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## Report on One-day National Seminar on "Physics of novel Magnetic and Superconducting materials" organized by Department of Physics

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**Report on  
One-day National Seminar  
on  
*Physics of novel Magnetic and Superconducting materials*  
organized  
by  
Department of Physics,  
Integral University, Lucknow**

The Department of Physics, Integral University, organized a National Seminar on *Physics of Novel Magnetic and Superconducting Materials* on April 8, 2025. The seminar served as a dynamic platform for students and researchers to explore and discuss the fundamental science behind magnetism and superconductivity. Distinguished professors from IIT Kanpur and Aligarh Muslim University, invited as resource persons, delivered insightful lectures that enriched the academic experience of the participants. Their expertise and engaging discussions provided valuable exposure to emerging trends and research in this exciting field of physics.

The inaugural function of the seminar commenced with a graceful floral welcome extended to the esteemed guests, followed by the university *Tarana*. Professor Shamoon Ahmad Siddiqui, Head of the Department of Physics, Integral University, delivered a warm and thoughtful welcome address, setting an enthusiastic tone for the day's proceedings.

Professor Abdul Rahman Khan, Dean of the Faculty of Science, emphasized the significance of such scientific gatherings in fostering knowledge exchange and collaborative research among participants. The resource persons, Professor Zakir Hossain from IIT Kanpur and Professor Shahid Husain from Aligarh Muslim University, also addressed the audience, sharing valuable insights and motivating young researchers. Prof. Furqan Qamar, Chief Advisor to the Hon'ble Chancellor, in his address, advised the participants to adopt a multidisciplinary approach in their respective domains of research.

The Hon'ble Chancellor, Professor Syed Waseem Akhtar also graced the occasion, commending the organizers for their efforts and encouraging the continuation of such academic initiatives. The Hon'ble Pro-Chancellor, Dr. Syed Nadeem Akhtar, in his address, reiterated the university's commitment to nurturing scientific temper and promoting collaboration among researchers. At last, Dr. Salman Ahmad Warsi, delivered the vote of thanks. The session concluded on a unifying note with the national anthem, resonating a spirit of unity and shared purpose.

Following the inaugural session, the seminar proceeded with engaging scientific sessions that fostered meaningful intellectual exchange among participants. These sessions provided an opportunity for students, researchers, and faculty to delve into contemporary topics in magnetism and superconductivity.

The keynote speaker, Professor Zakir Hossain's talk focused on the complex magnetic and superconducting behaviors exhibited by *d*- and *f*-electron systems. He discussed how the localized nature of *f*-electrons and the itinerant character of *d*-electrons contribute to a wide range of physical phenomena, including unconventional superconductivity and complex magnetic ordering. These insights are crucial for the design of novel quantum materials and next-generation electronic devices. In his insightful lecture, another speaker Professor Shahid Husain explored the intricate interplay between magnetic and electric properties in multifunctional materials, with a focus on novel lead-free nanocomposites. He highlighted the concept of **magnetoelectric coupling**, where magnetic and electric orders coexist and influence each other, offering potential for advanced applications in sensors, memory devices, and spintronic systems. The talk emphasized the **importance** of developing **lead-free materials**, showcasing experimental findings that demonstrated enhanced **ferroic orders** such as ferroelectricity and ferromagnetism in these new nanocomposites.

The event was graced by the presence of Prof. Wahajul Haq, Prof. Syed Aqeel Ahmad, Deans and Heads of various departments.

The event was attended by 111 students of Science and Engineering discipline and 12 Faculty & Faculty supporting Staff.

### **Glimpses of the Event**



With best regards

Prof. Shamoan Ahmad Siddiqui  
 Professor and Head  
 Department of Physics, Faculty of Science  
 Integral University, Lucknow