CURRICULUM VITAE

Address: working

Dr. Héctor Pesenti
Assistant Professor and Coordinator of Master Science Program
Materials Institute - IMPT
Facultad de Ingeniería, Universidad Austral de Chile
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Second address:
Universita degli Studi di Trento
Dipartimento di Ingegneria dei Materiali e Tecnologie Industriali
XRD Laboratory
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Education:

Secondary school

Qualification	Technician in Machines and Tools
City/State	Copiapo - Chile
Year of beginning	1986 year of end 1991

- ***Graduate Degree***

Major	Graduate in Engineering Science
Minor	Graduate in Metallurgy Engineering (especility extractive)
Name of University	University of Atacama
City	Copiapó - Chile
Year of beginning	1995 Year of end 2001
Grade	Graduate in Engineering Science

Masters Degree

Title	Master in Metallurgy Engineering

Name of school	Università Degli Studi di Udine - Italia
Date of beginning	Octubre 2002, date of end, Abril 2004

- ***Doctorate Degree***

Degree	Research Doctorate in Materials Engineering (Dottore di ricerca in Ingegneria di Materiali)
Name of University	University of Trento
City/State	Trento - Italia
Date of beginning	Octubre 2003, date of end Abril 2008

Language skills

Italian	Acceptable
English	Acceptable
Spanish	Mother Tongue - Acceptable

IT knowledge

Informatic Tools:
Common: Windows, Linux, Office (Word, Excel, etc.), LyX, Adobe, Corel, Nero, etc.
Mathermatic: Wolfram MATHEMATICA, OriginLab, MATLAB, DERIVE 6, MAPLE 9.5, MATHCAD, ETC.
Compilators, web desig, etc.: LabView, Fortran, Pascal, Dreamweaver, Flash, etc.
Program and specific code: Topas, Search match (X'Pert, MDI Jade, etc.), Imagen J, MarqX, PM2K, Maud, MDI JPowd, etc.

Analysis instrumental and data interpretations:

- Diffractometros: Rigaku (Max III y PMG HV), D5000 Siemens, Thermo ARL X'Tra, Panalytical X'Pert texture, Huber Goniometer, etc.
- Rietveld method
- Spectroscopy: FT-IR, Raman, fluorescence, absorption.
- Thermal Analysis
- SEM and ESEM
- TEM
- Testing Machine, etc.
- Crystallography and Mineralogy

Sinthesis and Processes (macro, micro and nanostructure)

- Sputtering, CVD
- Mechanical Milling and Alloying
- Spark Plasma sintering and other plasma process
- Stamping and Drawing
- Rolling: Cold and Hot (texture)
- Electrophoretic deposition, etc.
- Botton up and top dawn process for nanostructured materials

Professional experience:

Present position

Company	Materials Institute, Faculty of Engineering, University Austral of Chile, Chile
Field of activity	Courses taught: Materials Science and Engineering, Thermodynamic, Analysis of Phases.
Research activities	Materials Science and Engineering and Instrumental characterization.
Position	Assistant Professor and Postgradute coordinator.
Date of beginning	01/09/2011
Date of end	to the present day.

Previous positons

(1)

Company	Department of Materials Engineering Faculty of Engineering, University of Concepción, Chile
Field of activity	Courses taught: Biomaterials, Qualitative and Quantitative phases analyses, Solid phases Diffusion and Thermodynamic.
Research activities	Materials Science and Engineering.
Location of employment	University of Concepcion, Edmundo Larenas 270, Chile.
Date of beginning	01/01/2008
Date of end	31/07/2011

(2)

Company	Comisión Chilena de Energía Nuclear (Chilean Commission of Nuclear Energy, CCHEN), Santiago, Chile.
Position	Researcher
Location of employment	Nuclear Center la Reina, nueva Bilbao 12500, Las Condes
Date of beginning	01/01/2008
Date of end	31/01/2008
Main acquired skills	Improvement of methodology of laboratory and XRD quantitative and qualitative processes for fuel cycle and radioactive waste characterization. Nuclear fuel research: study microestructural of U-Mo for research reactors, texture, swelling in ternary transformation diffution (U-Mo-Al), etc .

(2)

Company	University of Trento, Italy.
Position	Doctorate Student.
Location of employment	Facultaty of Engineering, Department of Engineering of Materials and Industrial Technology.
Date of beginning	10/2004
Date of end	04/2008

Main acquired skills	The knowledge of Science and Engineering of the Materials were used to form the research project titled “Re-engineering of natural Materials for biomedical applications”. The high tech instrumental used, in the characterization of the materials, was a great support. The XRD was one of the most important tools to determine and quantify the phases in the solid materials. Further, the diffraction profile analysis was of paramount importance to obtain the structural data, and the physical parameters of polycrystalline materials to nanometric level. The studies of calcite, gypsum, cuprite, biological Apatite and phosphoric-Silicon sand have permitted known the main effects in the microstructure that produce the high mechanical deformation. So of this way, it is possible to predict the behavior of the solid in the synthesis of biomaterials, and subsequently, they do not cause problems in the normal develop of the cells. Spark plasma sintering, conventional sintering, glass foam formation, and mechanical milling were used for make the different experimental samples of this project. TEM, ESEM, FT-IR, thermal analysis and XRD were applied, and the obtained diagrams were interpreted for quantify the different physical-chemical parameters.

(3)

Company	Color Glass SpA., Glass-Ceramic Industry
Position	Engineering Support
Location of employment	Zona Industriale, Novaledo (TN), Italia.
Date of beginning	04/2004
Date of end	11/2004
Main acquired skills	Optimization of the performance of the grinding plant and improvement of the control of granulometry of the glass-ceramic powder.

(4)

Company	Acciaieria Trentina and University of Udine, Italy.
Position	Master Student
Location of employment	Zona Industriale, Borgo Valsugana (TN), Italia.
Date of beginning	04/2003
Date of end	12/2003
Main acquired skills	Fundamental propose was the control of non-Metallic inclusion in the steel. The project was in two steps, in the firth step, thermodynamical balance and complementary literature were used for address the problem. The second part, sampling and instrumental analysis were used for determine the main inconvenience in every step of the processes, principally, quantification by XRD (Riedvelt Method) and fluoresces. In Conclusion, high agitation of the liquid metal and excess aluminum involved in the deoxidation stage were optimized to reduce non-metallic inclusions. Finally, “Shewhart” card and a statistic models based in the chemical composition were performed to identify the steel castings out-range in the LF stage.

(5)

Company	CAP Aceros, Campañia Siderúrgica Huachipato, Talcahuano, Chile.
Position	Thesis of graduate.
Location of employment	Center for the Quality and Metallurgical Development.

Date of beginning	08/2002.
Date of end	11/2001.
Main acquired skills	Formability Diagrams of Steel for Deep Drawing were performed. Further, the anisotropy was evaluated by different methodologies; among they texture by XRD, magnetostriction and others mechanical destructive methods. ASTM A 568/A568M-98 specification was attained. The microstructure control in the process of annealing is very important to obtain a grain "Pankeke" and so was possible to attain an improvement of the anisotropy. In conclusion, the customers were able reduce the non-conforming products, in the deep drawing process and/or the metal stamping processes.

Publications in peer reviewed journals and Conferences

A. Gallegos, C. Carrasco, C. Camurri and **H. Pesenti**, "*Study of mayor variables for the establishment of electrolytic plasma at low powder*", Revista Facultad de Ingeniería Universidad de Antioquia, Issue 65 pages: 7-15, 2012.

H. Pesenti, Matteo Leoni, Antonella Motta and Paolo Scardi, "*Natural Apatite from Geological Hydrothermal deposit for Biological and Medical Application*", Submitted.

R.V.Mangalaraja, S.Ananthakumar, M.Paulraj, **H. Pesenti**, Marta López, Carlos P.Camurri, Loreto A. Barcos, Ricardo E. Avila, "*Electrical and thermal characterization of Sm^{3+} doped ceria electrolytes synthesized by combustion technique*", Journal of Alloys and Compounds, Vol. 510, Issue 1, Pages 134-140.

H. Pesenti, M. Leoni, A. Motta & P. Scardi, "Re-engineering of fossils for reconstructive surgery", Journal Biomaterials Applications, Vol. 25, Issue 1, Pages 445-467, 2011.

J. Lisboa, J. Marín, M. Barrera, y **H. Pesenti**, "*Fabricación de placas combustibles monolíticas con aleación Uranio-Molibdeno para uso en reactores nucleares de investigación*", Revista Latino-Americana de Metalurgia y Materiales, S1 (2), paginas 665-674, 2009.

H. Pesenti, M. Leoni, P. Scardi, "*XRD line profile analysis of calcite powders produced by high energy milling*", Zeitschrift fur Kristallographie, pages 143-150, 2008.

K. Sipos, J. Martinez, N. Burgos, **H. Pesenti**, "*Steel for deep drawing: manufacture, characterization, microstructure and texture", Revista de Metalurgia*, Vol. 41, Nº 1, Págs. 58-63, 2005.

Z. Correa, **H. Pesenti**, A. Zúñiga, C. Garfias, "Lily Of The Incas as a Potential Starch Source for Biobased Materials",3rd International Conference on Biodegradable and Biobased Polymers (BIOPOL-2011), 29-31 August 2011, at ECPM, University of Strasbourg, France.

L. Olivares, J. Marin, J. Lisboa and **H. Pesenti**; "Powder Production of Uranium – Molybdenum - Metal Alloys Applying Hydride - Dehydride Methodology". 30th RERTR 2008 International Meeting on Reduced Enrichment for Research and Test Reactors Washington, D.C. USA from October 5-9, 2008.

J. Lisboa, J. Marin, M. Barrera, **H. Pesenti**; "Fabricación de Placas Combustibles Monolíticas con Aleación Uranio-Molibdeno para uso en Reactores Nucleares de Investigación" (Manufacture of monolithical fuel plates of U-Mo for Nuclear Reactor Research) X IBEROMET Colombia, Cartagena de Indias, 13-17 de Octubre 2008

H. Pesenti, M. Leoni, A. Motta & P. Scardi, "Biocompatibles Glass-Ceramics for Hard Tissue Application", presented at the 1st TICME (Advances in Polymers, Composites and Biomaterials), Trento, December 16-19, 2007.

H. Pesenti, M. Leoni, G. De Giudici, P. Scardi, "XRD line profile analysis of calcite powders produced by high energy milling", Size-Strain V Diffraction Analysis of the Microstructure of Materials Germany, Congress-Centre Garmisch-Partenkirchen, October 7-9, 2007.

Research projects

Synthesis of the Termoelectrical powder by Plasma Arc, DID S2012-49, Universidad Austral de Chile, Resercher.

Development and Innovation for the productive processes: Support for medium and littek company in the Region of the Ríos-Chile, FIC12-107, Resercher.

Effect of new processing methods of Salmon on multilayer PET and PP polymers fo metallic containers: Composition, degradation and recycling, Fondecyt Regular-2013, Co-Research.

Re-engineering of natural Fiber for Technological Applications, IMPT-2012, Researcher.

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Research Activity and Interesting Areas

Materials Science Research

- X-Ray Diffraction and crystallography applications: quantitative and qualitative methods, Scardi & Leoni research Group, University of Trento-IMPT.
- Materials surface modifications by Plasmas discharge, IMPT-Grupo de mecanica de fractura, UNCOMA-Argentina.
- Ceramic Powder synthesis by Plasma Arc.

Materials engineering research

- Synthesis of ceramic and metallic nanoalloys powders
- Electroforetic deposition of ceramic and alloys.
- Natural ceramics for new technological applications: siliclastic and carbonate natural ceramics.
- Multifunctinal Natural fiber

Seminars and courses

- Course de "Elementos de Protección Radiológica Operacional, CEPRO" (Radiation Protection and the Safety of Radiation Sources), 13 to 24 de October 2008, Comisión Chilena de Energía Nuclear, Chile.
- Course de "Esposizione a Radiazioni Ionizzanti" (Safety of Radiation Sources), Università degli Studi di Trento, May 2007, Italy.
- VII summer School "P. Giordano Orsini" caratterizzazione microstrutturale dei Materiali per l'ingegneria (Microstructural characterization of engineering materials), Università degli Studi di Trento, June 2006, Italy
- Applications of the Synchrotron radiation to the study of thin films and Nanostructured Materials, Università degli Studi di Trento, June 2005, Italy.
- XRD techniques, Prof. Paolo Scardi, doctoral school, Università degli Studi di Trento, Italy.
- Neutrón Diffraction, Dr. Antonio Cervellino, Neutrón Diffraction Group - ETH Zurich and Paul Scherrer Institute, 2007.
- Powder Metallurgy, Prof. Alberto Molinari, doctoral school, Università degli Studi di Trento, Italy.
- Advanced Thermodynamic, Prof. Claudio Della Volpe, doctoral school, Università degli Studi di Trento, Italy.
- Tissue-Biomaterials, Prof. Antonella Motta, doctoral school, Università degli Studi di Trento, Italy.
- Hybrid Macromolecular Materials, doctoral school, Prof. Luca Fambri, Università degli Studi di Trento, Italy.
- Coating to improve the corrosion and wear behaviour, Rossi, Deflorian, Pellizari, Strafelini, , Università degli Studi di Trento, Italy.

- Surface analysis techniques for the evaluation of materials degradation, Deflorian, Rossi, Università degli Studi di Trento, Italy.
- High temperature phenomena in materials science, Prof. Richi Raj, University of Colorado, 2005.
- Scanning Electron Microscopy, Prof. Stefano Gialanella, Università degli Studi di Trento, 2005, Italy.
- Nanostructurated Materials, Prof. Dirè, Soraru and Leoni, doctoral school, Università degli Studi di Trento, 2006, Italia.
- An Introduction to Bayesian, Prof. D. S. Sivia, ISIS Pulsed Neutron & Muon Source, Rutherford Appleton Laboratory Chilton-UK, 2006.
- Advanced Materials, Prof. R. L. Snyder, Georgia Institute of Technology, School of materials Science and Engineering, Atlanta, USA, 2006
- Crystallization Kinetic Modelling, Prof. E. J. Mittemeijer, Max Planck Institute for Metals Research, 2005.
- Materials deformation: elasto-plastic modelling, Dr. Udo Welzel, Max Planck Institute for Metals Research, 2006.
- Siderurgy, Master School, Prof. Romaus, Master School, Università degli studi di Padova (Padua), Italy
- Casting Technology, Master School, Danieli United Wear, Udine, Italy.
- Rolling Mill Technology, Master School, Danieli United Wear, Udine, Italy.
- Furnace Technology, Master School, Danieli United Wear, Udine, Italy.
- Phase diagrams and Metallography, Master School, Prof. Romaus and Dr. Davalà, Master School, 2003, Università degli Studi di Padova, Italy.
- Foundry, Prof. Alberto Molinari, Master School, Università degli Studi di Udine, Italy.
- Casting Modelling in foundry, Università degli Studi di Padova, 2003, Italy.
- Statistic Control of the quality, Master School, Università degli Studi d'Udine, 2004, Italy.
- Powder Metallurgy, Dr. Flavio Miani, Master School, Laser Sintering, Stereo-lithography, Centro di Ricerca Metallurgica, Amaro, Udine, Italy.
- Stainless steel, Acciaieria Valbruna, Vicenza, Italy.
- Corrosion I, II, Prof. Maurizio Magrini, Dipartimento di Principi e Impianti di Ingegneria Chimica "I. Sorgato", Univerisity of Padua, Italy.
- Cold rolling and deep drawing, Departamento de Investigación y Desarrollo Metalúrgico, Dr. Konstantin Sipos, Compañía Siderúrgica Huachipato, Talcahuano 2001, Chile. Etc.

Personal Information

Name	**Hector Gonzalo**
Surname	**Pesenti Perez**
Date of birth	25th March 1971
Gender	Male
Place of birth	Copiapó
State of birth	Chile
Nacionality	Italian and Chilean
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