

Foreword

This annual report summarises the research activities of ITN during the year 2001, which is the last year of the 2nd mandate of this Directive Board. It also includes details of the evolution in management, human resources, publications and budget of the last six years of activity of ITN under the authority of the Ministry of Science and Technology.

The research activity is presented for each sector (Reactor, Department of Radiological Protection and Nuclear Safety, Chemistry, and Physics) and the scientific output (publications and communications to conferences) is grouped, as in the past year, under the following areas:

- Nuclear Engineering (2 groups)
- Radiological Protection and Nuclear Safety (DPRSN)
- Environmental Sciences (3 groups)
- Inorganic Chemistry, Radiochemistry and Radiopharmacy (3 groups)
- Cultural Heritage and Sciences (1 group)
- New Materials and Compounds (3 groups)
- Industrial Technologies (2 groups)

A few words are due to compare the situation of ITN in 31.12.2001 with the one in 31.12.1995. In fact, many changes have occurred following a strategy defined by the Directive Board.

The **Reactor team** has been reinforced with new people: a young scientific leader, four well trained operators and a few PhD and graduate students. The **reactor spent fuel** has been sent to the USA and the **uranium** stored in ITN is under ITN administration.

In April 25th 2001 the RPI made 40 years since its first operation. This event was celebrated in the presence of the Minister of Science and Technology, with the publication of the book “Reactor Português de Investigação no Panorama Científico e Tecnológico Nacional, 1959-1999” by H. Machado Jorge and C. Jorge M. Costa. With the same purpose of celebration a book entitled “Publicações RPI, 1961-2001” written by Eduardo Martinho and Jaime Oliveira was published in July 2001.

The **Department of Radiological Protection and Nuclear Safety**, in ITN since October 1998, is now fully integrated and has a specific well recognized

mission. Further steps in the reorganization can be done only now.

The role of DPRSN in the depleted uranium matter is very well known. It has shown competence to give answers in a timely fashion.

The **Chemistry Sector** achieved during the second mandate a strong reorganization under the coordination of the new leaders proposed by the members of this sector and nominated by the Directive Board. The thermoluminescent and the Inorganic and Radiopharmaceutical Chemistry Laboratories were completed and are operational.

The **Physics Sector** optimized the work of the Laboratory of Ion Beams and completed the extension of the physics building where the Laboratory of X-Ray Diffractometry and a small workshop are installed. The installation of neutron scattering facilities had considerable progress in 2001. The **Radiosterilization Unit** is fully operational under ITN authority.

A quite radical reorganisation was carried out also in the administrative services (personnel and account services) with the introduction of **new technologies**, leading to an increase in the quality and efficiency of the services with a significant reduction of costs.

The budget of ITN in 1995 was PTE 0.84×10^9 (equivalent to € 0.42×10^7) and in 2002 will be PTE 2.40×10^9 (equivalent to € 1.20×10^7). Taking into account the inflation rate, there was a substantial increase in the budget, in real terms. However, most of the state budget in 2001 was for personnel. The research projects are mainly funded through open competition by the National Science Foundation, and the number of European projects funded in 2002 is significant.

In 2002 the modernisation of infrastructures will continue with the completion of a new building housing the **Library** and a **Lecture Hall**, the construction of a **Laboratory for low background measurements** in the DPRSN, the **proposal of a new building** for the DPRSN, the completion of the **renewal of the communications network**, and the introduction, in the administrative services, of the **new rules** of the Accountancy.

A **new statute for ITN** is not yet established. The new laws that regulate the State Laboratories were only partially implemented. However, ITN is pioneer in the creation of the Scientific Council, of the International Advisory Board, of the Visiting

Committee and in the organisation of the scientific annual reports. ITN is now prepared to accept a mission.

ITN is, in the Ministry of Science and Technology, a **Centre of Excellence** equipped with **National infrastructures** oriented to deliver **specialised services** and **Education and Training** in the fields where its expertise is unique in Portugal.

ITN should also be an active centre to **train scientists** to represent the interests of Portugal in specialised agencies like IAEA, OECD/NEA, IEA, Euratom/European Commission.

Regarding the **research career**, ITN completed the procedures for **the opening** of new positions of Principal Researcher and of Auxiliary Researcher. It opened, also, positions for invited researchers. **Two areas** were considered **priority** by the Directive Board: Nuclear Physics and Engineering for the Reactor Sector and Radiological Protection, Environment Radioactivity and Nuclear Safety.

Further positions have to be opened in all areas and for all other Sectors **taking into account a clear mission inside ITN**. In order to initiate this new step the Directive Board accepts and is prepared to implement the proposal of the International Advisory Board sent to the Ministry of Science and Technology which states:

“The IAB suggests the following elements in the ITN Mission Statement: The ITN has as its primary task to carry out research and to provide expertise, training and services in the field of nuclear and radiation science for Portugal. This includes safety aspects

such as radiation dosimetry, safety of nuclear installations and nuclear fuel, safe handling of radioisotopes, safety of installations emitting X-ray and environmental radiological protection. The utilization of the Research Reactor and the ⁶⁰Co gamma ray irradiation facility are part of the mission. The R and D in the Sectors should be directed to furthering the use of nuclear methods and radiation technology for the good of Portugal in societal, industrial, medical, environmental etc. areas.

The ITN can have as a complementary task to provide a number of facilities for experimental research for the scientific community in Portugal which are beyond the capacity of a single university. The nuclear facilities of ITN are unique in Portugal, with specialized equipment that exceeds the ability of a university to acquire and maintain. A mission of ITN should be to make these facilities available to university (and private laboratory) researchers, including technical help and laboratory space for these external users (particularly those from universities). ITN has to provide a modern and updated research infrastructure, including trained scientists, around these facilities. Typical examples would be the ion beam laboratory with a Van de Graaff accelerator and its high fluence ion implanter and, possibly, a small cyclotron for nuclear medicine.”

The Directive Board