

CARLOS HUMBERTO BORZI

PERSONAL DATA

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LANGUAGES

Spanish, English, Italian.

Basics of: French, Portuguese and German.

STUDIES

Academic Degrees:

Doctor in Physics, UNLP 1982 (with honours).

Licenciado en Física, UNLP and Instituto Balseiro (Centro Atómico Bariloche) 1979.

Active Member of The New York Academy of Sciences (NYAS).

Fellowships:

- Undergraduate at Instituto Balseiro, under the sponsorship of CNEA, 1974/78.
- Research at Instituto Multidisciplinario de Biología Celular (IMBICE), under the sponsorship of CONICET, 1979/80.
- Research at Instituto de Física de Líquidos y Sistemas Biológicos (IFLYSIB), under the sponsorship of CONICET, 1981/82.
- Postgraduate Studies at Baker Laboratory at Cornell University, Ithaca NY, under the sponsorship of CONICET, 1982/83.

Areas of Expertise:

- Thermodynamics and Statistical Mechanics.
- Theory of Fluids.
- Microemulsions oriented to enhanced oil recovery.
- Mathematical Models for Structures and Processes.
- Reaction-Diffusion Processes.
- Material Sciences.
- Vitrification and ceramisation of Dangerous Wastes.
- Environmental Managing Systems (ISO 14000 Series).

PROFESIONAL LIFE:

Since 2000: Head of Environmental Consultants at “S.W.Hand – E.M.S.”. **Goals:** I advised an Iron Foundry and a Company of Environmental Services for the Implantation of their Environmental Managing Systems. Both Companies are performing the trial period (generating records) in order to get ready for the Certification ISO 14001.

Since 1998: Head of Environmental Consultants for QA Service SA. **Goals:** I drove an Enterprise of Industrial Waste Management and another one dedicated to Industrial Biochemistry, to get the ISO 14001 Certificate (The certificates were released by TÜV CERT, Germany). I prepared the Environmental Managing Manuals, the Procedures and the Operative Instructions. I prepared and offered the course: “Methodology for the Implantation of an Environmental Managing System” in Nov/98, Set/99 and Oct/00.

Since 1995: Manager of Technology in a Consulting Company (MONDITEC SA). **Goals:** I put together and led a multidisciplinary group for the development of techniques of Microbially Enhanced Oil Recovery and Bioremediation of contaminated soils. I adjusted different technologies for managing dangerous wastes. I patented a procedure to transform certain dangerous wastes into environmentally friendly construction materials (Dir. Nac. Prop. Ind. Acta # 0333760). I prepared several Environmental Impact Reports.

1990-1995: Head of the Department of Toxic Wastes at the Argentinean Atomic Energy Commission (CNEA). **Goals:** I put together and led a multidisciplinary group to study Vitrification and ceramisation of toxic waste techniques. I developed numerical methods for failure detection in Nuclear Reactors (CANDU type). I represented CNEA at the National Committee for the agreement with the ISO 14000 Series in Argentina. I prepared several Environmental Impact Reports for CNEA activities.

1988-1990: Researcher and Assistant Professor at Chemistry Department, State University of New York at Albany, NY-USA. **Goals:** I implemented a numerical method for the representation of functions of several variables in terms of functions of one single variable following Kolmogorov’s solution to Hilbert’s 13th problem (ref. 15).

1984-1990: Associate Member of the International Centre for Theoretical Physics (ICTP), Trieste-Italia. **Goals:** I developed a theory for the Transport on Non-Electrolytes through the Cell Membrane.

1982-1987: Assistant Researcher at Baker Lab, Cornell University, Ithaca, NY-USA and Courant Institute, NYU, New York, NY-USA. **Goals:** I investigated several scientific and technological problems. The results were published in international journals. The main research field was the Theory of Complex Fluids.

1979-1982: Scientific researcher and professor of Physics at UNLP. **Goals:** I got my Doctorate in Physics and published several scientific articles.

TEACHING EXPERIENCE

Professor of: "Implementación de Sistemas de Gestión Ambiental", QAS SA, 1988; SAFYBI 1999, UNBA 2000.

Profesor Visitante del Departamento de Física de la Universidad Nacional de Mar del Plata (UNMDP), 1993-1997.

Visiting Professor at Chemistry Department SUNY, Albany NY, 1988-1989.

Visiting Professor at Instituto Balseiro Bariloche ("Phase Transitions"), 1987-1988.

Professor of Physics at Departamento de Física de la UNMDP, 1986-1987.

Assistant Professor at Courant Institute for Mathematical Sciences, New York University, NY, NY, 1986.

Tutor of Physics at Cornell University, Ithaca, NY, 1985.

Tutor of Physics at Departamento de Física de la UNLP, 1979-1982.

Helper at Instituto Balseiro, 1975-1979.

Thesis Direction:

"Formación y Estabilidad de Estructuras Disipativas en Sistemas de Reacción-Difusión", by Dr. Gonzalo G. Izus with honours 7-10-96 at Depto. de Física de la UNMDP.

SCIENTIFIC PUBLICATIONS

- 1- "The Membrane Proteins as the Transport Medium for Polar Non-Electrolytes" C.Borzi and H.A.Massaldi.
Proceedings of the 3rd International Meeting on Polymer Science and Technology. pp:90 (1981).
- 2- "Thermodynamics of Osmotic Flow with Cavitation in Semipermeable Porous Membranes" H.A.Massaldi and C.Borzi.
Journal of Physical Chemistry 85:1746 (1981).
- 3- "Transporte de no-electrolitos a través de la membrana celular. Modelo fisicoquímico". C. Borzi.
Doctorate Thesis: UNLP 1982. with honours.
- 4- "Non-Ideal Phenomena in Osmotic Flow Through Selective Membranes" H. Massaldi and C.Borzi.
Journal of Membrane Science 12:87 (1982).
- 5- "The Dynamics of the Stress Stage of Osmotic Haemolysis" C.Borzi, A.Fuchs and H.A.Massaldi.
Journal of Biomechanics 16(2): 103 (1983).
- 6- "Enfoque Fenomenológico de los Procesos Irreversibles" C.Borzi.
Cuadernos de Camat 17:131 (1984).
- 7- "The Physicochemical Mechanism of Mediated Transport" H.A.Massaldi and C.Borzi.
Journal of Theoretical Biology 106:537 (1984).
- 8- "Fluctuations of the Cell Size in a Model Microemulsion" C.Borzi.
Journal of Chemical Physics 82(8): 3817 (1984).
- 9- "The Non-Critical Binodal at a Critical Endpoint" C.Borzi.
Physica 133A:302 (1985).
- 10- "Interfacial Phase Transitions of Microemulsions" C.Borzi, R.Lipowsky and B.Widom.
Journal of the Chemical Society Faraday Transactions II 82:1739 (1986).
- 11- "Phase Equilibria in a Model Microemulsion" P.Balbuena, C.Borzi and B.Widom.
Physica 138A:55 (1986).

12- "Structure and Tension of the Interfaces in a Model Microemulsion" C.Borzi, R.Lipowsky and B.Widom.
Capitulo VII de "Microemulsions" ed. H.Rosano. M.Dekker Pub. Co. New York (1987).

13- "The Direct Correlation Function of a One Dimensional Lattice Gas" C.Borzi, G.Ord and J.K.Percus.
Journal of Statistical Physics 46(1-2):51 (1987).

14- "Some Travelling Wave Reaction-Diffusion Problems" C.Borzi, H.L.Frisch, R.Gianotti and J.K.Percus.
Radiation Effects Defects in Solids 111+112(1-2):119 (1989).

15- "Representation of Functions of Several Variables in Terms of Functions of One Variable" H.L.Frisch, C.Borzi, G.Ord and J.K.Percus.
Physical Review Letters 63(9):927 (1989).

16- "Inverse Solution for Some Travelling Wave Reaction-Diffusion Problems" C.Borzi, H.L.Frisch, R.Gianotti and J.K.Percus.
Journal of Physics A23: 4823 (1991).

17- "Pattern Formation in Reaction-Diffusion Systems with Finite Geometry" C.Borzi and H.Wio.
Physics Letters A 160: 247 (1991).

18- "Theoretical Prediction of the Garter Spring Positions along the Channels of CANDU Reactors" C.Borzi.
Proceedings of Canadian Nuclear Society, 13:102 (1992).

19- "Pattern Formation in an Activator-Inhibitor Model: Effect of Albedo Boundary conditions on a Finite Geometry" H.Wio, G.Izus, O.Ramirez, R.Deza and C.Borzi,
Journal of Physics A:26,4281 (1993).

20- "Diffusion Controlled growth of Hydrogen Clusters in Metals" B.Nowakowski, H.L.Frisch, A.Mijovilovich and C.Borzi.
Annalen der Physik 2:695 (1993).

21- "Global Stability of Stationary Patterns in Reaction-Diffusion Systems" G.Izus, O.Ramirez, R.Deza, H.Wio, D.Zanette and C.Borzi.
Physical Review E 52(1):129 (1995).

22- "La Vitroceramizacion de Residuos Peligrosos y su Alternativa Economica" C.Borzi.
Gerencia Ambiental Nro 27,pag: 518 (1996).

23- "Global Analysis of Pattern Selection and Bifurcations in Monoestable Reaction Diffusion Systems" G.Izus, R.Deza, H.Wio & C.Borzi.
Physica A 237:135-149 (1997).

24- "Effect of Partially Reflecting Boundary Conditions on the Decay of Metastable States in an Activator-Inhibitor System" G.Izus, R.Deza, H.Wio & C.Borzi.
Physical Review E 55: 4005-4011 (1997).

25- "Boundary Effects on the Dynamics of Monostable reaction-Diffusion Systems" B.von Haeften, G.Izus, R.Deza and C.Borzi.
Physics Letters A 236: 403-408 (1997).

26- "Structural Stability of Stationary patterns in a Bistable Reaction-Diffusion System"
G.Izus, J.Reyes de Rueda and C.Borzi.
Journal of Statistical Physics 90 (1/2): 103-117 (1998).

27- "Critical Slowing Down on the Dynamics of Bistable Reaction-Diffusion Systems in the Neighbourhood of the Critical Point" J.M.Reyes de Rueda, G.Izus and C.H.Borzi.
Journal of Statistical Physics, 97(3/4):803-809 (1999).

Thecnical Reports and Patents

- 1- "Informe Preliminar sobre la localización de separadores en la Central Nuclear de Embalse", C.Borzi. CNEA DIC/90.
- 2- "Primeras impresiones sobre la evaluación metalográfica de hidruros en aleaciones de Zr". C.Borzi, CNEA ENE/91.
- 3- "Informe de actualización sobre la localización de los separadores en la Central Nuclear de Embalse". C.Borzi, CNEA ABR/91.
- 4- "Localización de los separadores a lo largo de los canales combustibles en Reactores CANDU". C.Borzi, SUCAN-CNEA DIC/91.
- 5- "Assessment for the reliability of the predictions of code EXTEPOT regarding spacer location probabilities", C.Borzi and C.Espinel. AECL Report #121155 FEB/92.
- 6- "Gestión Final de Residuos Peligrosos (con Anexo Técnico)" C.Borzi, S.Fabbri y M.Botbol, Informe CNEA-GAID, 1995.
- 7- "Recuperación Asistida de Petróleo" C.Borzi, Informe CNEA-GAID, 1995.
- 8- "Procedimiento para Gestión Final de Cenizas de Incineradores y Otros Residuos especiales e irreuperables de cualquier origen y procedencia". C.H. Borzi, M.A.Mondino, D. Sánchez, M. Botbol, V. Marino y J.Cesari. Dirección Nacional De la Propiedad Industrial, Acta N° 333760, 1995.
- 9- "Estudio de Impacto Ambiental de MOLDIFER SRL", Secretaría de Política Ambiental de la Pcia. De Bs.As., 1999
- 10- "Seminario Internacional de Diagnóstico y Propuestas sobre el Medio Ambiente Argentino", UNBA Octubre de 1996. I was the Chairman of Solid and Semisolid Waste Treatment".

Recent Informative Publications:

"Lograr una Etica Ambiental", C.Borzi. Calidad Empresaria, vol 11: 66 (1998).

"Sistemas de Gestión Ambiental", C.Borzi. Revista Interamericana de Ambiente y Saneamiento, vol 3: 16-17 (1998).