Nuclear and Energy Research Institute
National Nuclear Energy Commission
IPEN-CNEN
Brazil

Dr. Ricardo Elgul Samad on behalf of **Dr. Isolda Costa** (Ipen Director) and
Dr. Wilson Calvo (Ipen Superintendent)

GOVERNO DO ESTADO DE SÃO PAULO

ipen instituto de pesquisas energéticas e nucleares

CNEN Comissão Nacional de Energia Nuclear

MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÃO

GOVERNO FEDERAL BRASIL UNIÃO E RECONSTRUÇÃO

A little of our history

The IEA R1 reactor was inaugurated on 25th January 1958 in the presence of the President of Brazil (Juscelino Kubitschek).

Source: O Globo

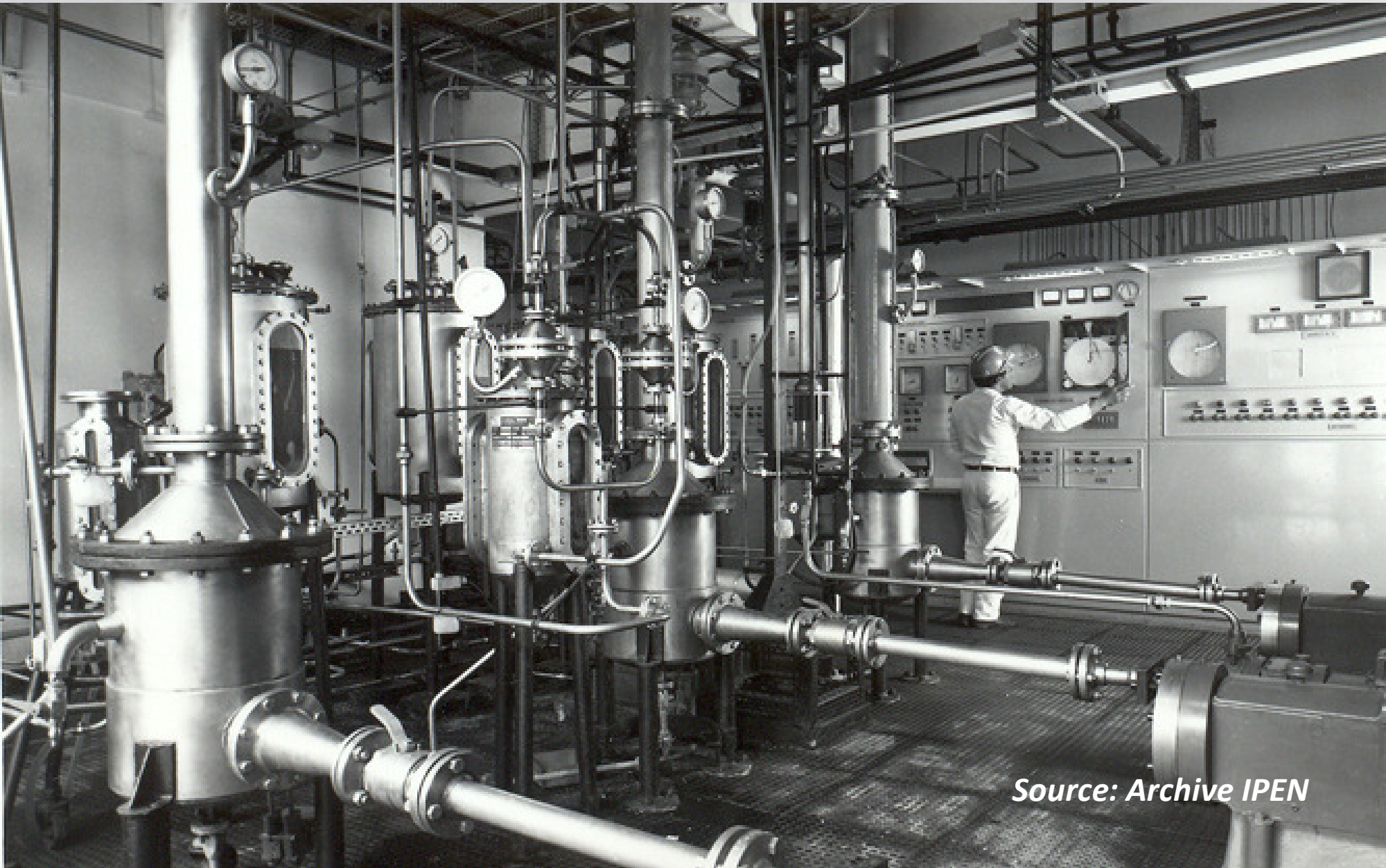
A little of our history

The first production of I-131 took place in 1959

Source: Archive IPEN

A little of our history

Purification of Uranium in the Chemical Engineering Center (1972)



Source: Archive IPEN

A little of our history

Finalization of construction of the Radiopharmacy Center which was inaugurated in 1976

Source: Archive IPEN

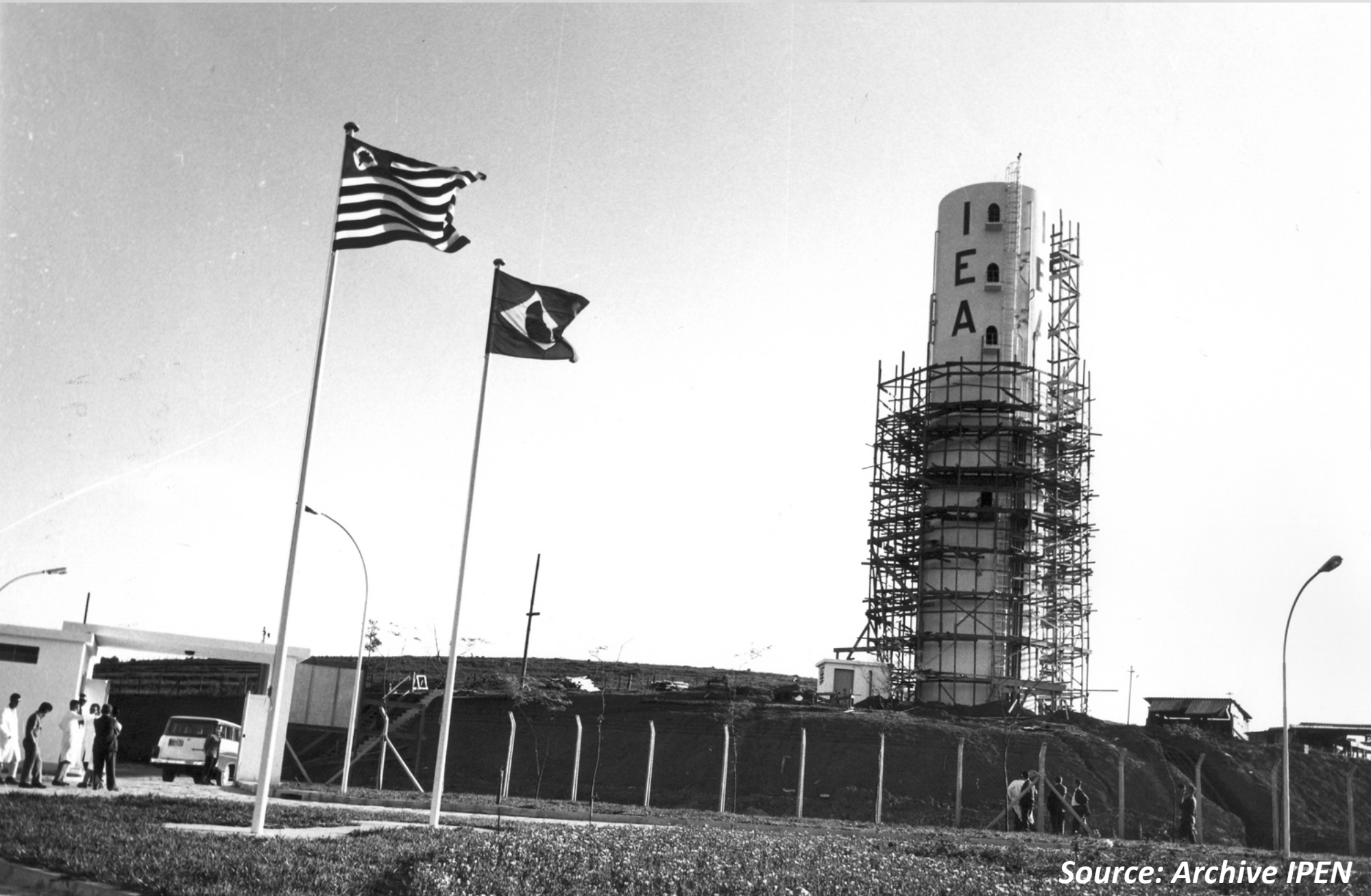
A little of our history

IPEN stablished its post-graduation program in Nuclear Science and Technology with USP-1976

Source: Archive IPEN

A little of our history

New areas developed to dominate the technology on the Fuel Cycle



Source: Archive IPEN

Aerial View of IPEN-CNEN Today

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MISSION

"Our commitment is to improve the quality of life of the Brazilian population, producing scientific knowledge, developing technologies, generating products and services in a safe way and training human resources in the nuclear and related areas"

VISION

"To be a national and international reference in Research, Development, Teaching and Production and in the creation of new opportunities in Science and Technology in the areas of institutional action, committed to innovation, safety, social well-being and the sustainable development of the Country"

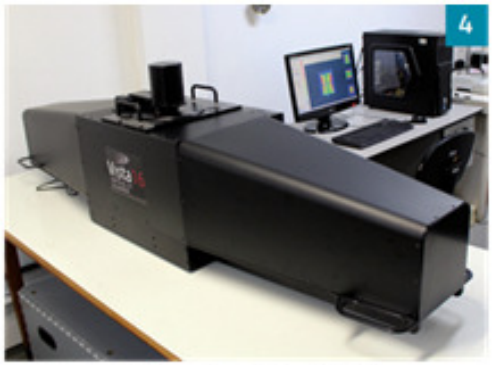
Research Centers

Infrastructure

Cyclone 18 - Acelerador de Partículas Ciclotron de 18 MeV.

Irradiador Multipropósito de ^{60}Co de 37 PBq.

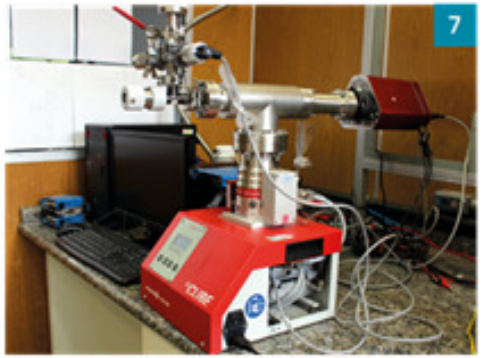
Acelerador de Elétrons de 1,5 MeV e feixe de 65mA.



Tomografia Computadorizada Óptica, utilizado na dosimetria em radioterapia, em 3D.

Cyclone 30 - Acelerador de Partículas Ciclotron de 30 MeV.

Acelerador de Elétrons de 1,5 MeV e feixe de 25mA.

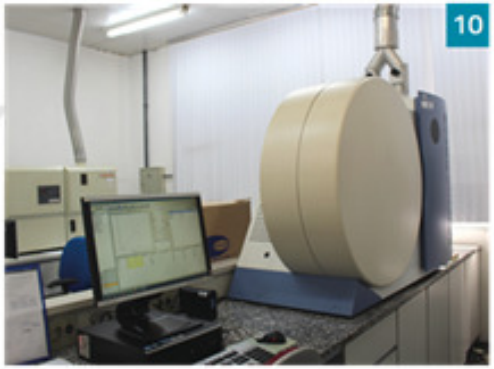


Espectroscopia de massa eletroquímica diferencial para teste de célula a combustível.

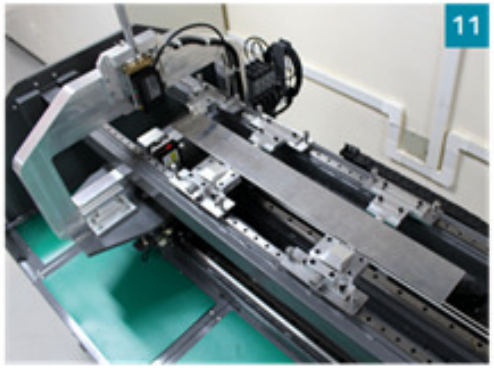
Reator Nuclear Crítico IPEN/MB-01, de 100 W.

Infrastructure

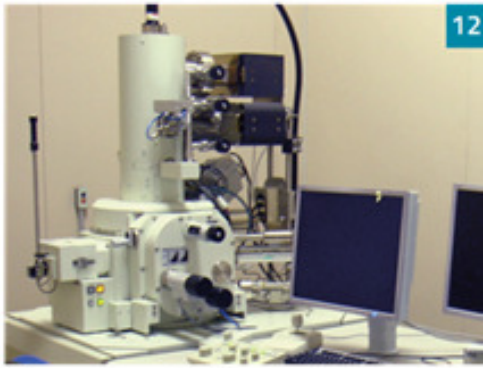
Biotério.



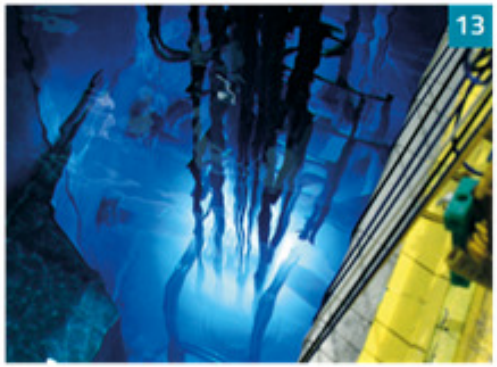
Espectrometria de emissão óptica com plasma de argônio (ICP-OES).



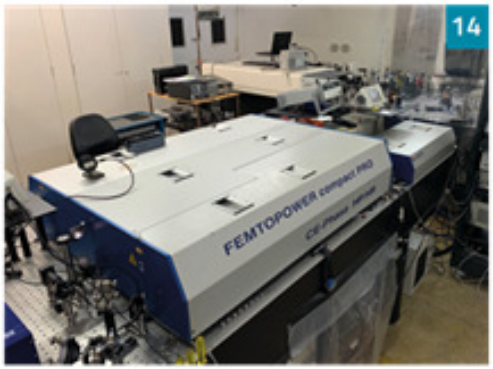
Máquina automática de medição de placas combustíveis por triangulação a laser.



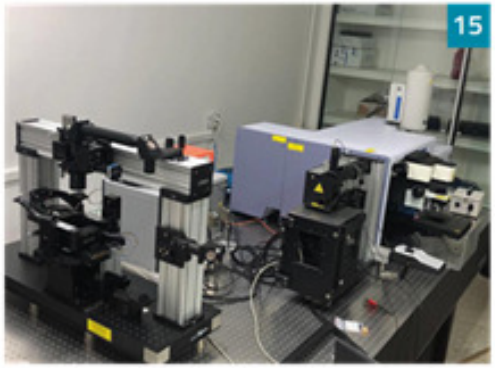
Microscópio eletrônico de varredura com canhão de emissão de campo (SEM-FEG).



Reator Nuclear de Pesquisa IEA-R1, de 4,5 MW.

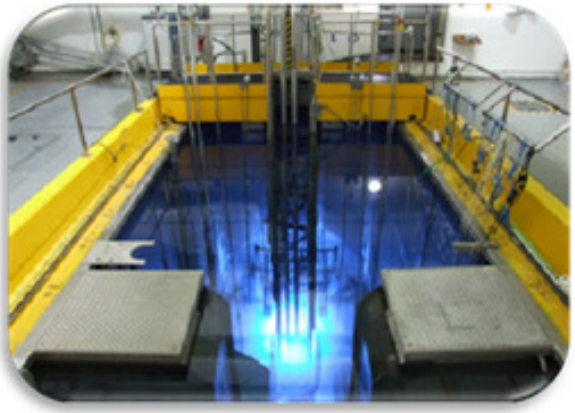


Laser de ⅓ TW de Potência de Pico.



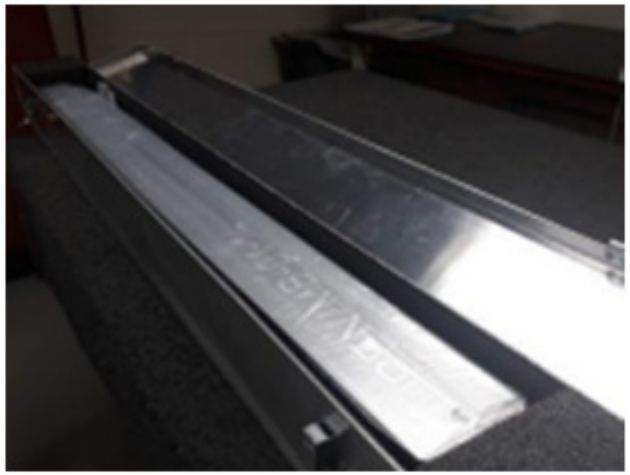
SNOM - Scanning Near-field Optical Microscopy

Production of Radioisotopes and Radiopharmaceuticals



Production of Fuel Elements for Research Reactors



Provision of Technological Services

- ✓ Characterization, treatment and storage of radioactive waste
- ✓ Risk analysis of nuclear facilities
- ✓ Radioprotection training
- ✓ Shielding calculation
- ✓ Radiologic Emergency Care
- ✓ Inspection of Fuel Elements

Function: Teaching

Postgraduate program in Nuclear Technology

Started in 1976
Concept 6
CAPES Assessment

Degrees: August, 2023
Doctorate - 1,104
Master's - 2,186
TOTAL - 3,290

IPEN-CNEN was contemplated with the award of Best Thesis of 2014 in Engineering (Area II)

Professional Masters in Radiation Technology in Health Sciences

Stricto sensu

Started in 2019

Degrees awarded: 52

2023: Fifth class

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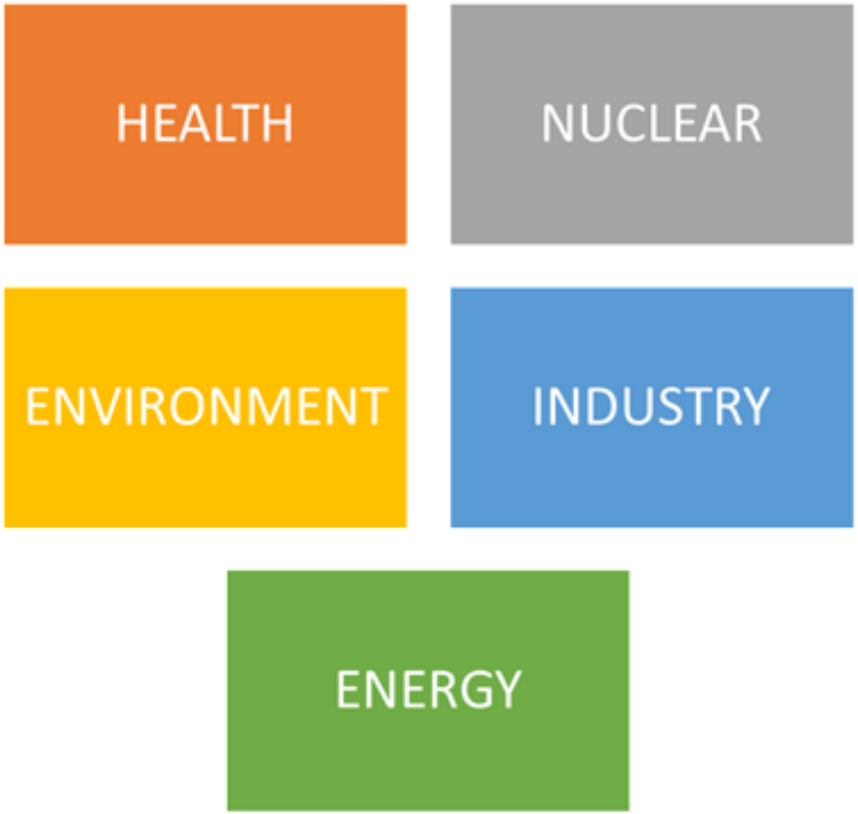
Research and Development

Five Main Areas of R&D&I



Research and Development

Use of Nuclear Technology and Radiation to Characterize, Conserve and Preserve Cultural Heritage

NUCLEAR

Research and Development

HEALTH

Inactivation of the SARS-CoV-2 virus by ionizing radiation

Studies to evaluate the effectiveness of serum therapy

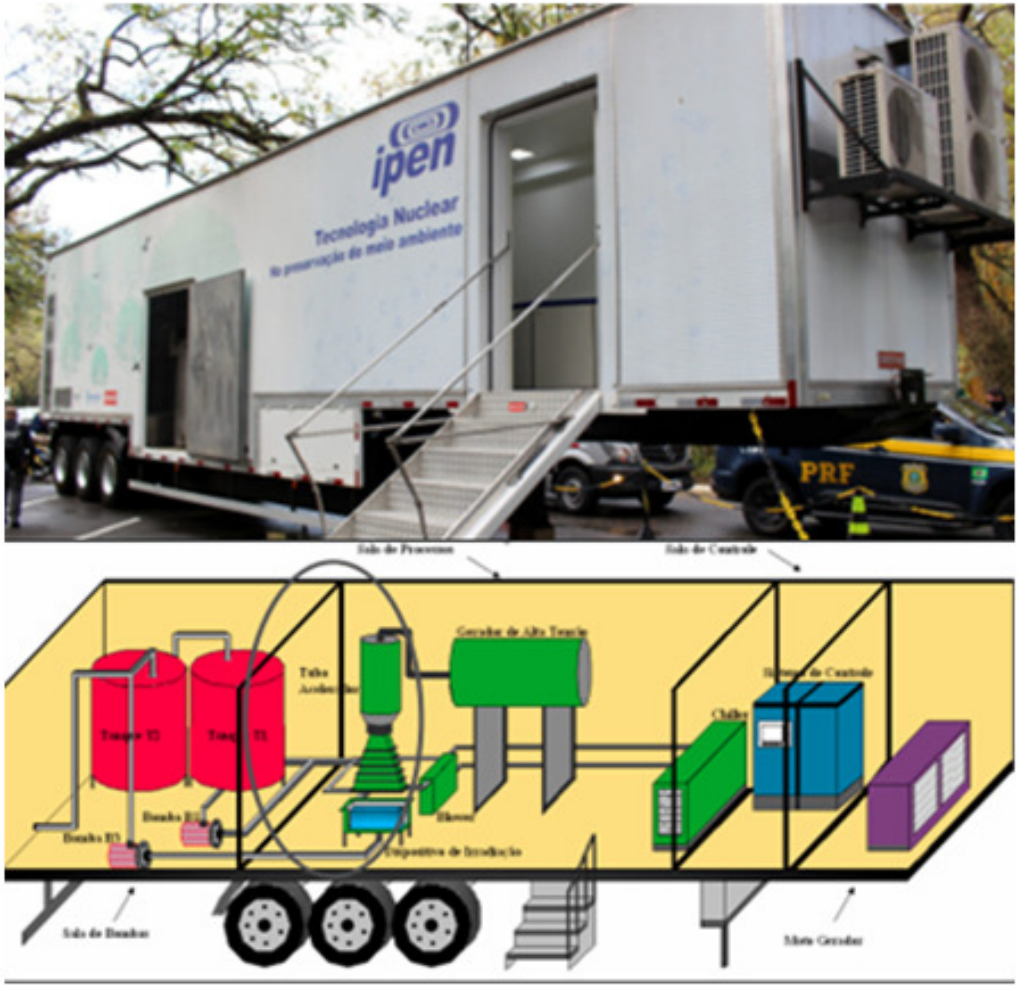
Partnership

INSTITUTO BUTANTAN

Research and Development

Mobile Electron Beam Irradiation Unit

ENVIRONMENT



Research and Development

Respiratory filter with silver nanoparticles

Development of a filter for respiratory use in Intensive Care Unit during intubation procedures

Partnership with Scav Medical

INDUSTRY

Research and Development

ENERGY

Center for Innovation in New Energies - CINE (FAPESP-SHELL): Sustainable Route for the Conversion of Methane with Advanced Electrochemical Technologies of the Center for Innovation in New Energies

Research and Development

International Collaborations

CSIC
Consejo Superior de Investigaciones Científicas

BEA
Battelle Energy Alliance

INL
Idaho National Laboratory

Fraunhofer
FEP

ULL
Universidad de La Laguna

DLR
Deutsches Zentrum für Luft- und Raumfahrt
German Aerospace Center

UR | UNIVERSITÉ DE LA RÉUNION

UNIVERSITY of HOUSTON

National Research Nuclear University • Moscow Engineering Physics Institute • MEPhI

University of Nebraska Lincoln

Universidad Nacional de Caaguazú
Coronel Oviedo
Paraguay
Arandu Poty Rekavo
2007

Governo do Estado de São Paulo

ipen
instituto de pesquisas energéticas e nucleares

CNEN
Comissão Nacional de Energia Nuclear

Ministério da Ciência, Tecnologia e Inovação

Governo Federal
Brasil
União e Reconstrução

IAEA Technical Cooperation Projects

TC Programme Cycle 2024-2025

Title	Coordinator
Ionizing radiation applied for reducing plastic and microplastics pollution: standardization of methods for detection, characterization and treatment demonstration in situ	Isolda Costa

IAEA Technical Cooperation Projects

TC Programme Cycle 2022-2023

Title	Coordinator
Sustainable and residue-free nuclear fuel fabrication for research reactors in Brazil	Rafael H.L. Garcia
Strengthening industrial gamma tomography technology to characterize Brazilian reservoir rocks and quality control of refining towers and pipes for enhancement of oil production.	Margarida M Hamada
Development of radioisotope and radiopharmaceutical Ac225-PSMA for applicability in the treatment of prostate cancer	Emerson Bernardes

IAEA Technical Cooperation Projects

TC Programme Cycle 2016-2018

Title	Coordinator
Development of mobile unit using an electron beam accelerator for treatment of effluent from petroleum industry and degradation of toxic organic compounds in wastewater for reuse in industrial processes and cleaning purposes	Wilson Aparecido Parejo Calvo
Improving of Brachytherapy Production Quality for Cancer Treatment in Brazil	Maria Elisa Rostelato

IAEA Technical Cooperation Projects

Programme: Technical Cooperation Projects Latin America and the Caribbean (ARCAL)

Title	Coordinator
Project RLA1020 (ARCAL CLXXIX) - Promoting Radiation Technology in Natural and Synthetic Polymers for the Development of New Products, with Emphasis on Waste Recovery	Wilson Aparecido Parejo Calvo
Projeto Arcal RLA 2020016 "Implementación del proceso de irradiación de frutas frescas y secas com fines cuarentenários. Corrdenado pela Argentina	Anna Lucia Villavicencio

IAEA Technical Cooperation Projects

Programme: Coordination Research Projects - CRP

Title	Coordinator
F Enhancing the Beneficial Effects of Radiation Processing in Nanotechnology	Solange K. Sakata
Development of Radiation-Grafted Membranes for Cleaner and Sustainable Energy	Yasko Kodama
Radiation based technologies for treatment of emerging organic pollutants	Sueli Borrely
Determinação de Doses Letais e Esterilizadoras de radiação gama para todas as fases de ciclo de vida de Plutella xylostellaa (Linnaeus, 1758) (Lepidoptera:Plutellidae) traça diamondback para tratamento fitossanitário	Anna Lucia Villvicencio
F23032 Radiation Processing For Preservation of Cultural Heritage Objects	Pablo A. Vasques Salvador
Radiation Effect on Polymer Materials Commonly Used in Medical Devices	Aurea B.C Geraldo

Scientific Divulgation

Meeting organized by IPEN-CNEN with the support of IAEA

Course organized by IPEN-CNEN with support of the IAEA

Thank you very much for your attention!