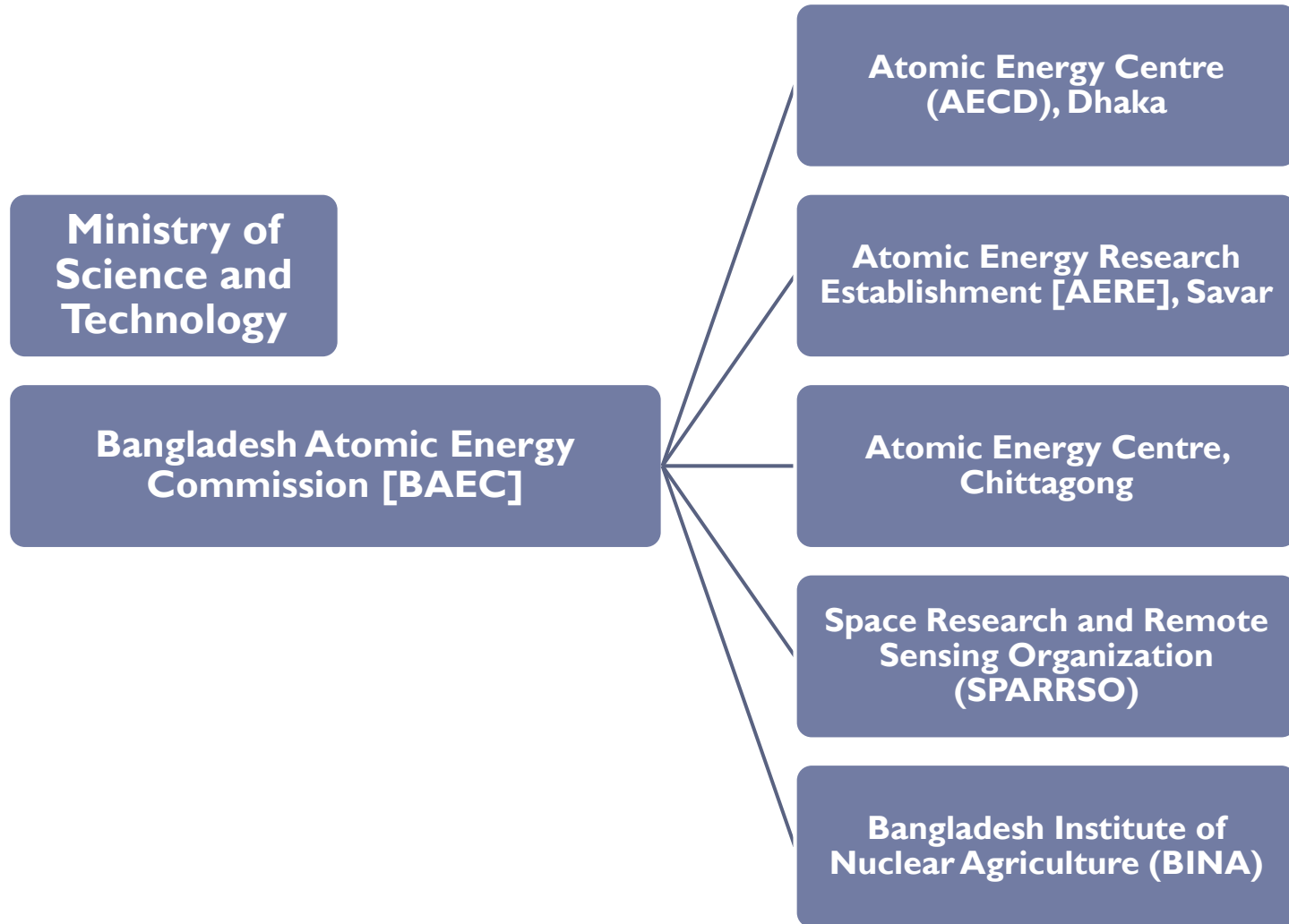


# **Major Nuclear and Radiation Physics experimental facilities in**

Prepared By Dr M Tanseer Ali

# Research Facilities

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# Bangladesh Atomic Energy Commission [BAEC]

- ▶ Bangladesh Atomic Energy Commission (BAEC) was established in **1973** as a multidisciplinary R&D organization with the view of promoting peaceful uses of nuclear energy in Bangladesh.
- ▶ From the very beginning of its formation, BAEC started R&D works in areas covering physical science, bioscience, engineering and nuclear medicine for human welfare and economic uplift of the country.
- ▶ At present, the BAEC has grown as the largest organization for scientific and technological research in Bangladesh.



# Atomic Energy Centre (AECD)

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- ▶ Atomic Energy Centre established in 1964.
- ▶ Initially, the programs in the AECD focused on different fields of theoretical physics, experimental physics, radiobiology and nuclear medicine.
- ▶ At Present, R & D programs of AECD has been reorganized giving proper importance on the demands and needs of different national sectors of economy such as health, environment, trading, industry and agriculture.
- ▶ Many important baseline works on human health, environment, non-destructive testing and radiation protection were done in the AECD laboratories.



# **Atomic Energy Centre (AECDC), Dhaka**

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- ▶ Accelerator Facilities Division
- ▶ Electronics Division
- ▶ Material Science Division
- ▶ Experimental Physics Division
- ▶ Health Physics Division
- ▶ Medical Physics Division
- ▶ Engineering and General Services Division



# **Atomic Energy Research Establishment [AERE], Savar**

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## **▶ Institutes and Units**

- ▶ Institute of Nuclear Science and Technology (INST)**
- ▶ Institute of Food and Radiation Biology (IFRB)**
- ▶ Institute of Electronics (IE)**
- ▶ Institute of Computer Science (ICS)**
- ▶ Reactor Operation and Maintenance Unit (ROMU)**
- ▶ Nuclear Minerals Unit (NMU)**
- ▶ Tissue Banking and Biomaterial Research Unit (TBBRU)**
- ▶ Energy Institute (EI)**
- ▶ Central Engineering Facilities (CEF)**
- ▶ Scientific Information Unit (SIU)**
- ▶ Training Institute (TI)**



# Major experimental facilities in BAEC

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## ▶ **3 MW TRIGA Mark-II Research Reactor**

Three beam ports and the core of the reactor are utilizing for the following experimental purposes

- ▶ **Radioisotope production (I-131)** for medical purposes [Fission Molly Mo-99 is imported for the production of Tc-99m). ISO certified Kit production facility is available.

Major instruments: Technetium generator, I-131 production facility, Kit production facility

- ▶ **Neutron Activation Analysis (NAA)** for quantitative determination (even in ppb level) of elements in various sample matrices e.g., environmental, industrial, human health, food and agricultural products, etc. The NAA is also used for the measurement of nuclear data.

Major instruments: HPGe (High purity germanium) detectors with digital gamma spectrometers

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# Major experimental facilities in BAEC

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- ▶ **Neutron Scattering** is used for the study of structural and characteristics properties of newly synthesis materials.

Major instruments: High performance neutron powder diffractometer, Triple axis spectrometer

- ▶ **Neutron Radiography** is for non-destructive testing of materials.

Major instruments: Digital neutron radiography facilities, dark room





# Major experimental facilities in BAEC

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- ▶ **SSDL (Secondary Standard Dosimetry Laboratory)**  
performs calibration and standardization of various radiation monitoring devices used in industry, medical hospital and clinics, agriculture, research and educational institute both public and private sectors, all over Bangladesh.
- ▶ **3 MV Tandem Accelerator:**  
Beam port -1: PIXE for elemental analysis using proton beam  
Beam port-2: production of secondary neutron for nuclear data measurements.



# Major experimental facilities in BAEC

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- ▶ **Co-60 gamma irradiator (for radiation processing and polymer Technology):** Mutation breeding (new varieties of crops production), food preservation and sterilization.
  - ▶ **LINAC** in the Medical Physics Institute
  - ▶ **Isotope Hydrology laboratory:** source of ground water contamination with remediation, soil erosion protection, etc.
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# Other nuclear and non-nuclear analytical techniques

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- ▶ ICPMS, TXRF, AAS, GC-MS, liquid scintillation counter, etc.
- ▶ Low level beta counter, gross alpha counter, alpha spectrometry, whole body counter, Na(Tl) scintillation detector, etc.
- ▶ NDT facilities for industrial applications



# Nuclear Medicine

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Enter to get more menu

NINMAS, BSMMU  
Campus, Shahbag,  
Dhaka

INMAS, Dhaka Medical  
College Campus, Dhaka

INMAS Medical College  
Campus, Mitford, Dhaka

INMAS, Kumilla Medical  
College Hospital  
Campus, Kumilla

INMAS, Chittagong  
Medical College Hospital  
campus, Chittagong

INMAS, Mymensingh  
Medical College Campus,  
Mymensingh

INMAS, MAG Osmani  
Medical College Campus,  
Sylhet

INMAS, Faridpur  
Medical College hospital  
campus, Faridpur

INMAS, Medical college  
hospital Campus,  
Rajshahi

INMAS, Dinajpur Sodor  
Hospital Campus

INMAS, Rangpur  
Medical College campus,  
Rangpur

INMAS, Kolatoli,  
Coxsazar

INMAS, khulna Medical  
College Campus, Khulna

INMAS, Sher-e bangla  
medical college campus,  
Barishal

INMAS, Mohammad Ali  
Hospital Campus,  
Bogura



# Academic Institutes

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- ▶ **Public Universities (39 universities)**
  - ▶ Dhaka University
  - ▶ Shahjalal University of Science and Technology
  - ▶ Jahangirnagar University
  - ▶ Rajshahi University
  - ▶ Chittagong University
  - ▶ Etc.
  
- ▶ **Private Universities (93 UGC approved)**
  - ▶ Islamic University of Technology (IUT)
  - ▶ North South University (NSU)
  - ▶ BRAC University

