IIT Patna. He has conducted 4 workshops as a local coordinator of RAA at Indian Institute of Technology (IIT) Patna. Total about 500 students and Teachers participated in this healthy programme

Contributions-25

Contributions/ Participations in State/Nation building Programme -Initiative of Government

Rashtriya Avishkar Abhiyan & Unnat Bharat Abhiyan activities ; State/Nation building Programme -Initiative of Government



Prof. P. Bhattacharya, Director, IIT Patna Felicitating to Dr. Rakesh as a Resource person in Teachers/Students Workshop at IIT Patna in RashtriyaAvishkarAbhiyanprogramme. On this occasion Prof.Rajmani Prasad Sinha, former Vice Chancellor and chairman, Bihar School examination board chairman was also on the dias and address the different technical sessions.

Atal Tinkering laboratory, inaugurated as chief guest at DPS Patna



Delivering a lecture in programme in Atal Tinkering laboratory, Initiative by MHRD, Govt. of India. The theme of the lecture was Science & Research in my life and Sustained development of society



National Technology Day -11thMay(Human Chain) for Mass awareness



Attended on invitation as a stakeholder Interaction meet with Hon'ble MHRD minister, Sri Prakash Javedkar and UGC chairman at Pune on focal theme "Shodh, Shiksha and Samiksha".



INSPIRE session-A programme of Department of Science and Technology



Delivering a Talk on International Year of Light-Proclaimed by united nations for public understanding of Importance of light in Dailey life at Kanpur University.

Seminar on nanotechnology in Hindi-25

First time I organized National Seminar as Coordinator in Aryabhata Knowledge University Campus on Atomic Energy in Hindi for Students and Teachers of Bihar. The culture of organizing seminar in AKU campus started from this seminar, while we have no chairs, tables and sound systems. Before this such seminars were organized in hotels



Eminent academicians from Bhabha Atomic Research Center (BARC), IIT Kanpur and faculty member from IIT, BIT, Universities of Bihar and NIT participated.



Low Cost teaching methodology of Dr. Rakesh Was appreciated


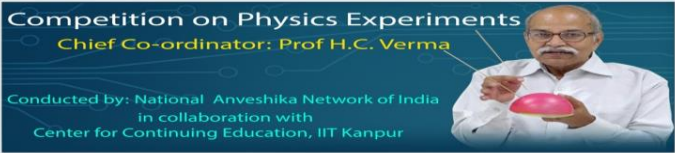
Worked/ Research Laboratory Exposure

I have worked in following National/International Research laboratories with my mentors/Collaborators

6. IIT Kanpur
 7. CSIR-NPL, New Delhi
 8. Nanotechnology center, University of Allahabad(Nano mission lab)
 9. UGC-IUAC, Delhi
 10. BHU-IIT
-




Best Practices
National Anveshika Experimental Skill Test (NAEST)
Working for uplifting Science Education and related Innovations at all levels of Study
Initiative of Padam Shree Prof. H.C. Verma, Dept. of Physics, IIT Kanpur

Experiments are integral part of science. History shows how careful observations and suitably designed experiments have changed the course of human development in all aspects. To promote these skills among students, National Anveshika Network of India (NANI), a unit of Indian Association of physics Teachers, conducts a competition NAEST (National Anveshika Experimental Skill Test) based on Physics Experiments each year since 2014. This is probably the only test of its kind in India. In the First round which is called Screening Round, 8 to 10 short videos of some innovative experiments related to natural phenomenon and beyond class room activities/ daily life will be shown to the students and questions will be asked to test their observation skills and basic understanding of the subject. Selected students from the Screening round will be allowed in the Prelims round which will be conducted by the 26 Anveshika across the different parts of country. This round focuses more on performing experiments and analyzing the data by the participants. This activities are being carried out in last 12 years.




Introduction to NAEST-2020


A competition based on Physics Experiments for classes 9, 10, 11 & 12
By **Dr. Rakesh Kumar Singh**
[Detailed Profile : <https://drakeshsingh.com/>]
Aryabhata Centre for Nanoscience & Nanotechnology (ACNN)
Center for Post Graduate Studies & Doctoral Research,
Aryabhata Knowledge University, Patna
Event Join Link : <https://bit.ly/NAEST2020>
29 Jul | 5 PM



**NATIONAL ANVESHIKA NETWORK OF INDIA
&
VIGYAN PRASAR
NAEST 2020**

Certificate of Appreciation
This certificate is awarded to
DR. RAKESH KUMAR SINGH
COORDINATOR, PATNA IAPT ANVESHIKA, PATNA
in recognition of valuable contributions to the
Online Prelims of National Anveshika
Experimental Skill Test 2020


Prof. H.C. Verma, Chief Coordinator, NANI


Sri Arvind C. Ranade, Scientist E, Vigyan Prasar

13 Dec 2020

13 Dec 2020

Co-curricular, extension and professional development related activities
Conducted about more than 100 as a Coordinator/Convener/ Organizing Secretary

These activities include- Student related co-curricular, extension and field based activities (such as extension work through scientific tour/workshops/seminar and other channels, cultural activities, subject related events, advisement and counseling etc. Total Major Activities in this category conducted about more than 115 as a Coordinator/Convener/ Organizing Secretary/ Teacher-In charge.



National Symposium Inaugural Dignitaries: **Prof. K.L.Chopra**, Former Director-I.I.TKharagpur, **Dr. R.K.Kotnala**, Chief Scientist, NPL-Delhi, **Prof. A.K.Bhowmick**, Director-I.I.TPatna, **Prof. S.Lal**, ViceChancellor, Patna University, **Dr. Sister.Doris D'Souza**, Principal, Patna Women's College(PWC), Patna University, **Prof. Janak Pandey**, V.C, Central University. of Bihar, **Dr. Rakesh Kr Singh**, Asst. Prof. of Physics, Patna Women'S College(Organizing Secretary), Dr. S.Prasad, Head, Physics, PWC.



Delivered a talk as Resource person at IIT Kanpur and J P University



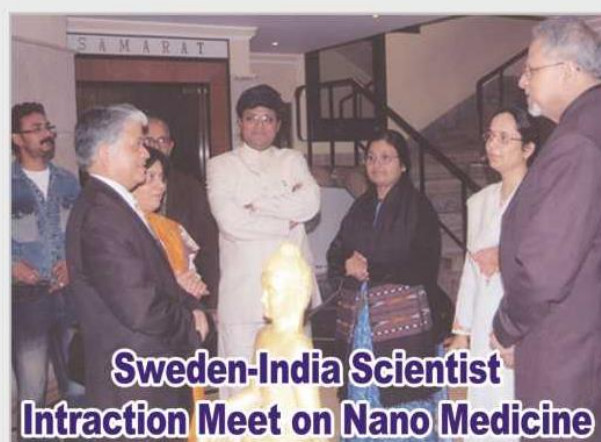
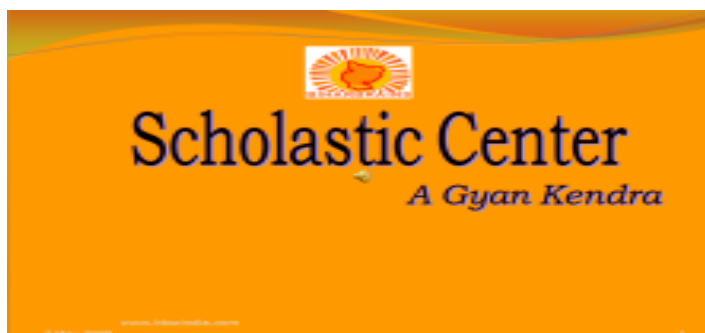
Addressing On Role of Science & Scientists
For developed society,
Organized- Dept. of Education, Govt. of Bihar



Basic Scientific Research (BSR) and College with
Potential for Excellence Research- UGC scheme- Guidance

Statement about Collaboration with Scientists abroad/national level

Dr. Rakesh is the co-convener of our 60 member Global Scientific Council member of the Bihar Brain development Scientific Society-which has been formed for the purpose of organizing International level science conferences, starting science magazines/journals, seminars, workshops, orientation programs and establishing R&D centers etc. He has been actively involved in organizing Bihar Science Conference, an International Conference on science & Technology since 2008 in collaboration with many scientist across the globe, namely scientists from USA, UK, KOREA, Singapore, Australia, Mexico, Germany and other countries as well. Apart from this, also contributed very actively in organizing “Sweden- India Scientist Interaction program cum seminar on Nano medicine held on 17th Jan 2008, Korea Scientists felicitation program held on 12th December 2008 and many other Workshop and conferences. Being a spokesperson of the society, takes keen interest in the day to day affairs of the society and successfully promoted our vision in front of international scientific community.



Conducted these International level meet as a Organizing Committee member

Multidisciplinary Science activities

Recognition : **Master Resource Person** of
International Year of Physics (Proclaimed by United Nation)
At: Institute of Physics Bhubeneshwar, Orissa, (Aug. 2005)



Academic Recognition of Master Resource person of International Year of Physics-2005, Proclaimed by United Nations by DST-Govt. of Bihar and NCSTC-network, Delhi, Science for Society, Bihar

- ✚ Year 2005 was declared as **International Year of Physics(IYP)** by **united nations**. This year marks of the theory of relativity: Special and general- has stood the test of time for a century now and remains one of the greatest creation of human mind that help us to understand nature in the proper perspective. The **IYP** also marks the centenary of the golden decade (1895-1905: Modern Physics) in which momentous discoveries in Physics were made including Quantum Science. In the same year Albert Einstein's seminal paper entitled "on the electrodynamics of moving bodies" appeared in Annalen der Physik in 1905.
- ✚ Importance to celebrating the year of Physics is, so celebrating celebrating 100 year of the golden decade and offers great opportunity to communicate the basic Scientific aspects of these discoveries and how they have shaped our lives, promotes the method of science and spread a scientific outlook among the people.
- ✚ On 27-29 July 2005, as Master Resource Person training programme was organized by the DST-Govt. of India at Institute of Physics(I.O.P) Bhubeneshwar, Dept. of Atomic energy. Dr. Rakesh actively participated in all the sessions of this training programme.
- ✚ Dr. Rakesh kr Singh nominated for the Master Resource person of International Year of Physics by Bihar Council on Science & Technology-DST-Govt. of Bihar and Science for society, Bihar, member of National Council of Science & Technology Communication-network- Technology bhawan, Delhi. On this occasion delivered talks on various aspects of Physics , conducted various activities at different colleges/PG centers/Institutions and schools through the state Bihar and others places for the progress of science for the people

Recognition

Senior Resource Persons of Utsahi Physics Teachers

(A group evolved through IIT Kanpur Initiated Project on Innovative Physics Teaching)

Coordinated by Prof. H.C.Verma, IIT Kanpur

For Revitalization of Physics Education through Innovative Teaching Methods



Receiving Senior Resource Person appreciation by Prof. H.C.Verma in IIT Kanpur initiative project

- ✚ Nature is beautiful and understanding it, from quarks and leptons to Galaxies, is even more beautiful. Learning Physics and sharing it with students and fellow colleagues is an exciting experience and also a great challenge. Through workshops on Physics experiments, Science shows, Teacher's training Camps and numerous other activities, Utsahi Physics Teachers are spreading the fragrance of Physics learning thrill among students and teachers from middle school to Postgraduate level. **This group has been coordinated by Professor H. C. Verma, Dept. of Physics, IIT Kanpur.** He is Professor of Physics at IIT Kanpur and is constantly interacting with Physics teachers at school and college levels towards making Physics Teaching interesting and more meaningful. From these interactions, this group of highly motivated teachers has evolved which we call “**Utsahi Physics Teachers.**”

- ✚ **Senior Resource Persons (SRP)**

These are Physics teachers who have attended several NWUPTs(National workshops of utsahi Physics teachers at IIT Kanpur) and are very active in training other teachers in Physics Teaching Workshops in their regions. These persons are highly committed towards education and spend significant amount of time in conducting workshops, contacting teachers, and so on. This is in addition to their regular institutional duties.



Prof. H.C. Verma, Dept. Of Physics, IIT Kanpur delivering lecture on Revitization of Physics Education in India & Low cost demonstration Experiments by Dr. Rakesh .Kr .singh

- ✚ There are altogether **15 SRP'S*** . In each year there is SRP'S meet and Research exposure camp is being organized for upgradation for teaching- research, across different part of the country i.e It was held at IIT Kanpur, Univ. of Allahabad, Univ. of Rajsthan, Jaipur, BIT's Pilani, HBCSE-Bombay, Science College, Patna univ, IIT Guwati that is dedicated to Science Education in general and Physics Education in particular within India. **Such meet is a part of nationwide effort to renew the interest of students/ teachers in science and research activities.**

Recognition of Master Resource Person of International Year Of Astronomy at G.D. University Amritsar, Panjab, by DST, Govt. of India.



Academic Recognition of Master Resource person of International Year Astronomy-2009, Proclaimed by United Nations by DST-Govt. of Bihar and NCSTC-network, Delhi, Science for Society, Bihar

- ✚ **Year:2009** was declared as **International Year of Astronomy(IYA)** by **united nations**. In this year we celebrate a momentous event, the Astronomical use of a telescope by Galileo in 1609, an invention that initiated 400 years of incredible Astronomical discoveries; and pay homage to one of the greatest of scientists. Indeed, Galileo telescope triggered a scientific revolution, which has profoundly affected our world view. At the same time, we celebrate yet another momentous event- the publication of the first two laws on planetary motion by Johannes Kepler in 1609. **The Total Solar Eclipse, the largest celestial drama of this century** was occurred on **22 July 2009** in the same year.
- ✚ On 27-29 July 2009, as Master Resource Person training programme was organized by DST-Govt. of India at Guru-Govind Dev University, Amritsar. Dr. Rakesh actively participated in all the sessions of this training programme.
- ✚ Dr. Rakesh kr Singh nominated for the Master Resource person of International Year of Astronomy by Bihar Council on Science & Technology-DST-Govt. of Bihar and Science for Society, Bihar, member of National Council of Science & Technology Communication-network- Technology bhawan, Delhi. On this occasion delivered talks on various aspects of Evidence based Scientific phenomenon, conducted various activities at different colleges/PG centers/Institutions and schools through the state Bihar and other places for the progress of science for the people. His contributions for popularization of science was appreciated at large.

कानपुर आईआईटी में बिहार के प्रो. एचसी वर्मा व उनकी टीम का इनोवेशन ला रहा रंग, बिहार के स्कूलों की बदली तस्वीर

देश के कोने-कोने में साइंटिफिक फीवर

● पटना। अजय शंकर

खगड़िया के अलौली ब्लॉक का हाईस्कूल। यहां साइंस की पढ़ाई तो होती है पर प्रैक्टिकल के लिए लैब नहीं है। छात्र सिर्फ थ्योरी पढ़ते हैं। लेकिन, इन दिनों यहां प्रैक्टिकल भी हो रहा है। वह भी बिना लैब और ऑपरेटर्स के। महज दो कागज के टुकड़ों के जरिए बरनौली का थ्योरम समझाया जा रहा है।

यह हाल केवल इस स्कूल का ही नहीं है, बल्कि पूरे बिहार और देश के कई स्कूलों का भी है। ऐसा संभव हो पा रहा है आईआईटी कानपुर में बिहार के प्रो. एचसी वर्मा और उनके साथियों के इनोवेटिव प्रयोग की वजह से। उन्होंने 'उत्साही फिजिक्स टीचिंग ग्रुप' नाम से एक टीम बनाई है। यह टीम देश के कोने-कोने में छात्रों और शिक्षकों में साइंटिफिक फीवर डेवलप करने में जुटी है। इससे बिहार के स्कूलों में बदलाव आ रहा है। जो शिक्षक साइंस फिजिक्स पढ़ाने में रुचि नहीं लेते थे, आज वही विभिन्न प्रयोगों के जरिए छात्रों को पढ़ा

हो रहा है बदलाव

इस मिशन से बिहार के गांवों में मौजूद स्कूलों में काफी बदलाव आया है। जिन स्कूलों में कल तक लैब नहीं थी, आज वहां है। गांव के शिक्षक भी अपने स्तर ने नए-नए प्रयोग कर छात्रों को आसानी से चैप्टर समझा रहे हैं। छात्रों की नीरसता भी दूर हो रही है।

रहे हैं। छात्र भी पढ़ाई भी ध्यान देने लगे हैं। 'उत्साही फिजिक्स टीचिंग ग्रुप' के सीनियर मेंबर डॉ. राकेश कुमार सिंह इन दिनों गांवों में कैंप कर खुद के द्वारा तैयार उपकरणों के जरिए शिक्षकों को फिजिक्स पढ़ाने के तरीके बता रहे हैं।

इनमें लेजर मशीन, बरनौली थ्योरम, मोमेंट ऑफ इनर्सिया, वेब, मोशन, सीबैक इफेक्ट व फिजिक्स के अन्य पहलू शामिल हैं। इस टीम के इस इनोवेशन के

5000 शिक्षकों का बन चुका है कारवां

2004 में प्रो. एचसी वर्मा ने नेशनल लेवल पर फिजिक्स के 15 रिसोर्स पर्सन की मदद से 'उत्साही फिजिक्स टीचिंग ग्रुप' का गठन किया। इसमें बिहार के दो प्रोफेसर डॉ. अमरेंद्र नारायण एवं डॉ. राकेश कुमार सिंह शामिल हैं। आठ साल में ग्रुप ने देश के 5000 शिक्षकों को इनोवेटिव शिक्षा की ट्रेनिंग दी है। इनमें 500 शिक्षक बिहार के हैं।

जरिए कॉलेज में प्रयोगशाला में भारी भरकम मशीन के बिना भी छोटे व सस्ते उपकरण से भी छात्रों को साइंस का प्रयोग दिखाया जा सकता है। इससे छात्रों व शिक्षकों में साइंस के प्रति रुचि जागृत होगी। इससे बिहार में भी प्योर साइंस डेवलप होगा व युवा वैज्ञानिक की तादाद में बढ़ोतरी होगी। इन युवा वैज्ञानिकों की मदद से भविष्य में बिहार एवं देश में मॉडर्न टेक्नोलॉजी का तीव्र विकास संभव हो सकेगा।

सिटी लाइफ

prabhatkhabar.com

लाइफ पटना

www.prabhatkhabar.com

पटना खबर 13
25.05.2016

स्वीडन में नैनोमेडिसिन पर प्रेजेंटेशन देंगे डॉ राकेश

■ एक्यू में फैक्ट्री डॉक्टर राकेश के साथ दुनिया भर से मेटेरियल साइंस व नैनोटेक्नोलॉजी के एक्सपर्ट्स ले रहे हिस्सा

लाइफ रिपोर्टर @ पटना

आर्यभट नॉलेज यूनिवर्सिटी के सहायक प्रोफेसर सह नैनो साइंस सेंटर के स्थापना पदाधिकारी डॉक्टर राकेश कुमार सिंह 23 से 25 अगस्त तक स्वीडन के स्टॉकहोम में आयोजित होने वाले इंटरनेशनल कॉन्फ्रेंस ऑफ मेटेरियल साइंस, यूरोपियन एडवांस्ड मेटेरियल

नैनोसाइंस लैब में हुआ है तैयार

विविध के लिए यह बड़ी बात है, हमारे पास न केवल बिहार बल्कि पूर्वोत्तर भारत में उन्नत इन्विपमेंट है, हमारी पूरी कोशिश है कि विविध में आधुनिक तरीके से काम हो।

प्रोफेसर एसएम करीम, प्रो-वीसी, एक्यू

कांग्रेस में अपने पेपर का प्रेजेंटेशन देंगे। डॉक्टर राकेश इस आयोजन में आयुर्वेद भस्म एंड नैनोमेडिसिन विषय पर अपने रिसर्च पेपर को प्रस्तुत करेंगे। इस आयोजन में दुनिया भर से मेटेरियल साइंस व नैनोटेक्नोलॉजी के एक्सपर्ट्स हिस्सा ले रहे हैं।

डॉक्टर सिंह ने बताया कि उनके रिसर्च में मॉडर्न साइंटिफिक टूल्स

द्वारा यह साबित किया गया है कि भस्म एक नैनो मेडिसिन है, यह प्राचीन भारतीय विरासत है और इस बारे में धीरे-धीरे जानकारी बाहर आ रही है। इस रिसर्च पेपर में डॉक्टर राकेश के अलावा पीएचडी स्टूडेंट अभय कुमार व संजय कुमार के साथ विवि के प्रो-वीसी एसएम करीम और कोलेक्टरेटर आइआईटी पटना के डॉक्टर मनोरंजन

भी साथ हैं, प्रेजेंटेशन की तैयारी पूरी हो गयी है,

नैनोसाइंस लैब में हुआ है तैयार

श्री सिंह ने बताया कि हमारा भस्म नैनोमेडिसिन के रूप में है और इसकी खासियत यह है कि छोटे स्तर पर जाकर यह इलाज करने में सक्षम है, भस्म के विभिन्न गुण जैसे रंग, गुण, गंध को विवि के नैनो साइंस लैब में तैयार किया गया है, इस कार्य में डॉक्टर मनोरंजन कर का भी सहयोग रहा है, भस्म की पूरी प्रक्रिया को बनाने, कैरेक्टेराइज करने व उसके विश्लेषण करने में करीब छह माह का समय लगा है,