

Education, Training & Conference Organization



Chemistry

Conference organisation

- **COST B12 meeting**, organized by QIR, 15-16 November 2002, ITN, Sacavém, Portugal.
Co-Ordinator: I. SANTOS.
- **Workshop on “Consequences of River Discharge Modifications on Coastal Zone and Continental Shelf (CRIDA)”**, Organised by Environmental Analytical Chemistry group, 21 February 2002, Sacavém.
Co-Ordinator: M.F. Araújo.
- L. GANO, *Training on Radioimmunoassay at ITN, Graduation Course on Biochemistry*, FCUL, University of Lisbon, 12th, 19th March and 2th April (2002).
- L. GANO, *^{99m}Tc-Radiopharmaceuticals, in the Pharmacy Course*, University of Lisbon, 23th, 30th April and 2th, 7th May (2002).
- L. GANO, *Measure of the Mass of Blood and Quality Control of ^{99m}Tc-Radiopharmaceuticals*, INSTN, Saclay, França, 26-27, November (2002).

Course organisation

- **Radiopharmacy Course organized by the QIR**, 18 February - 22 February 2002, ITN, Sacavém, Portugal.
Responsible: I. SANTOS.
- **Training on Radiopharmacy** organized at ITN by the QIR, 19th April – 16th May, Sacavém, Course of Nuclear Medicine, ESTeSL.
Responsible: A. PAULO
- J.P. LEAL, Responsible for the *New Resources for Education in Chemistry* chair on the Master Graduation “Teaching Chemistry”, Faculdade de Ciências da Universidade de Lisboa.
- J. P. LEAL, Invited Professor of the Chemistry and Biochemistry Department of Faculdade de Ciências da Universidade de Lisboa.
- A. PIRES DE MATOS, Invited Professor and Coordinator of the *Analytical Methods Course* for the Conservation and Restoration Graduation of the Universidade Nova de Lisboa.

Graduation and post-graduation teaching

- M.F. ARAÚJO, Responsible for the *Environmental Geochemistry* of the MSc Course in Economic and Applied Geology (2002-2003), *Departamento de Geologia, Faculdade de Ciências da Universidade de Lisboa*, Lisboa.
- M.F. ARAÚJO, Teaching of *Métodos Avançados de Análise e Técnicas Hifenadas* in the MSc Course in Applied Analytical Chemistry, *Faculdade de Ciências da Universidade de Lisboa, Departamento de Química e Bioquímica*, Lisboa, October 2002.
- M.F. ARAÚJO, Teaching of *Energy Dispersive X-ray Fluorescence Spectrometry* in an Analytical Methods course for the BSc Course in Conservation and Restoration, *Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa, Departamento de Química*, Monte de Caparica, March/April 2002.
- P.M. CARREIRA, Teaching of *Environmental Geochemistry* in a MSc Course in Economic and Applied Geology (2002-2003), *Departamento de Geologia, Faculdade de Ciências da Universidade de Lisboa, Departamento de Geologia*, Lisboa.
- M.I. DIAS, orientation of the *Archaeometric Component* of the MSc degree course in Archaeomaterials, *University of Sheffield*, U.K., 2002.
- A. PAULO, *Invited Coordinate Professor at the ESTeSL, Lisbon: Radiopharmacy*, Jan-June (2001).
- J. MARÇALO, Teaching of *Radiochemistry and Mass Spectrometry* in an *Analytical Methods Course* for the Conservation and Restoration Graduation of the Universidade Nova de Lisboa.
- J. MARÇALO, Teaching of *Radiochemistry* in the graduation course in Biochemistry of Universidade de Évora.

Lectures given by ITN staff

- J.C. WAERENBORGH, “Introduction to Mössbauer spectroscopy. Applications”, *MSc in Physical Engineering, Applied Nuclear Physics.*, FCL, ITN, 8th November 2002.
- A.P. GONÇALVES, “Recent advances on U/Co multilayers”, *U/Fe multilayers group Meeting*, ESRF, Grenoble, France, 8th May 2002.
- A.P. GONÇALVES, “Crystal Growth of Intermetallic Compounds with *f* Elements”, *LatGrowth, Latin-American Summer School on Crystal Growth*, Madrid, Spain, 3-7 July 2002.
- A.P. GONÇALVES, “Preparação e Crescimento Monocristalino de Compostos Intermetálicos com Elementos *f*”, Seminar, Departamento de Engenharia de Materiais, Instituto Superior Técnico, Lisboa, 19th November 2002.
- A.P. GONÇALVES, “O que é o Vidro?”, Seminar, Departamento de Conservação e Restauro, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, 4th December 2002.

- G. BONFAIT, “Basics of Heat Transfer at Low Temperatures”, *SUPERMACHINES Workshop*, FCT/UNL, Lisboa, Portugal, 2002.
- M. ALMEIDA, “Molecular Spin Ladder Compound”, Seminar, University of Friburg, Witzerland, 11th September 2002.
- M. ALMEIDA, “Transition metal bisdichalcogenates, Useful building blocks for molecular materials and puzzling structural diversities”, *Departamento de Química, Universidade de Barcelona*, Spain, 24th May 2002.
- L. GANO, “Radionuclides used in Nuclear Medicine”, I Basic Course on Radiopharmaceuticals, HSC, Carcavelos, 28th November (2002).
- A. PIRES DE MATOS, “Três histórias de iões na fase gasosa: Química do urânio; Vitrificação de resíduos radioactivos; Vidro nas artes decorativas”, Lecture, Departamento de Química, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, 26th June 2002.
- A. PIRES DE MATOS, “O vidro e a cor”, Seminar, Licenciatura de Conservação e Restauro, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, 4th December 2002.

Inter-Departamental Activities

Ciência Viva Activities

Coordinator: J. Salgado

ITN participates in the following activities promoted by the “Ciência Viva” Unit of the Portuguese Ministry for Science and Technology:

1. *Ciência Viva Programme;*
2. *Science in holidays for young people;*
3. *Ciência Viva Forum.*

The objective of the *Ciência Viva Programme* is to promote experimental science in primary and secondary schools. The programme encourages partnership between schools and the scientific community. ITN participates in two projects.

1. *Knowing radiations* (PV-0491, Co-ordinator: A. Falcão, ITN);
2. *Radiation effects on morphologic characteristics of plants* (PV-0484, Co-ordinator: Maria Margarida Feliciano, Escola Profissional Agrícola Fernando Barros Leal – Torres Vedras);

Science in holidays for young people is a holiday occupation programme providing secondary school students with the opportunity of a first contact with research, through their participation in training activities carried out at research centers. ITN proposed the following activities:

1. *Radiation Physics Experiments*, supervisor J. Salgado, I. F. Gonçalves and A. Falcão (2 weeks);
2. *Gamma ray dosimetry*, supervisor A. F. Carvalho and L. Santos (2 weeks);

3. *Inactivation of microorganisms in eggs by gamma rays*, supervisor S. Cabo Verde (2 weeks);
4. *Radiocarbon dating*, supervisors R. Marques, I. Prudêncio and A. Amaro (2 weeks);
5. *Activation Experiments in the RPI*, supervisor I. C. Gonçalves (2 weeks);
6. *Radiation and matter*, supervisor R. Silva, L. Prudêncio and J. Vaz Pinto (2 weeks);
7. *Electrical discharges*, supervisor N. Pinhão (2 weeks);
8. *Characterisation of polymeric materials*, supervisor H. Casimiro (2 weeks);
9. *Laboratorial technics for regeneration of chemical products*, supervisor L. Ferreira (2 weeks);
10. *Dosimetry of beta radiation*, supervisor A. F. Carvalho and J. Cardoso (2 weeks).

Nine students from five high schools carried out experimental work at ITN during summer of 2002.

Ciência Viva Forum is a public event aimed at publicising, debating and reflecting on the activities carried out within the scope of the on going *Ciência Viva* projects. It provides an opportunity for the participants in the projects to share their knowledge and experience in order to consolidate the work carried out and to develop future projects. ITN participated in the 6th Forum. An interactive prototype of the Portuguese Research Reactor was designed and constructed for demonstration purposes. Students and teachers could carry out some simple experiments in radiation physics.

About five hundred high school scholars have visited the ITN activities.

Physics

Conference organisation

- **Technical Meeting (1st Research Co-ordination Meeting) of the Co-ordinated Research Project on “Remediation of Polluted Waters and Wastewater by Radiation”** from 15 - 18 October 2002, Sacavém.

Organised by ITN and IAEA.

- **Workshop on “Wastewater Treatment by Ionizing Radiation”**, Jointly Organised by ITN, AdI (Agência de Inovação) and IAEA (International Atomic Energy Agency), 18 October 2002, Sacavém.

Responsible: M.L. Botelho (ITN).

- **TTES 2002 - 3as Jornadas de Tratamentos Térmicos e Engenharia de Superfícies** da SPM-Sociedade Portuguesa de Materiais, (A.D. Sequeira, member of the Scientific Committee), Coimbra, Portugal.

Chairman: V. TEIXEIRA, (Minho University, Portugal).

Graduation and post-graduation teaching

- E. ALVES, Invited “Professor Coordenador” at *School of Health Technologies of Lisbon*, Disciplines: Applied Physics (1st Semester) and Atomic and Nuclear Physics (2nd Semester).

- R.C. da SILVA, Invited Assistant Professor at the *Department of Physics of the Faculty of Sciences and Technology, Universidade Nova de Lisboa*, classes *Nuclear Physics* and *Nuclear Physics Laboratory* (7th Semester).

- A.D. SEQUEIRA, *Structural Characterisation of Materials by X-rays* in the MSc. Course in

“Surfaces” of the three Lisbon Universities: *Universidade de Lisboa, Instituto Superior Técnico and Universidade Nova*.

- A.D. SEQUEIRA, *Study of Nanostructured Semiconductor Materials by High-resolution X-ray Diffraction*. Lectures to the 5th year of the Materials Engineering Graduation Course of the *Instituto Superior Técnico, Lisbon*.

- M.L. BOTELHO, *Introduction to research on Biology course – Upsalla University* (two credits).

- J. SALGADO, *Radiations in everyday life and environment*, in a MSc Course in Ensino da Física, *Universidade de Lisboa, Departamento de Física*.

- J. SALGADO, *Radiation Physics, Dosimetry and Radiological Protection* in a MSc Course in Physical Engineering – Applied Nuclear Physics, *Universidade de Lisboa, Departamento de Física*.

Lectures

- S. CABO VERDE, theoretical and experimental lecture on microbial biotechnology class - “Determinação de D₁₀ de *Bacillus pumillus* em substrato seco a duas taxas de dose” Faculty of Sciences, Lisbon October 2002.

Reactor

Conference organisation

- *Combined Meeting of the European Atomic Energy Society*, 26-29 May 2002, Hotel Tivoli Sintra, Sintra.
Co-Ordinators: J.C. SOARES, A.J.G. RAMALHO, J.G. MARQUES (ITN), 35 participants.
- *Workshop on "Computing Radiation Dosimetry"*, 22-23 June 2002, ITN, Sacavém.
Organizer: P. VAZ (ITN), 55 participants.
- *Third (Final) Research Co-ordination Meeting (RCM) for the IAEA Co-ordinated Research Project (CRP) on Validation and Application of Plants as Biomonitors of Trace Element Atmospheric Pollution, Analysed by Nuclear and Related Techniques*, 30 September – 4 October 2002, ITN, Sacavém.
Chairman: B. SMODIS (IAEA); M.C. FREITAS (ITN), 15 participants.
- *Francisco de Paula Leite Pinto: Impulsionador dos estudos de energia nuclear em Portugal*, 6 November 2002, ITN, Sacavém.
Chairman: J. COSTA OLIVEIRA (ITN), 75 participants.

Course organisation

- *Training Course on MCNP-X*, 24-28 June 2002, ITN, Sacavém.
Organizer: P. VAZ (ITN), 30 participants.

Graduation and post-graduation teaching

- J.C. OLIVEIRA, Collaboration with a series of lectures on "O Urânio e a electricidade" in a MSc Course in Physics Teaching, Universidade de Lisboa, Departamento de Química, Departamento de Física, April 2002.
- P. VAZ, "Radiation Technologies", IST- Technical University of Lisbon, Physics Engineering graduation (LEFT), Physics Department, October 2002-February 2003 (1 semester).
- P. VAZ, "Nuclear Physics Methods in Science and Technology", IST- Technical University of Lisbon, Physics Engineering graduation (LEFT), Physics Department, October 2002-February 2003 (1 semester).
- P. VAZ, "Physics II (Electromagnetism)", IST- Technical University of Lisbon, LESIM graduation, Physics Department, October 2002-February 2003 (1 semester).
- P. VAZ, "Physics I (Optics and Mechanics)", IST- Technical University of Lisbon, LESIM graduation, Physics Department, March 2002- September 2002 (1 semester).
- P. VAZ, "Physics II (Electromagnetism)", IST- Technical University of Lisbon, LESIM graduation, Physics Department, October 2001-February 2002 (1 semester).

Lectures given by ITN staff

- N.P. BARRADAS, "Neural Networks", Seminar, Instituto Tecnológico e Nuclear, 15th Nov. 2002.
- J. ANTUNES, "Optimisation des Systèmes Dynamiques", Seminar, Commissariat à l'Energie Atomique, CEA, 17th April 2002.

Radiological Protection and Nuclear Safety

Conference organisation

- *EUROMET Workshop and Contact person Meeting of the Technical Committee, Ionising radiation*, 9-11 October 2002, Lisbon. Chairman: NELCY COURSOL (CEA). 40 participants.
- *First Portuguese Journeys about Radon and Natural Radioactivity*, 4 December 2002, Guarda. Chairmen: F. P. CARVALHO, M. C. FAÍSCA, P. M. DUARTE. 130 participants.

Course organisation

- *Course on Radiation Protection and Safety*, (TABAQUEIRA, FÁBRICA DE ALBARRAQUE) – Sacavém, 13 – 17 May 2002, organized by DPRSN
Course Organization: M. B. MARTINS
Lecturers: J. CARDOSO, A. OLIVEIRA, M.B. MARTINS, K. JACOB, J.G. ALVES, I. PAIVA, R. TRINDADE, J. SEBASTIÃO.
- *Course on Radiation Protection and Safety*, (PEGOP-ENERGIA ELÉCTRICA, S. A.) - Pego, 5 December 2002 and 12 December 2002, organized by DPRSN.
Course Organization: M.B. MARTINS.
Lecturers: A. OLIVEIRA, R. TRINDADE, M.B. MARTINS, J. SEBASTIÃO.

Graduation and post-graduation teaching

- M. NEVES, laboratory support on P-32 samples in a MSc Course in Biophysics, *Faculdade de Ciências de Lisboa, Dep. de Física*, Lisboa, June 2002.
- C. OLIVEIRA, Invited Coordinator Professor at the School of Health Technologies of Lisbon, Classes: Applied Physics and Biophysics (1st semester); Ultra-sounds (2nd semester).

Lectures given by DPRSN staff

- A.F. CARVALHO “Cosmic Radiation and radiation Protection”, 1st Advanced Course on Aviation Medicine”, Portuguese Civil Aviation Authority, 2th February 2002.
- F.P. CARVALHO, Participation in the AIEA International Meeting “Intercomparison Exercise aimed at the Assessment of the Individual Doses due to Internal Radioactive Contamination”. Presentation and discussion of results from 32 countries for the preparation of a final report. Vienna, 25-27 September 2002.
- F.P. CARVALHO, “Radioactividade no Ambiente”, First Portuguese Journeys about Radon and Natural Radioactivity, Auditório Municipal, Guarda, 4 December 2002.

- I. PAIVA, “Radioactive Waste Management”, Post-Graduate Radiological Protection and Safety Course; *Escola Superior de Tecnologia da Saúde de Lisboa ESTSL*, April and June 2002.
- J.G. ALVES, “Dosimetria Individual”, Seminar, Instituto Biomedicina, Faculdade de Ciências da Universidade de Lisboa, 4 July 2002.
- J. CARDOSO, “Grandezas e Unidades em Protecção Radiológica”, Curso de Protecção Radiológica, Instituto Tecnológico e Nuclear, June 2002.
- J.H.P.LUIS, “Biological effects of radiation”, UTL, Faculty of Veterinary Medicine, Lisbon, 15 January and 29 November 2002.
- L. PORTUGAL, “Nuclear Risks; Risks and Vulnerabilities Training Course”; Civil Protection National Service, SNPC, Carnaxide, May 2002.
- M.C. FAÍSCA, “O Radão”, First Portuguese Journeys about Radon and Natural Radioactivity, Auditório Municipal, Guarda, 4 December 2002.
- M.C. FAÍSCA, “Técnicas de Redução dos Níveis de Radão”, First Portuguese Journeys about Radon and Natural Radioactivity, Auditório Municipal, Guarda, 4 December 2002.
- M.J. MADRUGA, “The significance of the Radiochemistry”, Seminar, Faculdade de Ciências de Lisboa, Departamento de Química e Bioquímica, 29 November 2002.
- M.J. REIS, “Intervenção em Emergências Radiológicas”, Seminar, Escola Superior de Tecnologias da Saúde de Lisboa, April 2002.
- M.J. REIS, “Intervenção em Emergências Radiológicas”, Seminar, St. Dominic's International School, June 2002.
- M. NEVES, “Radiações em Medicina e Biologia” Seminar, Instituto Superior Técnico, IST, 14 November 2002.
- M. NEVES, “Radiações em Medicina e Biologia” Seminar, Faculdade de Ciências de Lisboa, FCT, 13 December 2002.
- P.M. DUARTE, “Cartografia do Radão em Portugal”, First Portuguese Journeys about Radon and Natural Radioactivity, Auditório Municipal, Guarda, 4 December 2002.
- R. TRINDADE, “Radiological Protection”, Post-Graduate Radiological Protection and Safety Course; Escola Superior de Tecnologia da Saúde de Lisboa ESTSL, April 2002.
- R. TRINDADE, “Radiological Protection”, International School St. Dominic's, Estoril, June 2002.