

Dr. Hiram Isaac Beltrán Conde

Departamento de Ciencias Naturales

Resumen Curricular

Estudió la licenciatura en Ingeniería Química Industrial con especialidad en Ingeniería Ambiental de 1993 a 1998 en la Escuela Superior de Ingeniería Química e Industrias Extractivas (ESIQIE) del IPN. Realizó su trabajo doctoral de 1998 a 2002 en el Departamento de Química del CINVESTAV, donde estudió la incorporación de los elementos boro y estaño en estructuras moleculares con importancia biológica ya que contienen fragmentos derivados de aminoácidos, aminoalcoholes y aminofenoles. Debido a esta investigación le fue otorgado el Premio Arturo Rosenblueth 2003 por la mejor Tesis Doctoral en el área de Ciencias Exactas y Naturales del CINVESTAV. En el 2003 ingresó como posdoctorante al Programa de Ingeniería Molecular del Instituto Mexicano del Petróleo (IMP) realizando proyectos relacionados con la Química Aplicada a nivel industrial donde permaneció hasta el 2005. En ese mismo año ingresó como Investigador Asociado en el Instituto de Química de la UNAM donde desarrolló estudios de estructura-actividad de compuestos organometálicos de estaño. A partir de agosto del 2006 es Profesor-Investigador Titular en el Departamento de Ciencias Naturales, de la División de Ciencias Naturales e Ingeniería (DCNI) de la UAM, Unidad Cuajimalpa.

Su producción científica cuenta con 56 artículos de investigación y 2 de divulgación, 6 solicitudes de patente nacionales y 4 capítulos de libros, un capítulo incluido en la enciclopedia Comprehensive Heterocyclic Chemistry y otro capítulo mas en el libro Tin Chemistry: Fundamentals, Frontiers and Applications (Wiley) Ed. M. Gielen, A.G. Davies, K. Panell, E. Tiekink. Hasta el momento ha dirigido 9 tesis de licenciatura, 1 proyecto terminal de licenciatura, 1 tesina de especialización, 4 de maestría y 2 de doctorado. Se encuentra dirigiendo 5 tesis de doctorado, 4 de maestría y 1 proyecto terminal de licenciatura, todo lo anterior en codirección con personal académico de la DCNI.

Área de interés/experiencia en investigación

Los temas de interés científico están relacionados con el diseño de moléculas de importancia en procesos biológicos, además de estudios de estructura y actividad de moléculas orgánicas, organometálicas e inorgánicas.

Líneas de investigación:

Ingeniería y diseño de moléculas y materiales.

Optimización de reacciones y procesos químicos.

Química verde.

Química aplicada.

Publicaciones en Revistas

56. M. Pons-Jiménez, R. Cisneros-Dévora, R. Gómez-Balderas, R. Cartas-Rosado, R. Oviedo-Roa, H. I. Beltrán, E. Buenrostro-González, J. García-Martínez, L. S. Zamudio-Rivera, J. M. Martínez-Magadán (2014) Supramolecular pairing among heteroaromatic compounds and the cationic surfactant C12TAC. *Fuel* 149 174–183. DOI

55. R. Mellado-Vázquez, M. García-Hernández, A. López-Marure, P. Y. López-Camacho, A. J. Morales-Ramírez, H. I. Beltrán-Conde (2014) Sol-Gel Synthesis and Antioxidant Properties of Yttrium Oxide Nanocrystallites Incorporating P-123. *Materials* 7 (9) 6768-6778. DOI

54. M. Pons-Jiménez, R. Cartas-Rosado, J. M. Martínez-Magadán, R. Oviedo-Roa, R. Cisneros-Dévora, H. I. Beltrán, L. S. Zamudio-Rivera (2014) Theoretical and experimental insights on the true impact of C12TAC cationic surfactant in enhanced oil recovery for heavy oil carbonate reservoirs. *Colloids and Surfaces A: Physicochem. Eng. Aspects*. 455 76-91. DOI

53. N. Rivera, P. Y. López, M. Rojas, T. I. Fortoul, D. Y. Reynada, A. J. Reyes, E. Rivera, H. I. Beltrán, F. Malagón (2014) Antimalarial efficacy, cytotoxicity, and genotoxicity of methanolic stem bark extract from *Hintonia latiflora* in a *Plasmodium yoelii yoelii* lethal murine malaria model. *Parasitol. Res.* 113 (4) 1529-1536. DOI

52. N. González-Rivas, E. Cuevas-Yañez, V. Barba, H. I. Beltrán, H. Reyes (2013) Rectangular bimetallic diorganotin macrocycle obtained through a combination of metallosupramolecular chemistry with imine bond formation. *Inorganic Chemistry Communications* 37 110–113. DOI

51. S. Loera-Serna, M.L. López-Núñez, R. Lopez-simeon, J. Flores, H. I. Beltrán (2013) Alkaline One Pot Metathesis Reaction to give [Cu₃(BTC)₂] MOF at r.t. with Free Cu Coordination Sites and its Hydrogen Uptake Enhancement. *RSC Advances* 3 (27) 10962–10972. DOI

50. V. Y. Mena-Cervantes, R. Hernández-Altamirano, E. Buenrostro-González, H. I. Beltrán, L. S. Zamudio-Rivera (2013) Development of oxazolidines derived from polyisobutylene succinimides as multifunctional stabilizers of asphaltenes in oil industry. *Fuel* 110 293–301. DOI

49. R. Hernández-Altamirano, V. Y. Mena-Cervantes, T. E. Chávez-Miyauchi, D. A. Nieto-Álvarez, M. A. Domínguez-Aguilar, L. S. Zamudio-Rivera, V. Barba, F. J. Fernández-Perrino, S. Pérez-Miranda, H. I. Beltrán (2013) New bis-di-organotin compounds derived from aminoacid-imine-hexadentate ligands. Multifunctional evaluation as corrosion inhibitors, antibacterials and asphaltene dispersants/inhibitors. *Polyhedron* 52 301–307. DOI

48. C. A. Flores Sandoval, R. I. Cuevas Hernández, J. Correa Basurto, H. I. Beltrán Conde, I. I. Padilla Martínez, J. N. Farfán García, B. Noguera Torres, J. G. Trujillo Ferrara (2013) Synthesis and theoretic calculations of benzoxazoles and docking studies of their interactions with triosephosphate isomerase. *Medicinal Chemistry Research* 22 (6) 2768–2777. DOI
47. E. Gutierrez-Meza, R. Noria, G. Granados, V. Gomez-Vidales, J.Z. Ramirez, H. I. Beltrán, J. Peon (2012) Photophysics of a Cis Axially Disubstituted Macrocyclic: Rapid Intersystem Crossing in a Tin(IV) Phthalocyanine with a Half-Domed Geometry. *Journal of Physical Chemistry B* 116 (48) 14107-14114. DOI
46. S. Loera-Serna, M.A. Oliver-Tolentino, M. L. Lopez-Nunez, A. Santana-Cruz, A. Guzman-Vargas, R. Cabrera-Sierra, H. I. Beltrán, J. Flores (2012) Electrochemical behavior of [Cu-3(BTC)(2)] metal-organic framework: The effect of the method of synthesis. *Journal of Alloys and Compounds* 540 113-120. DOI
45. C. A. Flores-Sandoval, F. Godinez-Salomon, J.M. Hallen-Lopez, H. I. Beltrán, R. Hernandez-Altamirano, D.A. Nieto-Alvarez, L.S. Zamudio-Rivera (2012) A DFT Study of Strecker Intermediates as Scavengers for Cyanides. *Asian Journal of Chemistry* 24 (10) 4243-4249.
44. R. Lopez-simeon, J. Campos-Teran, H. I. Beltrán, M. Hernandez-Guerrero (2012) Free-lignin cellulose obtained from agar industry residues using a continuous and minimal solvent reaction/extraction methodology. *RSC Advances* 2 (32) 12286-12297. DOI
43. E. Torres, V. Marín, J. Aburto, H. I. Beltrán, K. Shirai, S. Villanueva, G. Sandoval (2012) Enzymatic Modification of Chitosan with Quercetin and Its Application As Antioxidant Edible Films. *Applied Biochemistry and Microbiology* 48 (2) 151-158. DOI
42. Salvador Ramos, Cristina Garza, Hiram I. Beltran, José Campos-Terán, Jesús Arenas-Alatorre, Rolando Castillo (2012) The cis-bis(decanoate)tin phthalocyanine/DPPC film at the air/water interface. *Journal of Colloid and Interface Science* 369 (1) 256-266. DOI
41. José Campos-Terán, Cristina Garza, Hiram I. Beltrán, Rolando Castillo (2012) Thin film formation at the air–water interface and on solid substrates of soluble axial substituted cis-bis-decanoate tin phthalocyanine. *Thin Solid Films* 520 (6) 2211-2219. DOI

40. Victor Barba, Jonathan Zaragoza, Herbert Höpfl, Norberto Farfán, Hiram I. Beltrán, Luis S. Zamudio-Rivera (2011) Use of bis-aminoalcohol benzoquinones and dihydroxybenzoquinones in the formation of mono and polymeric structures of diorganotin(IV) derivatives. *Journal of Organometallic Chemistry* 696 (10) 1949-1956. DOI
39. Horacio Reyes, Hiram I. Beltran, Ernesto Rivera-Becerril (2011) One pot synthesis of 2-phenylbenzoxazoles by potassium cyanide assisted reaction of o-aminophenols and benzaldehydes. *Tetrahedron Letters* 52 (2) 308-310. DOI
38. Violeta Y. Mena-Cervantes, Raul Hernandez-Altamirano, Eduardo Buenrostro-Gonzalez, Hiram I. Beltran, Luis S. Zamudio-Rivera (2011) Tin and Silicon Phthalocyanines Molecularly Engineered as Traceable Stabilizers of Asphaltenes. *Energy & Fuels* 25 (1) 224-231. DOI
37. J. S. Zugazagoitia, M. Maya, J. Peon, H. I. Beltrán (2010) Experimental determination of the two-photon absorption cross sections of Silicon and TinIV compounds. *Revista Mexicana de Física* 56 (2) 108-111. DOI
36. Raul Hernandez-Altamirano, Violeta Y. Mena-Cervantes, Sandra Perez-Miranda, Francisco J. Fernandez, Cesar Andres Flores-Sandoval, Victor Barba, Hiram I. Beltran, Luis S. Zamudio-Rivera (2010) Molecular design and QSAR study of low acute toxicity biocides with 4,4'-dimorpholyl-methane core obtained by microwave-assisted synthesis. *Green Chemistry* 12 1036-1048. DOI
35. Jimena Saucedo-Sugazagoitia, Carlos Damian-Zea, Mauricio Maya, Pedro Navarro, Hiram I. Beltran, Jorge Peon (2010) Excited-State Dynamics and Two-Photon Absorption Cross Sections of Fluorescent Diphenyl-Tin(IV) Derivatives with Schiff Bases: A Comparative Study of the Effect of Chelation from the Ultrafast to the Steady-State Time Scale. *Journal of Physical Chemistry A* 114 (2) 704-714. DOI
34. Rolando Luna-Garcia, Berenice M. Damian-Murillo, Victor Barba, Herbert Hopfl, Hiram I. Beltran, Luis S. Zamudio-Rivera (2009) Structure and conformational motion of seven-coordinate diorganotin(IV) complexes derived from salen and salan type ligands. *Journal of Organometallic Chemistry* 692 (24) 3965-3972. DOI
33. I. F. Hernandez-Ahuactzi, H. Hopfl, V. Barba, P. Roman-Bravo, L. S. Zamudio-Rivera and H. I. Beltran (2008) Pore-size tuning in double-pillared metal-organic frameworks containing cadmium clusters. *European Journal of Inorganic Chemistry* 2008 (17) 2746-2755. DOI

32. I. F. Hernandez-Ahuactzi, J. Cruz-Huerta, V. Barba, H. Hopfl, L. S. Zamudio-Rivera and H. I. Beltran (2008) Sequence of metal-organic oligomer-polymer exchange equilibria in solution: Supramolecular isomerism, self-assembly dynamics and carboxylate shift of di-n-butyltin cis-1,4-cyclohexanedicarboxylate. *European Journal of Inorganic Chemistry* 2008 (8) 1200-1204. DOI

31. B. Gomez-Zaleta, C. Gonzalez-De La Rosa, G. Perez-Hernandez, H. I. Beltran, F. Aparicio, A. Rojas-Hernandez and A. Rojo-Dominguez (2008) Molecular Speciation Effect on Docking and Drug Design. A Computational Study for Mangiferin, a Carbohydrate-Polyphenol Bioconjugate as a Test Case. *Journal of the Mexican Chemical Society* 52 (1) 78-87. DOI

30. E. Cerpa, F. J. Tenorio, M. Contreras, M. Villanueva, H. I. Beltran, T. Heine, K. J. Donald and G. Merino (2008) Pentadienyl complexes of alkali metals: Structure and bonding. *Organometallics* 27 (5) 827-833. DOI

29. G. Cendejas, C. A. Flores-Sandoval, N. Huitron, R. Herrera, L. S. Zamudio-Rivera, H. I. Beltran and F. Vazquez (2008) Theoretical and experimental studies of the initiator influence on the anionic ring opening polymerization of propylene oxide. *Journal of Molecular Structure* 879 (1-3) 40-52. DOI

28. Y. M. V. Rodriguez, H. I. Beltran, E. Vazquez-Labastida, C. Linares-Lopez and M. Salmon (2007) Synthesis and characterization of montmorillonite clays with modulable porosity induced with acids and superacids. *Journal of Materials Research* 22 (3) 788-800. DOI

27. J. A. Guevara-Salazar, M. Espinoza-Fonseca, H. I. Beltran, J. Correa-Basurto, D. Q. Zavala and J. G. Trujillo-Ferrara (2007) The electronic influence on the active site-directed inhibition of acetylcholinesterase by N-aryl-substituted succinimides. *Journal of the Mexican Chemical Society* 51 (4) 222-227. DOI

26. H. I. Beltran, C. Damian-Zea, S. Hernandez-Ortega, A. Nieto-Camacho and M. T. Ramirez-Apan (2007) Synthesis and characterization of di-phenyl-tin(IV)-salicyliden-ortho-aminophenols: Analysis of in vitro antitumor/antioxidant activities and molecular structures. *Journal of Inorganic Biochemistry* 101 (7) 1070-1085. DOI

25. V. Barba, E. Vega, H. Hopfl, L. S. Zamudio-Rivera, M. A. Dominguez-Aguilar, R. George-Tellez, F. Godinez-Salomon, J. M. Hallen-Lopez and H. I. Beltran (2007) A bis(di-n-butyltin)-quinone derivative

as a simultaneous chemo- and bioactive corrosion inhibitor. *European Journal of Inorganic Chemistry* 7 (2007) 927-930. DOI

24. G. Merino, H. I. Beltran and A. Vela (2006) Donor-acceptor heteroleptic open sandwiches. *Inorganic Chemistry* 45 (3) 1091-1095. DOI

23. V. Barba, R. Villamil, R. Luna, C. Godoy-Alcantar, H. Hopfl, H. I. Beltran, L. S. Zamudio-Rivera, R. Santillan and N. Farfan (2006) Boron macrocycles having a calix-like shape. Synthesis, characterization, X-ray analysis, and inclusion properties. *Inorganic Chemistry* 45 (6) 2553-2561. DOI

22. A. Abreu, S. J. Alas, H. I. Beltran, R. Santillan and N. Farfan (2006) Synthesis and characterization of boronates derived from non-symmetric amino-bis-phenols. *Journal of Organometallic Chemistry* 691 (3) 337-348. DOI

21. L. S. Zamudio-Rivera, R. George-Tellez, G. Lopez-Mendoza, A. Morales-Pacheco, E. Flores, H. Hopfl, V. Barba, F. J. Fernandez, N. Cabirol and H. I. Beltran (2005) Synthesis, characterization, biocide and toxicological activities of di-n-butyl- and diphenyl-tin(IV)-salicyliden-beta-amino alcohol derivatives. *Inorganic Chemistry* 44 (15) 5370-5378. DOI

20. J. L. Sosa-Sanchez, A. Sosa-Sanchez, N. Farfan, L. S. Zamudio-Rivera, G. Lopez-Mendoza, J. P. Flores and H. I. Beltran (2005) Novel phthalocyaninatobis(alkylcarboxylato) silicon(IV) compounds: NMR data and X-ray structures to study the spacing provided by long hydrocarbon tails that enhance their solubility. *Chemistry-A European Journal* 11 (14) 4263-4273. DOI

19. T. Mancilla, L. S. Zamudio-Rivera, Hiram, I. Beltran, R. Santillan and N. Farfan (2005) Synthesis and characterization of new (N -> B) phenyl substituted[N-benzyliminodiacetate-O,O',N]boranes. *Arkivoc* 366-376.

18. T. Mancilla, L. S. Zamudio-Rivera, H. I. Beltran, L. Carrillo and N. Farfan (2005) Synthesis and characterization of new 4-alkyl-2-arylmorpholin-2-ol hydrochlorides. *Synthetic Communications* 35 (3) 357-369. DOI

17. R. Luna-Garcia, B. M. Damian-Murillo, V. Barba, H. Hopfl, H. I. Beltran and L. S. Zamudio-Rivera (2005) Structural relationship between a host included chain of spirocyclic water hexamers and bulk water - the role of water clusters in self assembly and crystallization processes. *Chemical Communications* 44 5527-5529. DOI

16. F. Godinez-Salomon, J. M. Hallen-Lopez, H. Hopfl, A. Morales-Pacheco, H. I. Beltran and L. S. Zamudio-Rivera (2005) Strecker intermediates as non-pollutant scavengers for cyanides. *Green Chemistry* 7 (10) 716-720. DOI
15. Y. Duda, R. Govea-Rueda, M. Galicia, H. I. Beltran and L. S. Zamudio-Rivera (2005) Corrosion inhibitors: Design, performance, and computer simulations. *Journal of Physical Chemistry B* 109 (47) 22674-22684. DOI
14. H. I. Beltran, R. Esquivel, M. Lozada-Cassou, M. A. Dominguez-Aguilar, A. Sosa-Sanchez, J. L. Sosa-Sanchez, H. Hopfl, V. Barba, R. Luna-Garcia, N. Farfan and L. S. Zamudio-Rivera (2005) Nanocap-shaped tin phthalocyanines: Synthesis, characterization, and corrosion inhibition activity. *Chemistry-A European Journal* 11 (9) 2705-2715. DOI
13. G. Merino, M. A. Mendez-Rojas, H. I. Beltran, C. Corminboeuf, T. Heine and A. Vela (2004) Theoretical analysis of the smallest carbon cluster containing a planar tetracoordinate carbon. *Journal of the American Chemical Society* 126 (49) 16160-16169. DOI
12. N. Farfan, T. Mancilla, R. Santillan, A. Gutierrez, L. S. Zamudio-Rivera and H. I. Beltran (2004) Preference of di-n-butyltin(IV) compounds to build O center dot center dot center dot Sn bonds in fused rings with five-six members. *Journal of Organometallic Chemistry* 689 (22) 3481-3491. DOI
11. H. I. Beltran, R. Esquivel, A. Sosa-Sanchez, J. L. Sosa-Sanchez, H. Hopfl, V. Barba, N. Farfan, M. G. Garcia, O. Olivares-Xometl and L. S. Zamudio-Rivera (2004) Microwave assisted stereoselective synthesis of Cis-substituted Tin(IV) phthalocyanine dicarboxylates. Application as corrosion inhibitors. *Inorganic Chemistry* 43 (12) 3555-3557. DOI
10. V. Barba, H. Hopfl, N. Farfan, R. Santillan, H. I. Beltran and L. S. Zamudio-Rivera (2004) Boron-nitrogen macrocycles: a new generation of calix[3]arenes. *Chemical Communications* 24 2834-2835. DOI
9. T. Mancilla, L. S. Zamudio-Rivera, L. Carrillo, H. I. Beltran and N. Farfan (2003) Synthesis and characterization of new 2-(alkylamino)acetamides. *Arkivoc* 37-47.

8. H. I. Beltran, L. S. Zamudio-Rivera, T. Mancilla, R. Santillan and N. Farfan (2003) One-step preparation, structural assignment, and X-ray study of 2,2-di-n-butyl- and 2,2-diphenyl-6-aza-1,3-dioxo-2-stannabenzocyclononen-4-ones derived from amino acids. *Chemistry-A European Journal* 9 (10) 2291-2306. DOI

7. T. Mancilla, L. Carrillo, L. S. Zamudio-Rivera, H. I. Beltran and N. Farfan (2002) Synthesis and characterization of piperazine-2,6-diones. *Organic Preparations and Procedures International* 34 (1) 87-94. DOI

6. H. I. Beltran, L. S. Zamudio-Rivera, T. Mancilla, R. Santillan and N. Farfan (2002) X-ray analysis and structural characterization of 2-phenyl-6-aza-1,3-dioxo-2-borabenzocyclononenones. *Journal of Organometallic Chemistry* 657 (1-2) 194-204. DOI

5. H. I. Beltran, S. J. Alas, R. Santillan and N. Farfan (2002) Fixed stereochemical control in the synthesis of new mono- and disubstituted 2-phenyl-6-aza-1,3-dioxo-2-borabenzocyclononenones. *Canadian Journal of Chemistry* 80 (7) 801-812. DOI

4. G. Merino, M. A. Mendez-Rojas and H. I. Beltran (2001) Conductive polymers. New materials for the new millennium. *Educación Química* 12 (2) 75-78.

3. T. Mancilla, L. Carrillo, L. S. Zamudio-Rivera, H. I. Beltran and N. Farfan (2001) Synthesis and characterization of new 2-substituted isoindoline derivatives of alpha-amino acids. *Organic Preparations and Procedures International* 33 (4) 341-349. DOI

2. H. I. Beltran, A. Abreu, L. S. Zamudio-Rivera, T. Mancilla, R. Santillan and N. Farfan (2001) Synthesis and spectroscopy of N-(2-hydroxybenzyl)-alpha -amino acids. *Journal of the Mexican Chemical Society* 45 (4) 152-158.

1. J. Trujillo-Ferrara, R. Santillan, H. I. Beltran, N. Farfan and H. Hopfl (1999) H-1 and C-13 NMR spectra for a series of arylmaleamic acids, arylmaleimides, arylsuccinamic acids and arylsuccinimides. *Magnetic Resonance in Chemistry* 37 (9) 682-686. DOI

Memorias de Congreso

Capítulos en Libros

COMPREHENSIVE HETEROCYCLIC CHEMISTRY III (2008) Editorial Elsevier Ltd. Editors: Alan R. Katritzky, Christopher A. Ramsden, Eric F.V. Scriven, and Richard J.K. Taylor. Chapter: 1.10 - Three-membered Rings with One Boron Atom. Authors: Farfan, N; Beltran, HI. Volume: 1. Pages 513-537.

Comprehensive Heterocyclic Chemistry III-1.10 Three-membered rings with one boron atom

Tin Chemistry: Fundamentals, Frontiers, and Applications (2008) Wiley. Editors: Marcel Gielen, Alwyn G. Davies, Keith Pannell, and Edward Tiekink. ISBN: 978-0-470-51771-0. 752 pages. Chapter 4. Medicinal/Biocidal Applications of tin compounds and Environmental Aspects. Section: 4.6 Biological aspects of organotins: perspective in structural and molecular biology. Authors: Norberto Farfán, Hiram I. Beltrán, and Rosa Santillan. Pages: 482-496.

Tin Chemistry: Fundamentals, Frontiers, and Applications. Chapter 4. Section 4.6.

Molecular Systems: Theory and Modeling (2011) Editorial: Transworld Research Network. Editores: Federico Jiménez-Cruz y José Luis García-Gutiérrez. Chapter 9. Glycoconjugates: Advantages of conjugation analyzed fragment to fragment and determination of physicochemical properties useful for wide applications. Hiram I. Beltrán, Jose Campos-Terán, Felipe Aparicio, Arturo Rojo.

Obtención enzimática de ingredientes funcionales, compuestos bioactivos y nutraceuticos a partir de recursos vegetales y agorresiduos iberoamericanos (2012) Consejo Superior de Investigaciones Científicas (CSIC) España. Editores: Francisco José Plou Gasca y Georgina Coral Sandoval Fabián. Capítulo 2. APROVECHAMIENTO DE RESIDUOS AGROINDUSTRIALES: COMPOSICIÓN, MODIFICACIÓN ENZIMÁTICA Y EVALUACIÓN DE SUS POTENCIALES APLICACIONES. Autores: M. Beatriz Gómez-Patiño, Roxana López Simeón, Sergio Espinosa Domínguez, Maribel Hernández Guerrero, Daniel Arrieta-Baez, Hiram Isaac Beltrán, José Campos Terán, Dolores Reyes Duarte.