Joint Research Centre (JRC)

Institute for Transuranium Elements
Short Overview

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http://itu.jrc.ec.europa.eu/ http://www.jrc.ec.europa.eu/

Commissioner J. Potočnik

Science and Research

Director General R. Schenkel

Joint Research Centre

JRC - Robust Science for Policy Making

As a Directorate-General of the European Commission, the JRC provides customer-driven scientific and technical support to Community policy making

The Mission of the Joint Research Centre

… is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies.

As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union.

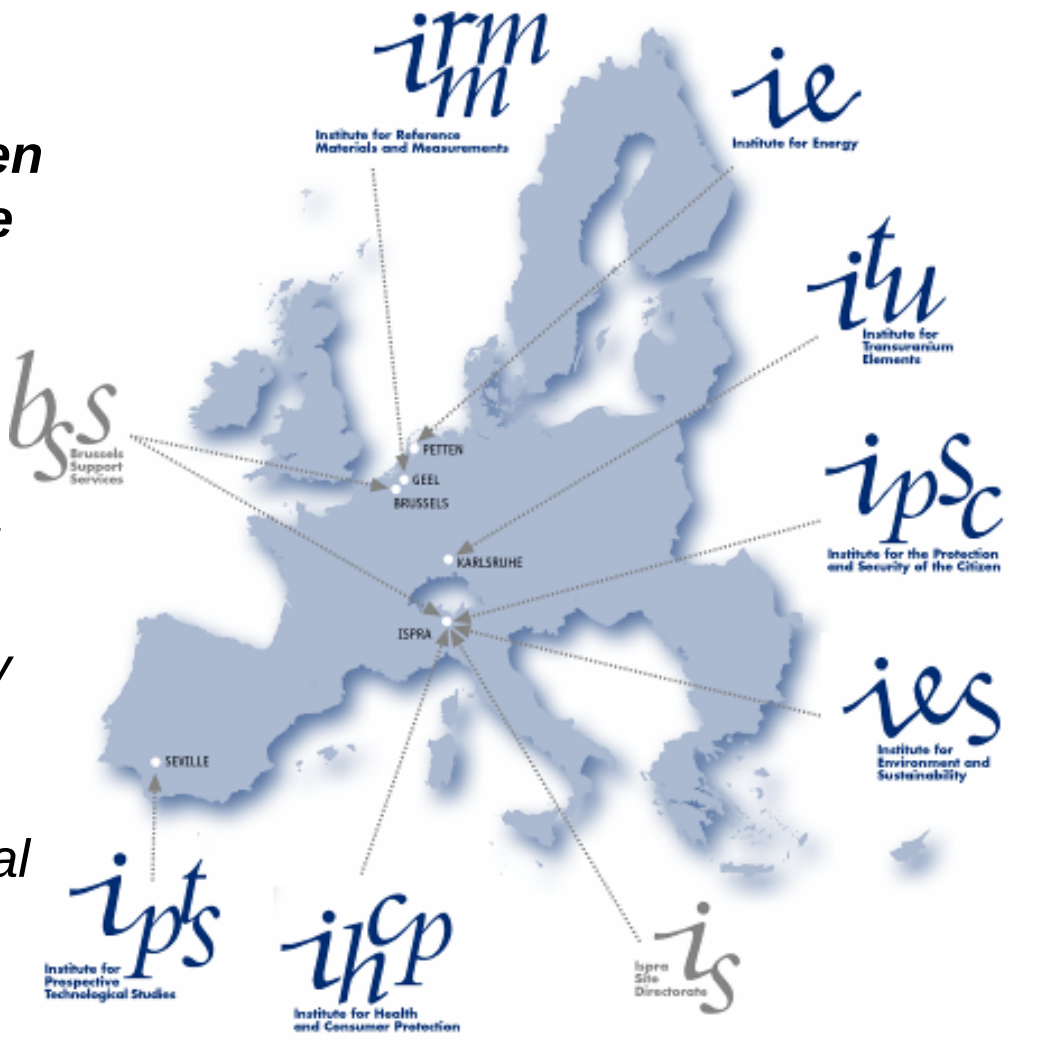
Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.

The Joint Research Centre and the ITU

The mission of ITU is to provide the scientific foundation for the protection of the European citizen against risks associated with the handling and storage of highly radioactive material.

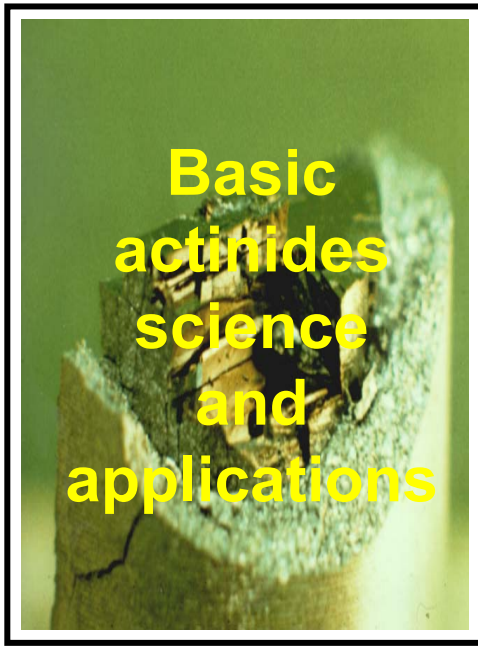
ITU's prime objectives are

- *to serve as a reference centre for basic actinide research,*
- *to contribute to an effective safety and safeguards system for the nuclear fuel cycle, and*
- *to study technological and medical applications of transuranium elements.*



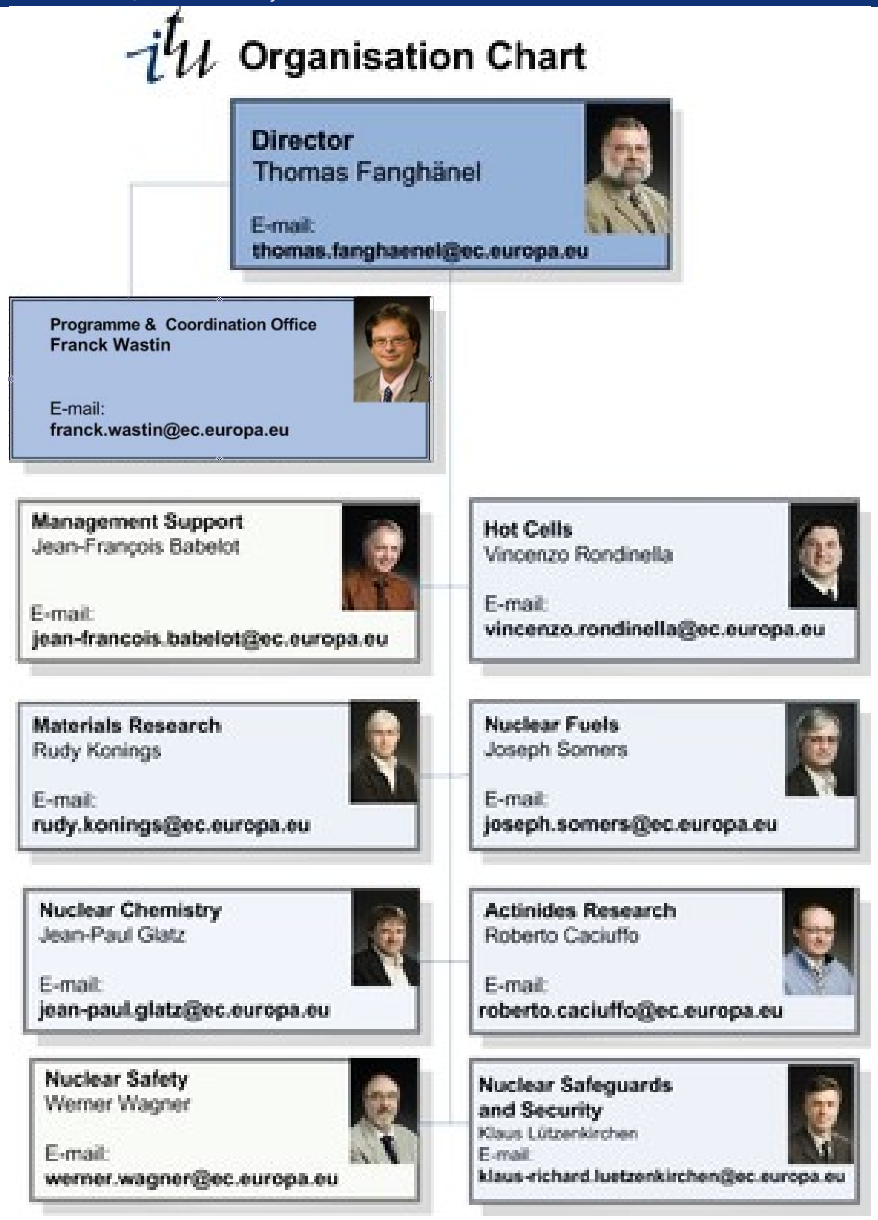
ITU's core competencies

90	91	92	93	94	95	96	97	98	99	100	101	102	103
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr



Education, Training

and user facilities/networking



FP7 JRC-ITU Actions

Nuclear Waste Disposal
properties and behaviour of high level waste forms from current and future nuclear fuel cycles.

Alternative Nuclear Fuel Cycles
reduction of the radiotoxicity of spent fuel and long-lived waste.

Fundamental and applied Actinide Research
basic understanding of nuclear materials.

Alpha-Immunotherapy
therapy of cancer and infectious diseases; actinides interaction with biological matrices

Analysis of Nuclear Trace in the Environment
development of analytical techniques and methods for determination of actinides in and their impact on the environment.

Knowledge Management, Training and Education
maintaining, developing and disseminating knowledge in the nuclear field.

Safety of Conventional Nuclear Fuels
in-pile behaviour of nuclear fuel at extended burn-up up.

Safety of Advanced Nuclear Fuels
advanced sustainable fuels, EURATOM contribution to Gen IV International Forum (GIF).

Nuclear and Trace Analysis for Safeguards
Non-Proliferation Treaty

Forensic Analysis and Combating Illicit Trafficking
defense against the illicit trafficking of nuclear and other radioactive materials.

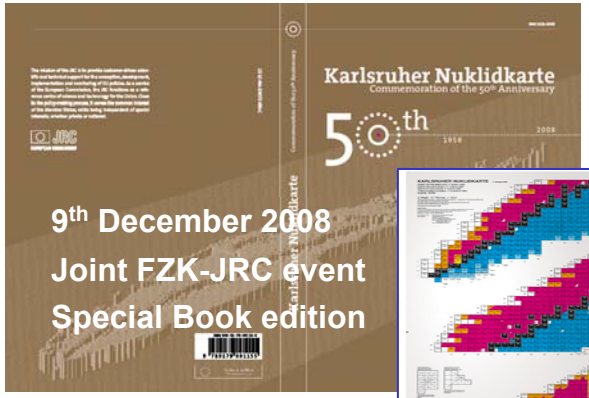
Fundamental knowledge of the basic physical, chemical and materials science data of actinides, Nuclear Physics and Nuclear data

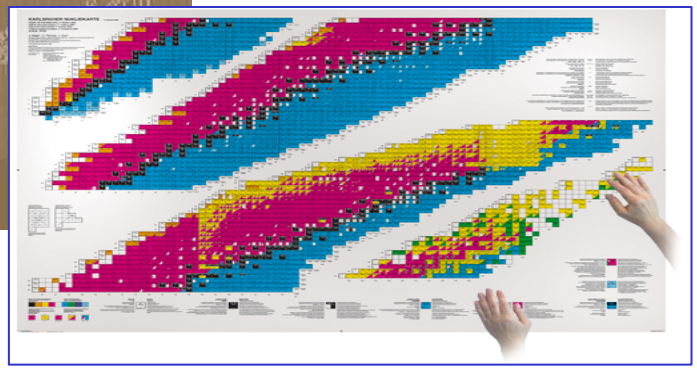
Solid state physics and chemistry of the actinides

Surface science and interface phenomena

Co-ordination chemistry in aqueous and non-aqueous systems

Thermodynamics of the actinides





Nuclear data for radioactive waste management and safety of new reactor developments

Nuclear Data (e.g. Karlsruhe Chart of nuclides)

Basic Research in Nuclear Physics and Nuclear Data Standards

Safety of Conventional and Advanced Nuclear Fuels
Nuclear Waste Disposal and Alternative Fuel cycles

GenIV International Forum

Code and Modeling
Transuranus

- **Fuel development** and fabrication, advanced sustainable fuels

- **Spent fuel, HLW**
  behaviour in repository

- **Fuel properties and behaviour**
  in-pile behaviour of nuclear fuel at extended burn-up

Non-Proliferation is a policy objective of the EU , ITU provides scientific/technical support to Member States, Euratom and IAEA

Traditional Safeguards

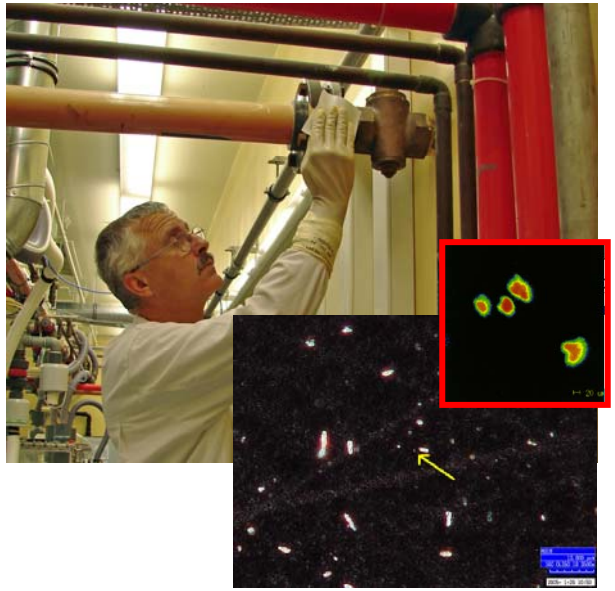
Isotope & Element Assay

- Nuclear material accountancy (owner)
- Independent verification (Euratom, IAEA,...)

Strengthened Safeguards

Environmental Analysis

- Absence of undeclared activities (Add. Protocol)



Illicit trafficking and nuclear forensics

- Detection
- Source attribution

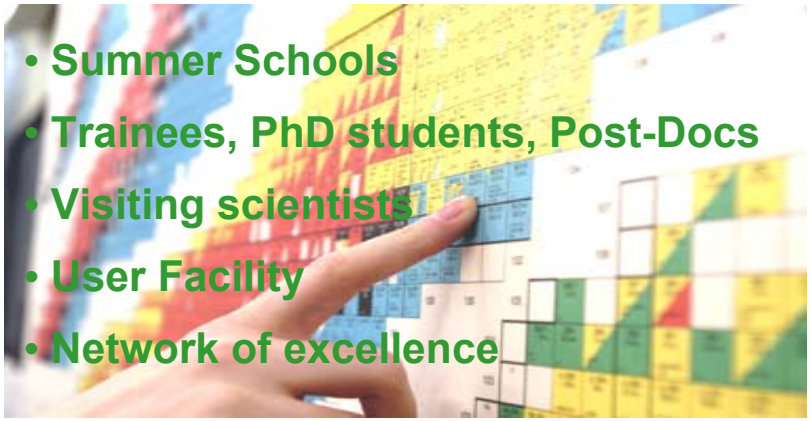
Chemical Analysis

Macroscopic Parameters

Microscopic Parameters

Reference Data

Radiological Dispersal Event (RDE)



- Summer Schools
- Trainees, PhD students, Post-Docs
- Visiting scientists
- User Facility
- Network of excellence

Nucleonica Training course 2009

- Workshops
- Conferences
- training courses
- Upgrade and new nuclear databases
- Information portals *www.nucleonica.net*

Invitation to the

2009 SUMMER SCHOOL on Actinide Science & Applications

16-19 June 2009

at the

Institute for Transuranium Elements (ITU)

in Karlsruhe, Germany


Thanks for your attention