

Curriculum Vitæ

1 Personal information



Name: IÑAKI SILANES CRISTÓBAL

Birth date: June 11, 1977

Address: Valdenoja 54, 2nd A, 39012 Santander (Cantabria)

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2 Academic training

- **Ph.D.:** Computational Chemistry (2006)
Title: *Ethylene Polymerization by Group IV Transition Metal Metallocenes*
Center: UPV-EHU Chemistry Faculty at Donostia
Areas of knowledge: Quantum Chemistry, Physical Chemistry
Doctoral program: Theoretical and Computational Chemistry
Courses taken:
“Inter-university doctoral course on Theoretical and Computational Chemistry”
Valencia, Spain, January 22 - February 17, 2001
- **University Degree:** Chemistry (2000)
Center: UPV-EHU Chemistry Faculty at Donostia
Area of knowledge: Macromolecular Chemistry

3 Present professional situation

- **Position:** Computer resources manager
Center/Organization: Instituto de Hidráulica Ambiental de Cantabria (IH)
Address: c/Isabel Torres 15, E-39011 Santander, Cantabria
Telephone: +34 942 201616

4 Former scientific activities

- **Position:** Researcher under contract (Nov 2008 – Apr 2010)
Center/Organization: Instituto de Física de Cantabria (IFCA) / CSIC
Supervisor: Isabel Campos
- **Position:** JAE-Doc post-doctoral researcher (Mar 2008 – Oct 2008)
Organization: Donostia International Physics Center (DIPC)
Group head: Andrés Arnau

- **Position:** Researcher under contract (Jan 2007 – Mar 2008)
Organization: Donostia International Physics Center (DIPC)
Group head: Andrés Arnau
- **Position:** Research group member (Jan–Dec 2006)
Organization: UPV-EHU
Department: Polymer Science and Technology
Group head: Jesus M. Ugalde
- **Position:** Project-bound scholar (May–Dec 2005)
Organization: UPV-EHU
Project: Bottom-up approximation in nanotechnology. Two examples: nanospheres and monodimensional nanowires.
Department: Polymer Science and Technology
Director: Jesus M. Ugalde
- **Position:** Pre-doctoral scholar (2000–2004)
Organization: Basque Government - Eusko Jaurlaritza
Thesis director: Jesus M. Ugalde
- **Position:** Collaboration scholar (1998–2000)
Organization: UPV-EHU Chemistry Faculty at Donostia
Supervisor: Jesus M. Ugalde

5 Languages

- Spanish:** Native.
Basque: Native. *Euskararen Gaitasun Agiria* (EGA)
English: High level. *Cambridge Advanced Exam* (CAE)

6 Supported research projects

- **Title:** “Transition metal clusters. Electronic screening”
Supporting organization: UPV-EHU
Period: 1998–2000
Main researcher: Jesus M. Ugalde

7 Publications

7.1 Articles

17. *Tunable Quantum Dot Arrays Formed from Self-Assembled Metal-Organic Networks*
F. Klappenberger, D. Kühne, W. Krenner, I. Silanes, A. Arnau, F.J. García de Abajo, S. Klyatskaya, M. Ruben, J.V. Barth
Phys. Rev. Lett. **2011** *106*, 026802
16. *Dichotomous Array of Chiral Quantum Corrals by a Self-Assembled Nanoporous Kagomé Network*

- F. Klappenberger, D. Kühne, W. Krenner, I. Silanes, A. Arnau, F.J. García de Abajo, S. Klyatskaya, M. Ruben, J.V. Barth
Nano Lett. **2009** *9*(10), 3509–3514
15. *Balancing Intermolecular and Molecule-Substrate Interactions in Supramolecular Assemblies*
D. G. de Oteyza, I. Silanes, M. Ruiz-Osés, E. Barrena, B. P. Doyle, A. Arnau, H. Dosch, Y. Wakayama, J.E. Ortega
Adv. Funct. Mater. **2009** *19*(2), 259–264
 14. *Crystallographic and electronic structure of self-assembled DIP monolayers on Au(111) substrates*
D. G. de Oteyza, E. Barrena, M. Ruiz-Osés, I. Silanes, B.P. Doyle, J.E. Ortega, A. Arnau, H. Dosch and Y. Wakayama
J. Phys. Chem. C **2008**, *112*(18), 7168–7172
 13. *Metal-organic honeycomb nanomeshes with tunable cavity size*
U. Schlickum, R. Decker, F. Klappenberger, G. Zoppellaro, S. Klyatskaya, M. Ruben, I. Silanes, A. Arnau, K. Kern, H. Brune and J.V. Barth
Nano Lett. **2007**, *7*(12), 3813–3817
 12. *Spectroscopic fingerprints of amine and imide functional groups in self-assembled monolayers*
M. Ruiz-Osés, T. Kampen, N. González-Lakunza, I. Silanes, P.M. Schmidt-Weber, A. Gourdon, A. Arnau, K. Horn and J.E. Ortega
ChemPhysChem **2007**, *8*(11), 1722–1726
 11. *Counterintuitive effects of the electron correlation in the first excited $^1\Sigma_g^+$ state of the hydrogen molecule*
J. Wang, J.M. Mercero, I. Silanes and J.M. Ugalde
Europhys. Lett. **2006**, *76*(5), 808–814
 10. *Self-assembly of heterogeneous supramolecular structures with uniaxial anisotropy*
M. Ruiz-Osés, N. González-Lakunza, I. Silanes, A. Gourdon, A. Arnau and J.E. Ortega
J. Phys. Chem. B **2006**, *110*(51), 25573–25577
 9. *Comparison of Ti, Zr and Hf as cations for metallocene-catalyzed olefin polymerization*
I. Silanes, J.M. Mercero and J.M. Ugalde
Organometallics **2006**, *25*(19), 4483–4490
 8. *A joint experimental and theoretical study of cation- π interactions: Multiple-decker sandwich complexes of ferrocene with alkali metal ions (Li^+ , Na^+ , Rb^+ , Cs^+)*
A.H. Ilkhechi, J.M. Mercero, I. Silanes, M. Bolte, M. Scheibitz, H-W. Lerner, J.M. Ugalde and M. Wagner
J. Am. Chem. Soc. **2005**, *127*, 10656–10666
 7. *Comparative study of various mechanisms for metallocene-catalyzed α -olefin polymerization*
I. Silanes and J.M. Ugalde
Organometallics **2005**, *24*(13), 3233–3246.
 6. *Minimal dipole charge for a dipole-bound dianion*
I. Silanes, H.J.J. van Dam and J.M. Ugalde
Mol. Phys. **2003**, *101*, 2529–2532
 5. *Electron correlation studies by means of electron-pair density functions*
E. Valderrama, X. Fradera, I. Silanes, J.M. Ugalde and R.J. Boyd
Reviews in Modern Quantum Chemistry: A celebration of the contributions of Robert G. Parr.
Ed. K.D. Sen, World Scientific, Singapore, **2002**
 4. *Atomic charge states in a weakly coupled plasma environment*
I. Silanes and J.M. Mercero and J.M. Ugalde
Phys. Rev. E **2002**, *66*, 026408
 3. *The ferrocene-lithium cation complex in the gas phase*
A. Irigoras, J.M. Mercero, I. Silanes and J.M. Ugalde
J. Am. Chem. Soc. **2002**, *123*, 5040–5043

2. *Cusp conditions for non-Coulombic interactions*
I. Silanes, J.M. Ugalde and R.J. Boyd
J. Mol. Struct. (Theochem) **2000**, 527, 27–33
1. *Reactivity of Co^+ ($^3F, ^5F$), Ni^+ ($^2D, ^4F$), and Cu^+ ($^1S, ^3D$): reaction of Co^+ , Ni^+ and Cu^+ with water*
A. Irigoras, O. Elizalde, I. Silanes, J.E. Fowler and J.M. Ugalde
J. Am. Chem. Soc. **2000**, 122(1), 114–122

7.2 Books

1. *Ethylene polymerization by group IV transition metal metallocenes*
I. Silanes (ISBN 978-84-8373-926-6)
UPV/EHU. Argitarapen Zerbitzua, Leioa (Spain), **2007**

8 International congresses

8.1 Talks

- 4^a Reunión Plenaria de la Red Española de e-Ciencia
“Esquema de metodología para transferir el oleaje desde su generación hasta la costa”
Barcelona (Spain), December 02, 2010–December 02, 2011
- ECOSS-25. 25th European Conference on Surface Science
“Surface effects in self-assembled polyphenyls”
Liverpool (UK), July 29, 2008
- Nanotron 2007
“Molecular self-assembly for nanoscale electronics”
Donostia (Spain), May 10, 2007

8.2 Posters

- TNT2007: Trends in NanoTechnology
“Self-assembly of NC-Ph₃-CN molecules on Ag(111): Formation of 2D hydrogen-bonded and metal-organic networks”
Donostia (Spain), September 3–7, 2007
- ESPA2006. Electronic Structure: Principles and Applications
“Comparison of Ti, Zr and Hf as cations for metallocene-catalyzed olefin polymerization”
Santiago de Compostela (Spain), July 18–21, 2006
- 3rd NanoSpain Workshop
“Supramolecular self-assembly on flat and vicinal Au(111)”
Pamplona (Spain), March 20–23, 2006
- TeoBio-05. Theoretical Biophysics Symposium
“Formation of C–C bonds in the coordination sphere of Zirconium”
Örebro (Sweden), June 29–July 1, 2005
- ESPA2004. Electronic Structure: Principles and Applications
“Pitfalls of the Cossée-Arlman mechanism for olefin polymerization”
Valladolid (Spain), September 15–17, 2004
- ESPA2002. Electronic Structure: Principles and Applications
“Critical Conditions for true Dipole-Bound Dianions”
Sevilla (Spain), September 11–13, 2002

- Electron densities and electron distributions workshop
“*Cusp conditions for non-Coulombic interactions*”
Donostia (Spain), April 27–28, 2000

8.3 Assistance

- OGF25. 4th EGEE User Forum / 25th OpenGridForum Event.
Catania (Italy), March 2–6, 2009
- SMS2006. Spanish Molecular Electronics Symposium.
Donostia (Spain), March 24, 2006
- Albert Einstein’s *Annus Mirabilis* Congress
Donostia (Spain), September 5–8, 2005
- Theoretical Biophysics Symposium
Donostia (Spain), March 5–7, 2003
- One Day Workshop On Physical Chemistry
Donostia (Spain), July 5, 2001
- ESPA2000. Electronic Structure: Prediction and Applications
Donostia (Spain), October 4–6, 2000

9 Membership in Thesis Tribunals

- “*Computational study of the Effect of Aluminum Cation on Aromatic Amino Acids*”
Julen Larrucea Corchero
Donostia (Spain), September 25, 2009

10 Stays in foreign centers

- **Center:** CCLRC Daresbury Laboratory, Daresbury (UK)
Starting date: September 2001
Duration: 13 weeks
Subject: Acquisition of expertise in the use of Quantum Chemistry software

11 Computer science

- User-level knowledge on **Windows** and **Unix** platforms, and system administrator level experience in **Linux** environments.
- **Programming:** Python, zsh/bash/(t)csh, Perl, L^AT_EX, Fortran, HTML, PHP
- Utility programs:
 - **Scientific computation** (Gaussian, SIESTA, GAMESS)
 - **Office related** (OpenOffice.org, KOffice, MS Office)
 - **2D and 3D data plotting** (Grace, GNUPlot)
 - **Calculus and algebra** (Mathematica)
 - **Web development** (Quanta+, Bluefish, Macromedia Flash)

- **Manipulation of 2D images** (GIMP, Photoshop)
- **Firewalling** (Firestarter, iptables)
- Courses
 - **Hands-on tutorial on the SIESTA code** - 32h, DIPC (2007)
 - **Animación de páginas Web con Flash** - 18h, Aula Gaztekutxa (2005)
 - **Tratamiento de Imágenes con Photoshop** - 12h, Aula Gaztekutxa (2004)
 - **Taller Informático** - 12h, Aula Gaztekutxa (2004)
 - **Practical Computing For Scientists** - 50h, DIPC (2001)

12 Teaching experience

- Substitution in 3rd course *Physical Chemistry* (theory, 2005)
- Substitution in 5th course *Physical Chemistry* (computer practice, 2005-2006)

13 Other

- **B1 driving license**
- *Kutxa Fin de Carrera* prize for my Degree (2000)
- *Premio Extraordinario de Bachillerato* price at High school (1995)
- Member of Eusko Ikaskuntza
- Guide in the yearly *Open Doors Days*, taking place at the UPV-EHU Chemistry Faculty at Donostia (2002-2005)
- **Norma ISO 14000** course (20h), UPV-EHU Chemistry Faculty at Donostia (2002)
- **Photography** course (14 h), Aula Gaztekutxa (2003)
- **Photographic improvement** course (14h), Aula Gaztekutxa (2004)
- 2800+ editions in Wikipedia (User:Isilanes)