

## Applied Geochemistry & Luminescence on Cultural Heritage

### Books and Book Chapters

F. Ruiz, M. Pozo, M. I. Carretero, M. Abad, M. L. González-Regalado, J. M. Muñoz, J. Rodríguez-Vidal, L. M. Cáceres, J. G. Pendón, M. I. Prudêncio and M. I. Dias (2011). Birth, Evolution And Death Of A Lagoon: Late Pleistocene To Holocene Palaeoenvironmental Reconstruction Of The Doñana National Park (Sw Spain). In: Lagoons: Biology, Management and Environmental Impact, Ch. 13, Editor: Adam G. Friedman, ISBN: 978-1-61761-738-6, 2011 Nova Science Publishers, Inc., 371-398.

M. Abad, F. Ruiz, M. Pozo, M.I. Carratero, J. Rodríguez-Vidal, L.M. Cáceres, J.M. Muñoz, M.L. González-Regalado, J.G. Pendón, A. Toscano, J. Borrego, M.I. Prudêncio, M.I. Dias (2011). Correlation between millennial mining activities and heavy metal pollution in two southwestern Spanish estuaries. In: Heavy Metal Sediments, Ch. 5, Editor: Lucia H. Sanz, ISBN 978-1-61470-690-8, 2011 Nova Science Publishers, Inc., 1-12.

### Journals

M.I. Prudêncio, M.I., Dias, J.C. Waerenborgh, F. Ruiz, M.J. Trindade, M. Abad, R. Marques, M.A. Gouveia, Rare earth and other trace and major elemental distribution in a pedogenic calcrete profile (Slimene, NE Tunisia). *Catena*, 87 (2011) 147-156.

R. Marques, M.I. Prudêncio, M.I. Dias, F. Rocha, Patterns of rare earth and other trace elements in different size fractions of clays of Campanian-Maastrichtian deposits from the Portuguese western margin (Aveiro and Taveiro Formations). *Chemie der Erde*, 71 (2011) 337-347.

C.I. Burbidge, S.I. Cabo Verde, A.C. Fernandes, M.I. Prudêncio, M.L. Botelho, M.I. Dias, G. Cardoso, Dosimetry in the multi kilo-Gray range using optically-stimulated luminescence (OSL) and thermally-transferred OSL from quartz. *Radiation Measurements*, 46 (2011) 860-865.

R. Marques, M.I. Dias, M.I. Prudêncio, F. Rocha, Upper Cretaceous clayey levels from western Portugal (Aveiro and Taveiro regions: clay mineral and trace-elements distribution). *Clays and Clay Minerals*, 59(3) (2011). 315-327.

M.J. Trindade, M.I. Dias, F. Rocha, M.I. Prudêncio, J. Coroado, Bromine volatilization during firing of calcareous and non-calcareous clays: Archaeometric implications. *Applied Clay Science*, 53 (2011) 489-499.

F. Ruiz, M. Abad, M.L. González Regalado, E.X.M. García, A. Toscano, M.I. Prudêncio, M.I., Dias, E.

Galán, M.I. González, Predation on ostracod populations of two north African lagoons. *Crustaceana*, 84 (2011) 1537-1545.

C.I. Burbidge, A.L. Rodrigues, M.I. Dias, M.I. Prudêncio, G. Cardoso. (available in 2011) (2010). Optimisation of preparation and measurement protocols for luminescence dating of small samples from a suite of porcelains and faiences. *Journal of Mediterranean Archaeology and Archaeometry*, 10, (2011) 53-60.

R. Marques, M.I. Prudêncio, J.C. Warrenborgh, F. Rocha, M.I. Dias, E. Ferreira da Silva. Geochemistry and mineralogy of volcanic ash red paleosol from Fogo island (Cape Verde). *Mineralogical Magazine*, 75 (3) (2011) 1408.

Trindade, M.J., Rocha, F., Prudêncio, M.I., Dias, M.I. Trace element mobility during spheroidal weathering of dolerite dykes from central Portugal. *Mineralogical Magazine*, 75 (3) (2011) 2030.

M.I. Prudêncio, M.I. Dias, J.C. Waerenborgh, M.J. Trindade, F. Ruiz, R. Marques, M.A. Gouveia, M. Abad, Rare earth and other trace and major elemental distribution in a pedogenic calcrete profile (Slimene, NE Tunisia), *Catena* 87 (2011) 147-156.

### Conference Proceedings

M.J. Trindade, M.I. Prudêncio, M.I. Dias, F. Rocha (2011), Mobilization and re-distribution of major and trace elements during spheroidal weathering of dolerites from Fornos de Algodres area. Proceedings of the VIII Cong. Ibérico de Geoquímica (Castelo Branco, Portugal), 1, 361-366.

R. Marques, M.I. Prudêncio, J.C. Waerenborgh, F. Rocha, M.I. Dias, E. Ferreira da Silva (2011), Iron and other chemical elements in a paleosol developed on volcanic ash in Fogo Island (Cape Verde). Proceedings of the VIII Cong. Ibérico de Geoquímica (Castelo Branco, Portugal), 1, 211-416.

R. Marques, M.I. Prudêncio, J.C. Waerenborgh, F. Rocha, M.I. Dias, E. Ferreira da Silva, Iron and other chemical elements in a paleosol developed on volcanic ash in Fogo Island (Cape Verde), *Proceedings VIII Cong. Iberico de Geoquímica, Castelo Branco, Portugal* 411-416 (2011).

### Communications

#### Invited

M. I. Dias. Materials, Pigments, Dating, Authenticity: Portuguese faience and Chinese Porcelain produced for the Portuguese market (XVI to XVIII Centuries). Applications of synchrotron radiation sources for

compositional and structural characterization of objects in cultural heritage, forensics and materials science. IAEA technical meeting (TM-40771). IAEA Headquarters, Vienna, Austria, 17-21 October 2011.

M. I. Dias, Análise por activação com neutrões em estudos de Arqueometria e Ciências da Terra. 50º Aniversário Do Reactor Português de Investigação, 27 de Abril de 2011.

C. I. Burbidge. Facets of luminescence for dating. Conference on Micro-Raman Spectroscopy and Luminescence Studies in the Earth and Planetary Sciences (CORALS II), Museo Nacional de Ciencias Naturales, Madrid, May 18-20, 2011.

### Oral

M.I. Prudêncio, M. A. Stanojev Pereira, J.G. Marques, M.I. Dias, L. Esteves, C.I. Burbidge, M.J. Trindade, M.B. Albuquerque. Neutron tomography for the assessment of consolidant impregnation efficiency in Portuguese glazed tiles (XVII - XVIII centuries). TECHNART, Berlin, Germany, April 26 - 29, 2011.

R. Marques, M.I. Prudêncio, J.C. Waerenborgh, F. Rocha, M.I. Dias, E. Ferreira da Silva. Ferro e outros elementos químicos num paleosolo desenvolvido em cinzas vulcânicas na ilha do Fogo (Cabo Verde). VIII Congresso ibérico de Geoquímica / VII Semana de Geoquímica, 26-28 Set. 2011, Castelo Branco, Portugal.

T.P. Silva, M.O. Figueiredo, M.I., Prudêncio. Ascertaining the degradation state of ceramic tiles: a preliminary non-destructive step in view of conservation treatments using gamma radiation. EMAC'11, Viena, Austria, 29 Sept - 1 October 2011, p. 39.

M.I. Prudêncio. Nuclear Techniques for the characterization and preservation of the Portuguese cultural heritage – research activities developed during 2010-2011. IAEA TC Project RER/8/015. Regional Planning and Coordination Meeting. 7-9 Sept. 2011, Warsaw; Poland.

M.J. Trindade, M.I. Prudêncio, M.I. Dias, F. Rocha. Mobilização e re-distribuição de elementos maiores e traço durante a meteorização esferoidal de doleritos da Área de Fornos de Algodres. VIII Congresso ibérico de Geoquímica / VII Semana de Geoquímica, 26-28 Set. 2011, Castelo Branco, Portugal.

R. Marques, M.I. Prudêncio, F. Rocha, E. Ferreira da Silva, M.I. Dias, C. I. Burbidge. Mineralogy, geochemistry and radiometry in paleoweathered carbonatites from Fogo island, Cape Verde. EUROCLAY, 26 June – 1 July 2011, Antalya, Turkey.

M.J. Trindade, M.I. Prudêncio, F. Rocha, M.I. Dias. Variation of mineral and chemical composition, especially actinides and lanthanides, in size fractions of residual clays of dolorite and aplite dykes from central Portugal. EUROCLAY, 26 June – 1 July 2011, Antalya, Turkey.

C.I. Burbidge, A.L. Rodrigues, M.I. Dias, M.I. Prudêncio e G. Cardoso. Técnicas para a datação por luminescência de amostras pequenas de cerâmicas cozidas a alta temperatura. IX Congresso Ibérico de Arqueometria, CIA-IX, 26-28 Outubro de 2011, Lisboa, Portugal.

C. Fabião, M.I. Dias e M.I. Prudêncio. Contributos arqueométricos para o conhecimento da construção da província romana da Lusitania. IX Congresso Ibérico de Arqueometria, CIA-IX, 26-28 Outubro de 2011, Lisboa, Portugal.

C. Fabião, I. Filipe, M.I. Dias, M.I. Prudêncio, M.J. Trindade e M.A. Gouveia. O Contributo da arqueometria para o estudo económico do baixo Tejo em época romana: o caso da Casa do Governador da Torre de Belém, Lisboa. IX Congresso Ibérico de Arqueometria, CIA-IX, 26 -28 Outubro de 2011, Lisboa, Portugal.

A.L. Rodrigues, C.I. Burbidge, M.I. Dias, F. Rocha, A.C. Valera e M.I. Prudêncio. Estudos de Luminescência, Mineralogia e Geoquímica no Contexto Arqueológico do Monte Carrascal – Ferreira do Alentejo, Portugal. IX Congresso Ibérico de Arqueometria, CIA-IX, 26-28 Outubro de 2011, Lisboa, Portugal.

T. Silva, S. Cabo Verde, C.I. Burbidge, A.C. Fernandes, M.L. Botelho, M.I. Dias, G. Cardoso e M.I. Prudêncio. Perfis de contaminação e inactivação microbiana em azulejos. IX Congresso Ibérico de Arqueometria, CIA-IX, 26-28 Outubro de 2011, Lisboa, Portugal.

M.A. Stanojev Pereira, M.I. Prudêncio, J.G. Marques, M.O. Figueiredo, M.I. Dias, T.P. Silva, L. Esteves, C.I. Burbidge, M.J. Trindade e M.B. Albuquerque. Tomografia de neutrões aplicada a azulejos do séc. XVII – visualização para caracterização, diagnóstico e optimização de técnicas de conservação. IX Congresso Ibérico de Arqueometria, CIA-IX, 26-28 Outubro de 2011, Lisboa, Portugal.

C.I. Burbidge, G. Cardoso, D.C.W. Sanderson, M.I. Dias. Constraint of time averaged water content using drained measurements. 13th International Conference on Luminescence and Electron Spin Resonance Dating 10-14 July 2011, Torun, Poland.

C.I. Burbidge, O. Monteiro Gil, J. Alves, J. Cardoso, L. Santos. Proposal: Retrospective dosimetry of a gloved hand. EURADOS Annual Meeting 2011. Czech Technical University, Prague, 7-11/02/2011.

R. Marques, M.I. Prudêncio, J.C. Waerenborgh, Fernando Rocha, M.I. Dias, E. Ferreira da Silva, Iron and other chemical elements in a paleosol developed on volcanic ash in Fogo island (Cape Verde), VIII Congresso Ibérico de Geoquímica, Castelo Branco, Portugal, 24-28 September 2011.

### Poster

R. Marques, M.I. Prudêncio, J.C. Warrenborgh, F. Rocha, M.I. Dias, E. Ferreira da Silva. Geochemistry and mineralogy of volcanic ash red paleosol from

- Fogo island (Cape Verde). Goldschmidt 2011, August 14-19, 201, Prague, Czech Republic.
- M.J. Trindade, F. Rocha, M.I. Prudêncio, M.I. Dias. Trace element mobility during spheroidal weathering of dolerite dykes from central Portugal. Goldschmidt 2011, August 14-19, 2011, Prague, Czech Republic.
- R. Marques, M.I. Prudêncio, J.C. Waerenborgh, F. Rocha, M.I. Dias, E. Ferreira da Silva, Geochemistry and mineralogy of volcanic ash red paleosol from Fogo island (Cape Verde), *Goldschmidt 2011*, Prague, Czech Republic, 14-19 August, 2011.
- M.M.S. Cabral Pinto, E. Ferreira da Silva, M.V.G. Silva, M.I. Prudêncio, R. Marques, P. Melo-Gonçalves. Geochemical background values of chemical elements in stream sediments of Santiago island, Cape Verde. VIII Congresso ibérico de Geoquímica / VII Semana de Geoquímica, 26-28 Set. 2011, Castelo Branco, Portugal.
- C.I. Burbidge, S.I. Cabo Verde, A.C. Fernandes, M.I. Prudêncio, M.L. Botelho, M.I. Dias e G. Cardoso. Dosimetria Retrospectiva, na gama dos kGy, para Monitorização no Tratamento de Azulejos Históricos. IX Congresso Ibérico de Arqueometria, CIA-IX, 26 - 28 Outubro de 2011, Lisboa, Portugal.
- T.P. Silva, M.O. Figueiredo, M.I. Prudêncio. Tile pathologies: green stains in blue-and-white glazes from an 18th century tile panel figuring Lisbon. TECHNART, Berlin, Germany, April 26 – 29, 2011.
- C.I. Burbidge, M.I. Dias, G. Cardoso, L. Oosterbeek, C. Scarre, M.I. Prudêncio, D. Franco, R. Marques, A. Cruz e P. Cura. Cronologias por luminescência nas paisagens de transição do Ribatejo. IX Congresso Ibérico de Arqueometria, CIA-IX, 26 -28 Outubro de 2011, Lisboa, Portugal.
- G. Cardoso, L. Oosterbeek e M.I. Dias. Construção de uma base de dados de datações de sítios arqueológicos da Península Ibérica: contribuição para o estudo de sequências cronológicas. IX Congresso Ibérico de Arqueometria, CIA-IX, 26 -28 Outubro de 2011, Lisboa, Portugal.
- M.I. Dias, M. Ondina Figueiredo, M. Antónia Matos, A. Pais, M.I. Prudêncio, T. Pena Silva, C.I. Burbidge, A.L. Rodrigues e J.P. Veiga. Datação, autenticidade, materiais e pigmentos. Estudos laboratoriais sobre Faiança Portuguesa e Porcelana Chinesa produzida para o mercado Português (séculos XVI a XVIII). IX Congresso Ibérico de Arqueometria, CIA-IX, 26 -28 Outubro de 2011, Lisboa, Portugal.
- M.I. Dias, J. Raposo, C. Fabião, A. Guerra, J. Bugalhão, A.L. Duarte, A. Sabrosa, M.I. Prudêncio e M.J. Trindade. Arqueometria e o estudo das ânforas lusitanas: o caso do Núcleo Arqueológico da Rua dos Correeiros, em Lisboa. IX Congresso Ibérico de Arqueometria, CIA-IX, 26 -28 Outubro de 2011, Lisboa, Portugal.
- M.J. Trindade, M.I. Dias, M.I. Prudêncio e F. Rocha. Indicadores geoquímicos e mineralógicos de cerâmicas arqueológicas e matérias-primas argilosas do Algarve. IX Congresso Ibérico de Arqueometria, CIA-IX, 26 -28 Outubro de 2011, Lisboa, Portugal.
- J.C. Waerenborgh, M.I. Prudêncio, M.I. Dias e M.A. Gaspar. Estudo por Espectroscopia Mössbauer da tecnologia de produção da cerâmica cinzenta Romana de Braga (Norte de Portugal). IX Congresso Ibérico de Arqueometria, CIA-IX, 26 -28 Outubro de 2011, Lisboa, Portugal.
- M.I. Prudêncio, T.P. Silva, M.I. Dias, J.G. Marques, M.A. Stanojev Pereira, M.O. Figueiredo, L. Esteves, M.B. Albuquerque, M.L. Botelho, S.I. Cabo Verde, M.J. Trindade, C.I. Burbidge, R. Marques. Non-destructive and micro-invasive techniques for cultural heritage diagnostics - a case study of glazed tiles from Portuguese historical buildings. I Encontro de Património Azulejar. Lisboa: O Azulejo e a cidade. CML, Novembro, 2011, Lisboa, Portugal.

## Environmental and Analytical Chemistry

### Books and Book Chapters

A.M.M. Soares (2011). Upwelling, efeito de reservatório, radiocarbono: construção de cronologias absolutas e inferências paleoambientais. In A.M.S. Bettencourt, M.I.C. Alves, S. Monteiro-Rodrigues, *Variações Paleoambientais e Evolução Antrópica no Quaternário do Ocidente Peninsular*. Braga: APEQ/CITCEM. 11-21.

### Journals

P.M. Carreira, J.M. Marques, J. Espinha Marques, H.I. Chaminé, P.E. Fonseca, F. Monteiro Santos, R.M. Moura, J.M. Carvalho (2011) Defining the Dynamics of groundwater in Serra da Estrela Mountain área, central Portugal: na isotopic and hydrogeochemical approach. *Hydrogeology Journal*, 1, vol. 19, 117-131. ISSN 1431-2174

F.P. Carvalho, J.M. Oliveira, A.M.M. Soares (2011). Sediment accumulation and bioturbation rates in the deep Northeast Atlantic determined by radiometric techniques. *IGES Journal of Marine Science*, 68(3), 427-435.

M.R. Carvalho, P.M. Carreira J.M. Marques, G. Capasso, F. Grassa, J.C. Nunes (2011) Geochemistry of groundwater from Graciosa Island (Azores): a contribution to the hydrothermal system conceptual model. *Mineralogical Magazine*, 75 (3). 630. ISSN 0026-461X.

J.M. De la Rosa, F.J. González-Vila, H. Knicker, J.A. González-Pérez, M.F. Araújo (2011) Molecular composition of sedimentary humic acids from South West Iberian Peninsula. A multi-proxy approach. *Organic Geochemistry*, 42, 791-802.

- J.M. De la Rosa, H. Knicker (2011) Bioavailability of N released from pyrogenic organic matter: An incubation study. *Soil Biology and Biochemistry*, 43, 2368-2373.
- J.M. De la Rosa, L. Sánchez García, J.R. de Andrés, F.J. González-Vila, J.A. González-Pérez, H. Knicker (2011) Contribution of Black Carbon in recent sediments of the Gulf of Cadiz. Applicability of different quantification methodologies. *Quaternary International*, 243, 264-272.
- J.M. De la Rosa, M. Santos, M.F. Araújo (2011) Metal binding by Humic Acids extracted from recent sediments from the Southwest Atlantic coast of the Iberian Peninsula. *Estuarine Coastal and Shelf Sciences*, 93, 478-485.
- J. Espinha Marques, A. Carvalho, J.M. Marques, H.I. Chamíné, A. Guerner, R. Moura, P.M. Carreira, O. Neves, J. Samper, F.T. Rocha (2011) A methodology for assessing the impact of the use of road salt on groundwater resources in a mountain environment (Serra da Estrala, central Portugal). *Cadrenos Lab. Xeolóxico de Laxe*. Vol. 36, 79-98. ISSN 0213-4497.
- E. Figueiredo, P. Valério, M.F. Araújo, R.J.C. Silva, A.M.M. Soares (2011) Inclusions and metal composition of ancient copper-based artefacts: a diachronic view by micro-EDXRF and SEM-EDS. *X-Ray Spectrometry*, 40, 325-332.
- E. Figueiredo, M.F. Araújo, R.J.C. Silva, J.C. Senna-Martinez, J.L. Inês Vaz (2011) Characterisation of Late Bronze Age large size shield nails by EDXRF, micro-EDXRF and X-ray digital radiography. *Applied Radiation and Isotopes*, 69, 1025-1211.
- J.A. Gonzalez-Perez, F.J. Gonzalez-Vila, M.E. Arias; J. Rodriguez, J.M. De la Rosa; T. Marañón; L. Clemente (2011) Soil lipid assemblage in *Rhododendron ponticum* ssp. *baeticum* and adjacent *Quercus canariensis* stands in their native habitat (Sierra de Luna, Cádiz, Spain). *Environmental Chemistry Letters*, 9, 453-464.
- A.R. Pereira, C. Ramos, J. Trindade, J.A. Gomes, J. Rocha, H. Granja, L. Gonçalves, A.M.M. Soares, J.M. Martins (2011). FMI 5000: Um projecto sobre mudanças ambientais holocénicas. *Finisterra*, XLVI, 91, 99-106.
- B. Pereira de Oliveira, J.M. De la Rosa, A.Z. Miller, C. Saiz-Jimenez, A. Gómez-Bolea, M. Sequeira Barga, A. Dionisio (2011) An integrated approach to assessing the origins of black films on a granite monument. *Environmental Earth Sciences*, 63, 1677-1690.
- J. Rodríguez-Vidal, F. Ruiz, L.M. Cáceres, M. Abad, L. González-Regalo, M. Pozo, M. Carretero, A.M.M. Soares, F.G. Toscano (2011). Geomarkers of the 218–209 BC Atlantic tsunami in the Roman Lacus Ligustinus (SW Spain): A palaeogeographical approach. *Quaternary International*, 242, (1) (2011) 201–212.
- I. Gutiérrez-Zugasti, S.H. Andersen, A.C. Araújo, C. Dupont, N. Milner, A.M.M. Soares (2011). Shell midden research in Atlantic Europe: State of the art, research problems and perspectives for the future. *Quaternary International*, 239, (1-2) (2011) 70-85.
- V. Martins, M. F. Araújo, E.F. Silva, J.M.A. Dias, R. Calisto, J.-M. Jouanneau, O. Weber, F. Rocha, Upwelling dominated oceanographic periods in the Ria de Vigo during the late Holocene. *Journal of Coastal Research*, SI 64, (2011) 1998-2001.
- A.M.M. Soares, J.M.M. Martins, J.L. Cardoso (2011). Marine radiocarbon reservoir effect of coastal waters off Cape Verde Archipelago. *Radiocarbon*, 53(2), 289-296.

### Conference Proceedings

M.F. Bem Hamouda, P.M. Carreira, H. Eggenkamp, J.M. Marques, F. Monteiro dos Santos, R. Gonçalves, P. Represas (2011) Understanding the origin of salinization of the coastal aquifer of Sousse (Tunisia) using geochemical and isotope investigations. Proceedings International Symposium on Isotopes in Hydrology, Marine Ecosystems, and Climate Change Studies. Eds IAEA-Environment Programme & Water Resources Programme. Monaco, IAEA-CN-186. 236.

P.M. Carreira, J.M. Marques, M.R. Carvalho, F. Grassa, G. Capasso, D. Nunes, J.C. Nunes (2011) Stable isotope feature of groundwaters from Graciosa volcanic Island (Azores) – preliminary results. Central European Geology. Acta Geologica Hungarica. Proceedings Isotope Workshop XI (ESIR), Budapest, Hungary, Ed. Attila Demény & Elmer Pal-Molnár. Vol 54 (1-2). 131. ISSN 1788-2281.

P.M. Carreira, D. Nunes, A.M. Monge Soares, M.A. Marques da Silva (2011) Paleoáguas como arquivos de alterações climáticas: caso de estudo o sistema multiaquífero Cretácico de Aveiro. Livro de Comunicações 8º Seminário Sobre Águas Subterrâneas. Ed. APRH. Lisbon (Portugal) 61-64.

P.M. Carreira, J.M. Marques, M.R. Carvalho, D. Nunes, M. Antunes da Silva (2011) Isotopic and geochemical signatures of Melgaço CO<sub>2</sub>-rich cold mineral waters – NW Portugal. Proceedings International Symposium on Isotopes in Hydrology, Marine Ecosystems, and Climate Change Studies. Eds IAEA-Environment Programme & Water Resources Programme. Monaco, IAEA-CN-186. 142.

A. Carvalho, J. Espinha Marques, J.M. Marques, P.M. Carreira, C. Mansilha (2011) Índices de Contaminação de água subterrânea por NaCl e CaCl na região da Serra da Estrela. Livro de Comunicações 8º Seminário Sobre Águas Subterrâneas. Ed. APRH. 33-37.

J.M. De la Rosa, M.E. Varela, S.R. Faria, F.J. González-Vila, H. Knicker, M.F. Araújo, J.A. González-Pérez, J.J. Keizer (2011) Fast characterization of wildfire effects on soil organic matter by analytical pyrolysis. Proceedings book of the 3rd International Meeting of Fire Effects on Soil

Properties (FESP). Ed., A. Vieira, A. Bento Gonçalves, Guimaraes (Portugal) ISBN: 978-989-97214-0-1.

E. Díaz-Martínez, E. Rebolada, A.M.M. Soares (2011). Fortificaciones vitrificadas protohistóricas en España. "Actas do VI Simpósio sobre Mineração e Metalurgia Históricas no Sudoeste Europeu (Vila Velha de Ródão, 18-20 June 2010) 81-87.

F. Geirinhas, M. Gaspar, J.C. Senna-Martinez, E. Figueiredo, M.F. Araújo, R.J.C. Silva (2011) Copper isotopes on artifacts from Fraga dos Corvos First Bronze Age habitat site and nearby Cu occurrences: an approach on metal provenance. Actas del Quinto Congreso Internacional sobre minería y metalurgia Históricas en el Suroeste Europeu, Ed., J.M. Mata-Perelló, L. Torro I Abat, M.N. Fuentes Prieto, Co-Ed., A.N. Campo, O. Pucha Riart, SeDPGYM, 177-184. ISBN: 978 99910 1 790 6.

A.P. Gonçalves, A.M.M. Soares, A.C. Silva, L. Berrocal-Rangel (2011) – Stone Beads from Late Bronze Age and Early Iron Age Settlements from South-Western Portugal: Analyses by X-Ray Diffraction. Proceedings of the 37th International Symposium on Archaeometry (13th-16th May 2008, Siena, Italy). Part 2, 227-231.

F. Grassa, G. Capasso, P.M. Carreira, M.R. Carvalho, J.M. Marques, M. Antunes da Silva (2011) Helium isotopes distribution in NW Iberian península: evidences of local neotectonic activity. Central European Geology. Acta Geologica Hungarica. Proceedings Isotope Workshop XI (ESIR), Budapest, Hungary, Ed. Attila Demény & Elmér Pal-Molnár. Vol 54 (1-2). 104. ISSN 1788-2281.

J.M. Marques, P.M. Carreira, J. Espinha Marques, H.I. Chaminé, P.E. Fonseca, F.A. Monteiro Santos, H.G.M. Eggemkamp, J. Teixeira (2011) A methodology for the assessment of low-temperature geothermal systems (N-Portugal): the "eyes" of geosciences. Livro de Comunicações 8º Seminário Sobre Águas Subterrâneas. Ed. APRH. 89-93

J.M. Marques, P.M. Carreira, H.G.M. Eggemkamp, M. Antunes da Silva (2011) Strontium isotopic ( $^{87}\text{Sr}/^{86}\text{Sr}$ ) and geochemical signatures of  $\text{CO}_2$ -rich thermal mineral waters (N-Portugal). Central European Geology. Acta Geologica Hungarica. Proceedings Isotope Workshop XI (ESIR), Budapest, Hungary, Ed. Attila Demény & Elmér Pal-Molnár. Vol 54 (1-2). 141. ISSN 1788-2281.

E. Figueiredo, M.F. Araújo, R.J.C. Silva (2011). A ponta de lança da gruta da nascente do Algarinho (Penela) no contexto da metalurgia do Bronze Final, in Actas do Encontro Internacional sobre Ciência e Novas Tecnologias aplicadas à Arqueologia na Villa Romana do Rabaçal, Penela, Terras de Sicó, Portugal, Câmara Municipal de Penela, p.41-49 (ISBN 978-989-95800-7-7).

## Communications

### Oral

A. Cruces, J. C. Quaresma, M. C. Freitas, C. Andrade, T. Ferreira, M. F. Araújo (2011) Evidências geológicas e arqueológicas para a transição climática entre o Período Quente Romano e o "Período das Trevas" no SW alentejano (Portugal). IV Jornadas do Quaternário, Coimbra, 9-10 December, 16.

E. Figueiredo (2011) Copper and tin for artefact production: issues around bronze composition and production in Late Bronze Age Central Portugal. L'Étain dans l'Occident Ancient, Toulouse (France) 14-16 September.

J.C. Senna-Martinez, E. Figueiredo, M.F. Araújo, R.J.C. Silva, P. Valério, J.L. Inês Vaz (2011) Metalurgia e Sociedade no Mundo Baiões-Santa Luzia: resultados do Projecto METABRONZE. Conferencias na Sociedade de Geografia, Lisbon, 2 March.

P. Valério, R.J.C. Silva, T. Ricou, M. Fátima Araújo, A.M. Monge Soares (2011) Metais dos Hipogeus do Bronze Pleno da Horta do Folgão (Serpa, Portugal). Estudo Arqueometalúrgico. IX Congresso Ibérico de Arqueometria, Lisbon, 26-28 October, 72.

J.M.M. Martins, A.M. Martín, P.J.C. Portela, A.M.M. Soares (2011) Improving the radiocarbon dating of marine shells from Canary Islands towards the construction of reliable and accurate chronologies. Radiocarbon and Archaeology, 6th International Symposium, Pafos, Cyprus, 10-15 April.

A.M.M. Soares, A.R. Pereira, J.M.M. Martins, P.J. Portela (2011) Radiocarbon dating of aeolianite formation. IV Jornadas do Quaternário, Coimbra, 9-10 December, 16.

### Poster

J.M. De la Rosa, F.J. González-Vila, J.A. González-Pérez, F. Fatela, M.F. Araújo (2011) Cambios Temporales en el Origen de la Materia Orgánica en las Marismas del Río Miño (NW Península Ibérica) Mediante Marcadores Lipídicos. VIII Congresso Ibérico de Geoquímica, Castelo Branco (Portugal), 24-28 September

J.M. De la Rosa, M.E. Varela, S.R. Faria, F.J. González-Vila, H. Knicker, M.F. Araújo, J.A. González-Pérez, J. J. Keizer (2011) Fast characterization of wildfire effects on soil organic matter by analytical pyrolysis. 25th International Meeting on Organic Geochemistry, Interlaken (Switzerland), 19-23 September.

E. Figueiredo, F. Lopes, M.F. Araújo, R.J.C. Silva, J.C. Senna-Martinez, E.V.P. Luís (2011) Os primeiros bronzes do território Português: uma primeira abordagem arqueometalúrgica a um conjunto de machados Bujões/Barcelos. IX Congresso Ibérico de Arqueometria, Lisboa, 26-28 October.

E. Figueiredo, M.F. Araújo, R.J.C. Silva, J.C. Senna-Martinez, J.L. Inês Vaz (2011) Artefactos

ornamentais: um estudo arqueometalúrgico de metais da Idade do Bronze do Centro de Portugal, IX Congresso Ibérico de Arqueometria, Lisbon, 26-28 October.

E. Figueiredo, M.F. Araújo, R.J.C. Silva, J.C. Senna-Martinez (2011) An archaeometallurgical study of Late Bronze Age ornamental artefacts from Western Iberian Peninsula, Non-destructive and microanalytical techniques in art and cultural heritage TECHNART 2011, Berlin (Germany), 26-29 April.

A.P. Gonçalves, J.L. Cardoso, M.J. Oliveira, P. Valério, A.M. Monge Soares (2011) Métodos instrumentais de análise na identificação da matéria mineral utilizada na manufatura de uma provável conta de colar do povoado fortificado calcolítico da Moita da Ladra (Vila Franca de Xira, Lisboa). IX Congresso Ibérico de Arqueometria, Lisboa, 26-28 October, 104.

J.A. González-Pérez, J.M. De la Rosa, H. Knicker, F.J. González-Vila, T. Boski (2011) Biomarkers along a Holocene sedimentary sequence from the Guadiana River estuarine area. 25<sup>th</sup> International Meeting on Organic Geochemistry, Interlaken (Switzerland), 19-23 September.

J.A. González-Pérez, J.M. De la Rosa, H. Knicker, F.J. González-Vila (2011) Evolution of organic matter in lignite-containing sediments under different environmental conditions. Analytical pyrolysis (Py-

GC/MS) proxy. 25<sup>th</sup> International Meeting on Organic Geochemistry, Interlaken (Switzerland), 19-23 September.

B. Pereira de Oliveira, J.M. de la Rosa, A.Z. Miller, A. Dionísio, T. Silveira, M.A. Sequeira Braga (2011) Origem dos filmes negros sobre património construído. Diversos olhares. IX Congresso Ibérico de Arqueometria, Lisbon, 26-28 October.

F. Pereira, R.J.C. Silva, A.M.M. Soares, M.F. Araújo (2011) Estudo arqueometalúrgico de artefactos provenientes do Castro de Vila Nova de São Pedro (Azambuja, Portugal). IX Congresso Ibérico de Arqueometria, Lisbon, 26 - 28 de October.

## Thesis

### MSc

Catarina Pontes Fernandes Carmelo de Matos (2011) Environmental aspects associated with the use of geothermal resources: high vs. low enthalpies. MSc thesis in Mining and Geological Engineering, Instituto Superior Técnico, Universidade Técnica de Lisboa, December 12<sup>th</sup>.

Filipa Isabel Peralta da Silva Pereira (2011) Archaeometallurgical study of artefacts from Castro de Vila Nova de São Pedro (Ajambuja, Portugal). MSc thesis in Conservation and Restoration, Universidade Nova de Lisboa, Monte de Caparica, October 19<sup>th</sup>.

## Inorganic and Organometallic Chemistry

### Journals

E. Di Santo, M. Santos, M.C. Michelini, J. Marçalo, N. Russo, J.K. Gibson, Gas-Phase Reactions of the Bare Th<sup>2+</sup> and U<sup>2+</sup> Ions with Small Alkanes, CH<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>, and C<sub>3</sub>H<sub>8</sub>: Experimental and Theoretical Study of Elementary Organoactinide Chemistry, *J. Am. Chem. Soc.* 133 (2011) 1955–1970.

P. X Rutkowski, M.C. Michelini, T.H. Bray, N. Russo, J. Marçalo, J.K. Gibson, Hydration of Gas-Phase Ytterbium Ion Complexes Studied by Experiment and Theory, *Theor. Chem. Acc.* 129 (2011) 575-592.

X. Wang, L. Andrews, D. Ma, L. Gagliardi, A.P. Gonçalves, C.C.L. Pereira, J. Marçalo, C. Godart, B. Villeroy, Infrared Spectra and Quantum Chemical Calculations of the Uranium-Carbon Molecules UC, CUC, UCH, and U(CC)<sub>2</sub>, *J. Chem. Phys.* 134 (2011) 244313/1-11.

C.C.L. Pereira, C.J. Marsden, J. Marçalo, J.K. Gibson, Actinide Sulfides in the Gas Phase: Experimental and Theoretical Studies of the Thermochemistry of AnS (An = Ac, Th, Pa, U, Np, Pu, Am and Cm), *Phys. Chem. Chem. Phys.* 13 (2011) 12940-12958.

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of 5f Electrons from Th to Cm, *Phys. Chem. Chem. Phys.* 13 (2011) 18322-18329.

J.B. Branco, G. Lopes, A.C. Ferreira, Catalytic Oxidation of Methane over KCl-LnCl<sub>3</sub> Eutectic Molten Salts, *Catal. Commun.* 12 (2011) 1425-1427.

A.C. Coelho, M. Nolasco, S.S. Balula, M.M. Antunes, C.C.L. Pereira, F.A. Almeida Paz, A.A. Valente, M. Pillinger, P. Ribeiro-Claro, J. Klinowski, I.S. Gonçalves, Chemistry and Catalytic Activity of Molybdenum(VI)-Pyrazolylpyridine Complexes in Olefin Epoxidation. Crystal Structures of Monomeric Dioxo, Dioxo- $\mu$ -oxo, and Oxodiperoxo Derivatives, *Inorg. Chem.* 50 (2011) 525–538.

P.J.A. Madeira, M. Faddoul, M.B. Afonso, P.D. Vaz, M.T. Fernandez, J.P. Leal, On the Way to Understand Antioxidants: Chromanol and Dimethoxyphenols Gas-phase Acidities, *J. Mass. Spectrom.* 46 (2011) 640–648.

R. Melo, J.P. Leal, M.L. Botelho, Radiolytic Degradation Mechanism of Gallic Acid and its End-products, *Rapid Commun. Mass Spectrom.* 25 (2011) 218–222.

### Conference Proceedings

M. Varela, J.P. Leal, MOODLE - A Way of Teaching in the 21st Century, *INTED2011 Proceedings*, L. Gómez Chova, D. Martí Belenguier, I. Candel Torres



(Eds.), International Association of Technology, Education and Development-IATED, Valencia, 2011.

S. Leal, J.P. Leal, H. Fernandes, A Blended-learning Approach to the Boyle-Mariotte Law, *Proceedings 1st Experiment@ International Conference*, Lisboa, 2011.

### Other publications

J.P. Leal, Chemical Elements: What's in a Name?, *Science* 334 (2011) 176-176.

B.J. Herold, A.A.S.C.M. Machado, J. Cardoso, J. Marçalo, J.A.L. Costa, M.C. Magalhães, M.H. Garcia, O. Pellegrino, O. Serra, R.B. Faria, R.T. Henriques, Hidretos Parentais, Nomenclatura Aditiva e Substitutiva... Serão Apenas Nomes Novos para Conceitos Velhos?, *Química (Boletim da Sociedade Portuguesa de Química)* 122 (2011) 49-53.

S.C. Leal, J.P. Leal, M.A.F. Faustino, A.M.S. Silva, A Química Orgânica no Ensino Secundário: A Percepção dos Alunos, *Química (Boletim da Sociedade Portuguesa de Química)* 122 (2011) 59-62.

J.P. Leal, Co-author of the texts of the Exhibition "A Química entre Nós...", Bayer Portugal/Comissão Nacional da UNESCO (2011).

### Patents

N. Pinhão, A. Janeco, J.B. Branco, Processo de Conversão de Metano e um Oxidante em Gás de Síntese e Hidrocarbonetos Utilizando um Plasma Não-Térmico, Assignee: Instituto Tecnológico e Nuclear (ITN), INPI (patent request number Pt-105078), 26-12-2011 (Request 1000034711 - in evaluation).

A. Boavida, J.B. Branco, J. Condeço, M. Gonçalves, T. Pardal, R. Fernandes, Processo para Conversão Eletroquímica Selectiva de Dióxido de Carbono, Assignee: OMNIDEA (AeroSpace Technology and Energy Systems) Lda., INPI (patent request number Pt-105566), 15-03-2011 (Process 3808 - in evaluation).

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C.J. Marsden, J. Marçalo, C.C.L. Pereira, J.K. Gibson,  $US_2^{2+}$  is not "thio-uranyl"!, *WATOC 2011- Ninth Triennial Congress of the World Association of Theoretical and Computational Chemists*, Santiago de Compostela, Spain, July 2011.

J. Marçalo, A.F. Lucena, C. Lourenço, B. Monteiro, L. Maria, J.M. Carretas, P. X Rutkowski, J.K. Gibson, Mass Spectrometry of Rare Earths—From Compound Characterization to Fundamental Gas-Phase Properties, *XXIV. Terrae Rarae 2011*, Karlsruhe, Germany, October 2011.

M.A. Antunes, J. Coutinho, L.C.J. Pereira, I.C. Santos, M. Mazzanti, J. Marçalo, M. Almeida, Mononuclear Uranium Complexes for Magnetic Materials, *General Workshop of the PICs Action on*

*Strongly Correlated Systems: From Intermetallics to Molecular Materials*, Sacavém, November 2011.

A. Ruivo, R. Rodrigues, L. Costa, R.C. Silva, A. Pires de Matos, Ruby Copper Thin Layers in Float Glass by Using Spray Pyrolysis or Ionic Exchange in Melted Copper Compounds, *Annual Meeting of the Society of Glass Technology*, Oxford, UK, September 2011.

A. Pires de Matos, C. Queiroz, F. Lopes, The 18th Century Arcana of William Stephens, *Annual Meeting of the Society of Glass Technology*, Oxford, UK, September 2011.

B.J. Herold, J.A. Costa, M.H. Garcia, R.T. Henriques, A. Machado, M.C. Magalhães, J. Marçalo, O. Pellegrino, Hidretos Parentais, Nomenclatura Aditiva e Substitutiva... Serão Apenas Nomes Novos para Conceitos Velhos?, *XXII Encontro Nacional da Sociedade Portuguesa de Química*, Braga, July 2011.

J.P. Leal, Compuquímica, *1º Encontro "Aqui há ciência...e palavras!"*, Almodovar, May 2011, invited talk.

M. Varela, J.P. Leal, MOODLE - A Way of Teaching in the 21st Century, *INTED 2011, The International Technology, Education and Development Conference*, Valencia, Spain, March 2011.

M. Varela, J.P. Leal, Second Life: A Fine Way to Spread Chemistry through the Internet, *EduLearn11*, Barcelona, Spain, July 2011.

S. Leal, J.P. Leal, Material Didático/Pedagógico para o Ensino da Química, *XXII Encontro Nacional da Sociedade Portuguesa de Química*, Braga, July 2011.

S. Leal, J.P. Leal, Production of Educational Material for the Teaching of Chemistry, *8th International Conference "Hands-on Science" (HSCI 2011)*, Ljubljana, Slovenia, September 2011.

S.C. Leal, J.P. Leal, H. Fernandes, A Blended-Learning Approach to the Boyle-Mariotte Law, *1st Experiment@ International Conference*, Lisboa, November 2011.

M.A. Antunes, J.T. Coutinho, L.C.J. Pereira, I.C. Santos, M. Mazzanti, J. Marçalo, M. Almeida, Mononuclear uranium complexes for magnetic materials, *Workshop on Strongly Correlated Electron and Complex Systems; From Intermetallics to Molecular Materials*, ITN, Sacavém, Portugal, 10–11 November 2011.

#### Poster

A.P. Gonçalves, A.F. Lucena, C.C.L. Pereira, J. Marçalo, J.K. Gibson, L. Andrews, Thorium and Uranium Carbide Cluster Cations in the Gas Phase, *41èmes Journées des Actinides*, Stará Lesná, Slovakia, April 2011.

A.F. Lucena, C.C.L. Pereira, C.J. Marsden, A.P. Gonçalves, J. Marçalo, J.K. Gibson, L. Andrews, Sulfuretos e Carbonetos de Tório em Fase Gasosa, *Ciência QB - 1º Encontro dos alunos de doutoramento do DQB - FCUL*, Lisboa, June 2011.

- C.C.L. Pereira, A.F. Lucena, C.J. Marsden, J. Marçalo, J.K. Gibson, Thorium and Uranium Polysulfides in the Gas Phase, *XXII Encontro Nacional da Sociedade Portuguesa de Química*, Braga, July 2011.
- A.F. Lucena, J.M. Carretas, J. Marçalo, P. X Rutkowski, J.K. Gibson, Questioning the Effective Charge of Uranyl,  $\text{UO}_2^{2+}$ , by ESI/QITMS, *XXII Encontro Nacional da Sociedade Portuguesa de Química*, Braga, July 2011.
- B. Monteiro, C. Lourenço, J.M. Carretas, J. Marçalo, N. Zorz, L. Berthon, Coordination Study of a New Tetradentate N-Donor Ligand by Lanthanide(III) and Americium(III) Ions, *XXII Encontro Nacional da Sociedade Portuguesa de Química*, Braga, July 2011.
- C. Lourenço, M.C. Oliveira, M. Santos, J. Marçalo, J.K. Gibson, The Gas-Phase Thermochemistry of Tantalum Monoxide and Dioxide, *XXII Encontro Nacional da Sociedade Portuguesa de Química*, Braga, July 2011.
- L. Maria, I.C. Santos, A. Cruz, J. Marçalo, A.M. Martins, Synthesis and Characterization of  $d^{0f^n}$  Metal Complexes Based on a New Trans-N,N'-Bis(Phenolate)-Cyclam Ligand, *EuCOMC XIX - XIX EuCheMS Conference on Organometallic Chemistry*, Toulouse, France, July 2011.
- E. Mora, L. Maria, I.C. Santos, J.M. Carretas, J. Marçalo, B. Biswas, J. Pécaut, M. Mazzanti, New Diamine Bis-Phenolate Thorium(IV) and Uranium(IV) Complexes, *XXII Encontro Nacional da Sociedade Portuguesa de Química*, Braga, July 2011.
- J. Marçalo, L. Maria, I.C. Santos, A. Cruz, A.M. Martins, New  $d^{0f^n}$  Metal Halide Complexes Supported by a Trans-N,N'-bis(phenolate) Cyclam Ligand, *XXII Encontro Nacional da Sociedade Portuguesa de Química*, Braga, July 2011.
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- A.C. Ferreira, G. Lopes, A.P. Gonçalves, J.B. Branco, Catalytic Reduction of  $\text{N}_2\text{O}$  by  $\text{CH}_4$  using Lanthanide Chloride Molten Salts, *XXII Encontro Nacional da Sociedade Portuguesa de Química*, Braga, July 2011.
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- R.C. Santos, A.L. Teixeira, J.P. Leal, A.O. Falcão, J.A. Martinho Simões, ThermInfo: Collecting, Retrieving, and Estimating Reliable Thermochemical Data, *XXII Encontro Nacional da Sociedade Portuguesa de Química*, Braga, July 2011.
- S. Leal, J.P. Leal, Produção de Materiais Didáctico-Pedagógicos para o Ensino da Química, *Ciência QB - 1º Encontro dos alunos de doutoramento do DQB - FCUL*, Lisboa, June 2011.
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## Radiopharmaceutical Sciences

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L. R. Goethals, I. Santos, V. Caveliers, A. Paulo, F. De Geeter, L. Gano, C. Fernandes, T. Lahoutte, Rapid hepatic clearance of (99m)Tc-TMEOP: a new candidate for myocardial perfusion imaging, *Contrast Media Mol. Imaging* 6 (2011) 178-188.

S. Gama, F. Mendes, F. Marques, I. C. Santos, M. F. Carvalho, I. Correia, J. C. Pessoa, I. Santos, A. Paulo, Copper(II) complexes with tridentate pyrazole-based ligands: synthesis, characterization, DNA cleavage activity and cytotoxicity, *J. Inorg. Biochem.* 105 (2011) 637-644.



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- C. Francisco, S. Gama, F. Mendes, F. Marques, I. C. Santos, A. Paulo, I. Santos, J. Coimbra, E. Gabano, M. Ravera, Pt(II) complexes with bidentate and tridentate pyrazolyl-containing chelators: synthesis, structural characterization and biological studies, *Dalton Trans.* 40 (2011) 5781-5792.
- C. Moura, L. Gano, I. C. Santos, I. Santos, A. Paulo,  $^{99m}\text{Tc}^{\text{I}}/\text{Re}^{\text{I}}$  tricarbonyl complexes with tridentate cysteamine based Ligands: synthesis, characterization and in vitro/in vivo evaluation, *Eur. J. Inorg. Chem.* (2011) 5405-5413.
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A. Capelo, L. Areias, S. Marques, L. Gano, S. Chaves, M. A. Esteves, M. A. Santos. A New Tripodal Hydroxypyrimidone Sequestering Agent. Acta of the XXII International Symposia on Metal Complexes – ISMEC 2011 June 13-16, 2011, Gardini Naxos, Italy.

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M. Morais, João D. G. Correia, Isabel Santos, Nanocompounds for Specific Targeting of Sentinel Lymph Node, EU COST D38 Final Meeting, Keble College, Oxford, UK, September 12-15<sup>th</sup>, 2011.

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F. Silva, C. Fernandes, M. P. C. Campello, L. Gano, P. Raposinho, A. Paulo, I. Santos, PEGylated DOTA-NAPamide derivative for in vivo targeting of Melanoma, World Molecular Imaging Congress, San Diego (USA), Sep. 2011.

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#### Poster

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