

Continuity of research dissemination, capacity-building, institutional representation and societal outreach Consolidated Academic Engagement & Public-Impact Brief

Academic institute visits, invited talks, research presentations and leadership roles | 2005–2026

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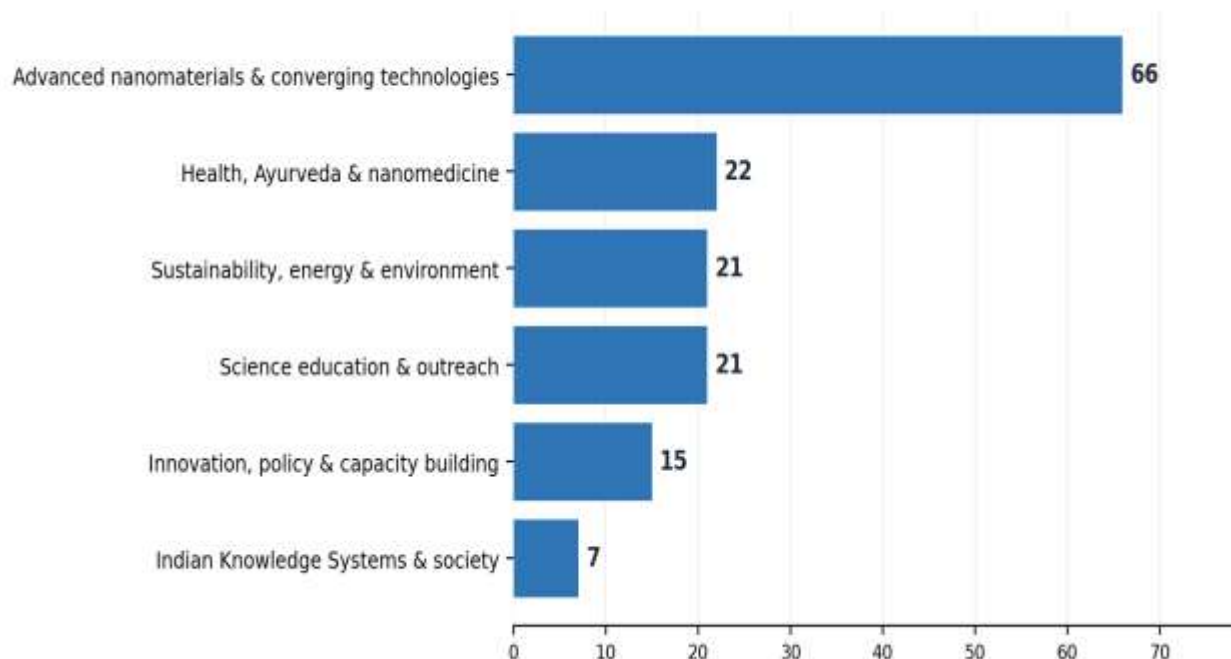
152	45	82	24
Recorded engagements	International	National	State-level

Executive assessment

The record demonstrates sustained academic engagement over more than two decades, extending from foundational Science specially Physics education to advanced nanomaterials for its application in green energy, agriculture, nanomedicine, Indian Knowledge Systems and innovation policy. **The engagements connect AKU and Bihar with IITs, NITs, central/state universities, national laboratories, Government departments, AYUSH/medical institutions, schools, incubation centres and international forums.** Their cumulative impact lies in research visibility, student and teacher capacity-building, multidisciplinary translation, public scientific awareness and stronger institutional networks.

1. Institutional Reach as Resource Person/ Expert/ Researcher

Primary Research / Engagement Themes (152 records)



The 152 engagements taken together, showed continuity of research dissemination, capacity-building, institutional representation and societal outreach . The portfolio strengthens the case for recognizing the School of Nanoscience & Nanotechnology and State Bihar as a platform through which Aryabhata Knowledge University can advance Bihar's research visibility, retain and develop scientific talent, support government priorities and translate interdisciplinary knowledge into public benefit. Theme counts use a mutually exclusive primary-theme classification for consolidation; many engagements are inherently interdisciplinary.

Scientific Outreach Impact from state level to international Level of Dr. Rakesh Kr Singh

Continuity of research dissemination, capacity-building, institutional representation and societal outreach

Institutional cluster	Named institutions / platforms in the record	Consolidated impact as Resource Person
Premier institutes & national laboratories	IIT Kanpur; IIT Patna; IIT Indore; NIT Patna; MANIT Bhopal; VIT Vellore; Delhi Technological University; HBCSE Mumbai; CSIR–NPL New Delhi; University of Allahabad; University of Rajasthan	Research exposure, faculty/student learning and national visibility in materials science, physics education and nanotechnology.
Central/state universities	Patna University; Nalanda University; JNU New Delhi; Magadh University; LNMU; T.M. Bhagalpur University; Munger University; Jai Prakash University; Patliputra University; Kanpur University; University of Lucknow; Vinoba Bhave University	Sustained dissemination across disciplines and regions; builds scholarly networks and strengthens Bihar's participation in emerging research.
Government & statutory ecosystem	DST/DAE, Govt. of India; DST/Department of Education, Govt. of Bihar; BCST; SCERT; Bihar State Disaster Management Authority; Ministry of Culture; Ministry of Commerce & Industry/DPIIT-IPR Chair	Translates research into policy-relevant themes: scientific temper, NEP, self-reliance, sustainability, IPR and disaster/environment awareness.
Health, Ayurveda & life sciences	National Institute of Ayurveda Jaipur; Govt. Ayurvedic College Hospital Patna; Mahavir Cancer Research Institute; Bihar University of Health Sciences; Indian Pharmaceutical Society; Shree Baidyanath Ayurveda; Bihar Optometry Association	Connects modern characterization with Ayurvedic medicines and public health, enabling interdisciplinary research and quality-control dialogue.
Innovation, industry & outreach	Atal Incubation Centre Patna; Institution of Engineers (India); National Anveshika Network; Doordarshan/Prasar Bharati; schools and teacher-training institutions	Extends research beyond journals through entrepreneurship, teacher development, low-cost experiments, youth engagement and public communication.
International platforms	Linköping University, Sweden; MOL2NET/USEDAT (Switzerland/USA-Europe); international materials conferences; technical committee forum in China	Creates international visibility for Bihar-based research and positions AKU-linked scholarship within global advanced-materials discussions.

2. Research Areas Presented As Resource Person/Faculty/Expert and Their Public Value

Primary area	Records	Representative content	Impact
Advanced nanomaterials & converging technologies	66	Ferrites, hexaferrites, multiferroics, optical/electrical properties, ceramics, carbon nanotubes and multifunctional materials.	Strengthens advanced-materials scholarship, research culture, laboratory capability and AKU/Bihar visibility.
Science education & outreach	21	Low-cost/no-cost experiments, innovative physics teaching, teacher orientation, talent nurturing and scientific temper.	Builds teacher capacity, motivates students and widens access to experiential science education.
Sustainability, energy & environment	21	Hydroelectric cells, green synthesis, nano-fertilizer, agriculture, waste-derived materials, water/environment and sustainable development.	Links research with clean energy, circular economy, agricultural productivity and environmental resilience.
Health, Ayurveda & nanomedicine	22	Ayurvedic Bhasma characterization, nanomedicine, pharmaceutical sciences, health and stem-cell interfaces.	Supports evidence-oriented traditional medicine, interdisciplinary health research and quality-control awareness.
Innovation, policy & capacity building	15	IPR, start-up policy, NEP, research infrastructure, human-resource development and institutional innovation.	Promotes translation, intellectual-property awareness, self-reliance and institutional capacity.
Indian Knowledge Systems & society	7	Ancient wisdom, Indian Knowledge Systems, ethics, consciousness and societal applications of science.	Connects heritage knowledge with contemporary scientific inquiry and Viksit Bharat priorities.

3. Selected High-Impact Engagements

Date	Institute / event and place	Visit / talk / presentation area	Demonstrated or potential impact
6–9 Aug 2005	International Year of Physics Programme Institute of Physics (IOP), Bhubaneswar & Department of Atomic Energy, Govt. of India	Master Resource Person – International Year of Physics (IYP-2005)	National-level teacher capacity and early science-outreach leadership.
21–23 Oct 2009	International Conference on Magnetic Materials and Their Applications for the 21st Century National Physical Laboratory (NPL), New Delhi	Ni–Zn Ferrite Nanoparticles and Their Applications	Research visibility at a national laboratory and international magnetic-materials forum.
26 May 2014	National Workshop IIT Kanpur	Physics and Its Scope: From Nanoworld to Universe	Engagement with a premier institute; connects physics foundations with nanoscale careers.
23–25 Aug 2016	European Advanced Materials Congress (EAMC-2016) International Association of Advanced Materials & Linköping University, Stockholm, Sweden	Study of Ayurvedic Nanocrystalline Tamra and Sankh Bhasma Physical Characteristics by Employing Modern Scientific Tools and Applications	International presentation of evidence-based study of Ayurvedic nanomaterials.
19–21 Jul & 6–9 Aug 2018	Rashtriya Avishkar Abhiyan IIT Patna	Rashtriya Avishkar Abhiyan Programme – Resource Person and Local Coordinator	Large-scale school-science capacity-building with IIT Patna linkage.
14 Jul 2019	International Conference on Nanotechnology, Renewable Materials Engineering & Environmental Engineering Industrial Electronics and Electrical Engineers Forum, Kolkata	Effect of Annealing Temperature on the Structural and Magnetic Properties of Barium Hexaferrite Nanomaterials	International dissemination of ferrite nanomaterials and environmental engineering relevance.
7–8 Apr 2021	ICFTMM-2021 Delhi Technological University	Hydroelectric Cell: A Green Energy Source for Sustainable Development	Positions hydroelectric-cell research within sustainable green-energy discourse.
2 Aug 2021	CME Programme Ministry of AYUSH & Govt. Ayurvedic College Hospital, Patna	Continuing Medical Education Programme for Ayurvedic Medical Officers	Connects nanoscience with continuing education of Ayurvedic medical officers.
23 Sep 2021	Academic Activity Nalanda University	Nanoscience and Nanotechnology for Sustainable Development	Links nanotechnology with sustainability at Nalanda University.
28 Feb–1 Mar 2022	International Conference on Role of Indian Science in Freedom Movement Jawaharlal Nehru University (JNU), New Delhi	Structural Characterization and Physical Properties of Ash as a Functional Nanomaterial	Represents Indian scientific knowledge and functional nanomaterials at JNU.

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5–7 May 2022	International Conference on Empowering Smart Future through Scientific Development and Technology MOL2NET (Switzerland), USEDAT (USA-Europe)	Session Chair (Nano-enabled Smart Technologies)	International session leadership in nano-enabled smart technologies.
23 May 2022	Workshop for District Education Officers SCERT, Department of Education, Govt. of Bihar	National Education Policy and Role of Nanotechnology for Self-Reliant Society	Policy-facing presentation to District Education Officers on NEP and self-reliance.
16–20 Jan 2023	Revitalization of School Physics Education through Concept-Oriented Teaching in Bihar IIT Patna, Department of Education, Govt. of Bihar & National Anveshika Network	Understanding Nature and Nature-Assisted Science Teaching (Especially Physics) through Low-Cost Experiments	Teacher development through low-cost physics experiments with IIT Patna and Govt. of Bihar.
23–25 Feb 2023	International Conference on Ayurvedic Pharmaceutical Sciences-2023 National Institute of Ayurveda, Jaipur	Physical Properties of Ayurvedic Bhasma as Nanomaterials by Employing Modern Scientific Tools and Their Applications	National Institute of Ayurveda platform for scientific characterization of Bhasma.
23 Mar 2023	Bihar Diwas Programme Bihar State Disaster Management Authority, Govt. of Bihar	Nanoscience and Nanotechnology for Jal-Jeevan and Hariyali	Applies nanoscience to water, environment and Bihar's Jal-Jeevan-Hariyali priorities.
May–Jun 2023	National Anveshika Science Skill Test National Anveshika Network of India, IIT Kanpur	Coordinator/Evaluator, National Anveshika Science Skill Test (NEAST)	National evaluation/coordination role supporting student science skills.
2023	SATHI Programme DST, Govt. of India, Bengaluru	Aryabhatta Knowledge University Representative – Presentation of Research Activities	Formal presentation of AKU research activities under DST's SATHI programme.
13 Feb 2024	National Conclave on Sustainability, Productivity and Green Growth ICAR, Patna	Nanotechnology for Sustainable Agriculture	Links nano-enabled agriculture to sustainability and green growth at ICAR Patna.
1 Mar 2024	National CME Workshop National Institute of Ayurveda, Jaipur, Ministry of AYUSH	Current Techniques Used in Characterization and Quality Control of ASU Drugs: Ayurvedic Bhasma as Nanomedicine	AYUSH-facing contribution to characterization and quality control of ASU drugs.
26–27 Jun 2025	7th International Conference on Materials Science and Manufacturing Technology (ICMSMT-2025) Akshaya College of Engineering & Technology, Coimbatore.	Evaluating the Impact of Waste Eggshell-Derived Calcium-Enriched Nano fertilizer on Carrot Plant Development	International presentation of waste-eggshell nano-fertilizer for plant development.
21 Dec 2025	National Workshop Department of Materials Engineering, IIT Patna	Functional Engineering Materials and Emerging Research Directions	Advanced-materials directions presented at IIT Patna.

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13 Mar 2026	International Conference Lalit Narayan Mithila University (LNMU)	Glorious Indian Knowledge System and Ayurvedic Nanomedicine: Translational Science Pathways towards Viksit Bharat 2047	Integrates IKS and Ayurvedic nanomedicine with translational pathways for Viksit Bharat 2047.

4. Consolidated Impact for State Bihar and Aryabhatta Knowledge University

Research reputation and visibility: Repeated participation across international, national and state platforms projects sustained expertise in nanoscience, materials research and multidisciplinary applications, helping associate AKU and Bihar with frontier research.

Human-capital development: Teacher orientations, resource-person roles, student visits, science-skill tests and low-cost experiment programmes create a multiplier effect: knowledge is transferred to teachers, students, officers and early-career researchers.

Societal and translational relevance: The portfolio consistently connects laboratory research with agriculture, green energy, waste-to-wealth, environment, water, public health and Ayurveda—areas aligned with Bihar’s development needs.

Government and policy interface: Engagements with DST, DAE, BCST-DSTR, SCERT- Education Department, AYUSH-Govt. of India and other public bodies demonstrate capacity to translate technical knowledge for government programmes, NEP, Intellectual Property Right and self-reliance.

Institutional networking: Links with IITs, NITs, central/state universities, national laboratories, medical/Ayurveda institutions and incubation bodies provide pathways for collaboration, student exposure, joint research and technology translation.

National priorities: Themes such as Atmanirbhar Bharat, Viksit Bharat 2047, sustainability, Indian Knowledge Systems and innovation show consistent alignment of academic work with public-interest and nation-building objectives.

Overall conclusion

The 152 engagements taken together, they show continuity of research dissemination, capacity-building, institutional representation and societal outreach from 2005 to 2026. The portfolio strengthens the case for recognising the School of Nanoscience & Nanotechnology and State Bihar as a platform through which Aryabhatta Knowledge University can advance Bihar’s research visibility, retain and develop scientific talent, support government priorities and translate interdisciplinary knowledge into public benefit.

Method and record note- Source: supplied document . Records 1–152 were consolidated. Names, dates, subjects, institutions/organizers, places and levels were reproduced from the supplied record with minor normalization of spacing. Impact statements are reasoned assessments based on the documented subject and host platform; they do not claim independent outcome verification. Repeated or closely related engagements were retained in the source count. Theme and format counts are analytical classifications prepared solely for this brief.

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