NUCLEAR RESEARCH CENTER (NRC)

About the Center:

The Nuclear Research Center (NRC) aims to be the primary national institution for conducting research and development in nuclear physics, technology, and engineering. This involves acquiring new information, knowledge, and results, creating and applying new methodologies and technologies, designing equipment, and providing educational services. The NRC employs 20 full-time staffs with 40% holding PhD degrees and 35% get a master degrees. Furthermore, we collabrate with several reseachers at prominent overseas research organizations and universities.

Basic and applied research/development: Experimental and theoritical study of nuclear structure, reaction mechanism, neutron and reactor physics; nuclear analytical methods and radiation technology, and innovation (implementation in health, food, agriculture, environment, geology, mining industry etc.)

Nuclear power and nuclear fuel research/development: research reactor and power reactor study, radioactive isotope production, formulation of feasibility study on exploitation of nuclear energy, uranium and thorium mining & processing technology, nuclear fu cycle, transmutation, nuclear & radiation safety norms, standards

Laboratory and basic equipment

- Gamma spectrometer used for natural radioactive study and activiation analysis.
- X-ray fluorescence spectrometer used for rapid determination of chemical element contents in food, geological, mining, environmental, and air pollution samples, among others.
- Minato laboratory for cluster servers
- Training laboratory for measuring low radiation background
- Reactor engineering e-lab
- Radiochemical laboratory /under renovation/

Research areas:

The NRC is divided into three divisions: Nuclear Data, Nuclear Analutical Method, Nuclear energy and Technology.

The primary research focuses in each field:

Nuclear Data Division:

- Study of nuclear properties (search for new isotopes and isomers, clarification of decay schemes);
- Neutron reaction research (searching for new patterns, developing theoretical models and calculations, creating and using databases);
- Study of photonuclear reactions (nuclear reaction, output, cross-section);
- Nuclear reactions involving charged particles and heavy ions;
- Cluster structure of light nuclei;

• Reaction study of RI production for Nuclear Therapy.

Nuclear Analytical Method:

- Study and monitoring of chemical elements and radioactivity in various samples, such as environment, geology, biology and mining (soil, water, air, ore, mineral, blood, plant, ...) using atomic nuclear analytical technique;
- Study of industrial technological processes control, and determination of quality and composition of industrial products;
- Study of natural polymer materials by radiation processing;
- Instrumentation development.

Nuclear Energy and Technology division:

- Reactor core simulation of suitable nuclear power reactors for Mongolia;
- Study of research reactor design;
- Research on hydrogen production from water and coal using nuclear energy;
- Simulation on advanced reactors and their nuclear fuels;
- Use of nuclear energy technology;
- Radiation study of some uranium deposits in Mongolia.

International cooperation:

The Nuclear Physics Research Center collaborates with foreign universities and academic institutions through joint research projects, exchanging scientific information, organizing conferences and seminars, training personnel in specific specialties, and receiving technical assistance from international organizations. functions. These consist of:

International Organizations through Nuclear Energy Commission:

- IAEA: TC & RCA projects training, equipment, network,
- JINR (Dubna, Russia) joint research, job-training (Nuclear reaction lab, Neutron physics lab)
- FNCA (Japan) research reactor utilization, NAA,
- ICTP, JAEA, KINGS, KAIST etc. training.

University level exchange Agreements and Direct Cooperation:

- Applied Phys Inst and X-Ray Lab, RAS, Irkutsk, Russia,
- Faculty of Science, Hokkaido University, Japan,
- Center for Research into Innovative Nuclear Energy System, TIT, Japan,
- Beijing University, China.

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