

# Carlos H. Borca, Ph.D. | Résumé

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## Computational Chemistry Researcher.....

Molecular Modeling for Biopharmaceutical Applications | Computationally-Aided Materials Design | Computational Chemistry  
Data-driven Molecular Design | Active & Deep Learning | Scientific Software Development | Biomacromolecular Simulation | Cloud Computing  
Academia & National Laboratories | Multidisciplinary Research | Publications & Presentations | Teaching & Outreach

## Experience

### Research.....

Princeton University - Princeton, NJ, USA | Adviser: Prof. Michael A. Webb 2020 - Present

- Developed deep learning models for data-driven synthesis of polymeric enzyme capsules
- Awarded \$10,000 in Azure cloud computing credits by the Microsoft Corporation and the Center for Statistics and Machine Learning

Georgia Institute of Technology - Atlanta, GA, USA | Adviser: Prof. C. David Sherrill 2017 - 2020

- Developed of theory and software to compute lattice energies of molecular crystals efficiently and accurately
- Generated benchmark-accuracy databases of lattice energies of molecular crystals
- Analyzed intermolecular interactions of phosphomolybdic acid models with organic polymeric semiconductors
- Modeled self-assembly of non-bonded polymers built by hexameric arrays of synthetic nucleobases

Northwestern University - Evanston, IL, USA | Collaborators: Dr. Martín A. Mosquera, Prof. Mark A. Ratner, and Prof. George C. Schatz 2015 - 2020

- Informed the design and optimization of light-harvesting and emitting iridium complexes with bulky quinolines
- Designed fragmentation schemes based on domain separation in density functional theory

Purdue University - West Lafayette, IN, USA | Adviser: Prof. Lyudmila V. Slipchenko 2012 - 2017

- Improved the efficiency of polarizable force fields for molecular dynamics by implementing multi-step algorithms
- Determined the melting temperature of ice modeled with the effective fragment potential method
- Collaborated in the computationally-aided mechanistic design of polymers with applications on pharmaceuticals
- Modeled crystallization inhibition properties of bile salts at atomistic scale
- Explored charge-transfer effects in carbon materials for supercapacitors via ground-state density functional theory
- Simulated the photochemical degradation process of isoprene carbonyl nitrates in the atmosphere

Lawrence Livermore National Laboratory - Livermore, CA, USA | Advisers: Dr. Alfredo A. Correa and Dr. Xavier I. Andrade 2015

- Implemented modular software to apply the Tkatchenko-Scheffler model for van der Waals interactions

Universidad Icesi - Cali, Colombia | Adviser: Prof. Carlos A. Arango 2011 - 2012

- Conducted atomistic molecular dynamics simulations of water absorbent materials based on chitosan

Universidad del Valle - Cali, Colombia | Adviser: Prof. Julio C. Arce 2007 - 2009

- Studied interactions of carbon nanotube/DNA hybrids with small molecules for chemical sensing applications

### Teaching.....

Graduate Teaching Assistant | Purdue University - West Lafayette, IN, USA 2012 - 2015

CHM 57900: Computational Chemistry - Spring 2015  
CHM 11100: General Chemistry - Fall 2012, Fall 2013, Fall 2014  
CHM 11500: General Chemistry - Spring 2013

Laboratory Lecturer | Universidad Icesi - Cali, Colombia 2009 - 2011

Physical Chemistry I - 2010-I, 2010-II, 2011-I  
Physical Chemistry II - 2010-II  
General Chemistry - 2009-II, 2010-I, 2010-II

### Mentoring.....

Postgraduate Mentor (1 Graduate and 1 Undergraduate) | Georgia Institute of Technology - Atlanta, GA, USA 2017 - 2020

Graduate Mentor (2 Undergraduates) | Purdue University - West Lafayette, IN, USA 2015 - 2017

## Outreach Education Programs and Initiatives

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ACS National Chemistry Week 2018 - Atlanta, GA, USA   Outreach Volunteer for the Georgia Section	2018
Interchange Program 2016 - West Lafayette, IN, USA   Theoretical and Computational Chemistry Science Club Instructor	2016
Clubes de Ciencia - Colombia 2015 - Puerto Triunfo, Antioquia, Colombia   Computational Chemistry Science Club Designer and Instructor	2015
Interchange Program 2015 - Medellín, Antioquia, Colombia   Chemistry and Biology Instructor	2015

## Education

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<b>Postdoctoral Research Associateship</b> Princeton University - Department of Chemical and Biological Engineering - Princeton, NJ, USA	2020 - Present
<b>Postdoctoral Fellowship</b> Georgia Institute of Technology - School of Chemistry and Biochemistry - Atlanta, GA, USA	2017 - 2020
<b>Ph.D. in Chemistry</b> Purdue University - Department of Chemistry - West Lafayette, IN, USA	2012 - 2017
<b>Applied Management Principles Program</b> Purdue University - Krannert School of Management - West Lafayette, IN, USA	2016
<b>Professional (5-Year) Degree in Chemistry</b>   Honors mention for meritorious research thesis Universidad del Valle - School of Natural and Exact Sciences - Cali, Colombia	2004 - 2009

## Professional Affiliations

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American Chemical Society (ACS) | Colombian Student Association at Purdue University (CSAP)  
Professional Chemists Council of Colombia (CPQ) | Jesuit Alumni Association of Cali, Colombia (A.S.I.A. Santiago de Cali)

## Languages

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Spanish:	Native speaker	
English:	Full professional proficiency	<i>Live and work in the United States since 2012</i>
Portuguese:	Limited working proficiency	

## Computer Skills

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OS:	Linux (Ubuntu, Red Hat, Fedora, CentOS, Cygwin), Windows (98, XP, Vista, 7, 8, 10), and MacOS (Catalina)
Cloud Computing:	Azure
Scientific programming:	Python (Spyder, Jupyter, Matplotlib, RDKit, OpenBabel, Scikit-Learn, TensorFlow, Keras), HTML5, C/C++
Chemistry:	CrystaLattE, LibEFP/EFPMD, GROMACS, LAMMPS, NAMD, PSI4, Q-Chem, Octopus, GAMESS, HyperChem, Gaussian, MOPAC, NWChem, VMD, IQmol, GaussView, Gabedit, Avogadro, Molden, PyMol, ChemBioOffice
Others:	TeX, GNUPlot, Origin, GitHub, TravisCI, CodeCov, LGTM, Bash, GIMP, Inkscape, LibreOffice

## Interests

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Aircraft, ship, and train models & simulation | Electronics repair & upgrade | LEGO® | Automobile mechanics

## Selected Honors and Awards

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Azure Cloud Computing Credits Award Princeton University's Center for Statistics and Machine Learning (CSML) - Princeton, NJ, USA	2020
<b>LLNL Students Poster Symposium Outstanding Accomplishment Award</b> Lawrence Livermore National Laboratory - Livermore, CA, USA	2015
Young Scientist and Innovator Scholarship of 2011 Administrative Department of Science, Technology, and Innovation of the Colombian Government (Colciencias) and Universidad Icesi - Cali, Colombia	2011

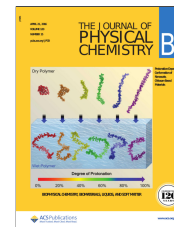
## Peer-reviewed Articles

### Published

18. Asem Alenaizan, **Carlos H. Borca**, Suneesh Karunakaran, Amy K. Kendall, Gerald J. Stubbs, Gary B. Schuster, C. David Sherrill, and Nicholas V. Hud. X-ray Fiber Diffraction and Computational Analyses of Stacked Hexads in Supramolecular Polymers: Insight into Self-Assembly in Water by Prospective Prebiotic Nucleobases. *Journal of the American Chemical Society*, 2021, 143, 16, pp 6079-6094. DOI: 10.1021/jacs.0c12010
17. Venecia R. Wilson, Naila A. Mugheirbi, Laura I. Mosquera-Giraldo, Dana Moseson, Daniel T. Smith, Diana Novo, **Carlos H. Borca**, Lyudmila V. Slipchenko, Kevin J. Edgar, Lynne S. Taylor. Interaction of Polymers with Enzalutamide Nanodroplets – Impact on Droplet Size and Induction Times. *Molecular Pharmaceutics*, 2021, 18, 3, 836–849. DOI: 10.1021/acs.molpharmaceut.0c00833
16. Martín A. Mosquera, Leighton O. Jones, **Carlos H. Borca**, Mark A. Ratner, and George C. Schatz. Domain Separated Density Functional Theory for Reaction Energy Barriers and Optical Excitations. *The Journal of Physical Chemistry A*, 2020, 124 (28) pp 5954–5962. DOI: 10.1021/acs.jpca.0c03596
15. Nicolas Tancogne-Dejean, Micael J. T. Oliveira, Xavier Andrade, Heiko Appel, **Carlos H. Borca**, Guillaume Le Breton, *et. al.* Octopus, a Computational Framework for Exploring Light-driven Phenomena and Quantum Dynamics in Extended and Finite Systems. *The Journal of Chemical Physics* 2020, 152 (12) 124119. DOI: 10.1063/1.5142502
14. **Carlos H. Borca**, Brandon W. Bakr, Lori A. Burns, and C. David Sherrill. CrystaLattE: Automated Computation of Lattice Energies of Organic Crystals Exploiting the Many-body Expansion to Achieve Dual-level Parallelism. *The Journal of Chemical Physics* 2019, 151 (14) 144103. DOI: 10.1063/1.5120520
13. Carlos A. Echeverry-Gonzalez, Carlos E. Puerto-Galvis, **Carlos H. Borca**, Martín A. Mosquera, Andrés F. Luis-Robles, and Vladimir V. Kouznetsov. Optimization of the Synthesis of Quinoline-based Neutral Cyclometalated Iridium Complexes via Microwave Irradiation: Design of Light-harvesting and Emitting Complexes using Bulky Quinolines. *Organic Chemistry Frontiers*, 2019, 6 (19) pp 3374-3382. DOI: 10.1039/C9QO00870E
12. Tzu-Yen Huang, Felipe A. Larraín, **Carlos H. Borca**, Caneq Fuentes-Hernández, Hongping Yan, Sebastian Alexander Schneider, Wen-Fang Chou, Víctor A. Rodríguez-Toro, Hans-Georg Steinrueck, Chuntian Cao, C. David Sherrill, Bernard J. Kippelen, and Michael F. Toney. Morphology of Organic Semiconductors Electrically Doped from Solution Using Phosphomolybdic Acid. *Chemistry of Materials*, 2019, 31 (17) pp 6677-6683. DOI: 10.1021/acs.chemmater.9b01069
11. Martín A. Mosquera, Leighton O. Jones, **Carlos H. Borca**, Mark A. Ratner, and George C. Schatz. Fragmentation Schemes Based on Domain Separation in Density Functional Theory. *The Journal of Physical Chemistry A*, 2019, 123 (22) pp 4785–4795. DOI: 10.1021/acs.jpca.9b01173
10. Laura I. Mosquera-Giraldo, **Carlos H. Borca**, Andrew S. Parker, Yifan Dong, Kevin J. Edgar, Stephen P. Beaudoin, Lyudmila V. Slipchenko, and Lynne S. Taylor. Crystallization Inhibition Properties of Cellulose Ester and Ethers for a Group of Chemically Diverse Drugs - Experimental and Computational Insight. *Biomacromolecules*, 2018, 19 (12), pp 4593–4606. DOI: 10.1021/acs.biomac.8b01280 - Featured in the cover art.
9. Naila A. Mugheirbi, Laura I. Mosquera-Giraldo, **Carlos H. Borca**, Lyudmila V. Slipchenko, and Lynne S. Taylor. Phase Behavior of Solid Dispersions Produced using Various Solvent Systems: Mechanistic Understanding of the Role of Polymer using Experimental and Theoretical Methods. *Molecular Pharmaceutics*, 2018, 15 (8), pp 3236–3251. DOI: 10.1021/acs.molpharmaceut.8b00324
8. Sarah F. Tyler, Eileen C. Judkins, Dmitry Morozov, **Carlos H. Borca**, Lyudmila V. Slipchenko, and David R. McMillin. To Be or Not to Be Symmetric: That is the Question for Potentially Active Vibronic Modes. *The Journal of Chemical Education*, 2017, 94 (9), pp 1232–1237. DOI: 10.1021/acs.jchemed.7b00289
7. Joel D. Rindelaub, **Carlos H. Borca**, Matt A. Hostetler, Mark A. Lipton, Lyudmila V. Slipchenko, and Paul B. Shepson. The Acid-Catalyzed Hydrolysis of an  $\alpha$ -Pinene-Derived Organic Nitrate: Kinetics, Products, Reaction Mechanisms, and Atmospheric Impact. *Atmospheric Chemistry and Physics*, 2016, 16, pp 15425–15432. DOI: 10.5194/acp-2016-726
6. Na Li, Laura I. Mosquera-Giraldo, **Carlos H. Borca**, James D. Ormes, Michael Lowinger, John D. Higgins, Lyudmila V. Slipchenko, and Lynne S. Taylor. A Comparison of the Crystallization Inhibition Properties of Bile Salts. *Crystal Growth & Design*, 2016, 16 (12) pp 7286–7300. DOI: 10.1021/acs.cgd.6b01470
5. **Carlos H. Borca**, Lyudmila V. Slipchenko, and Adam Wasserman. Ground-State Charge Transfer: Lithium-Benzene and the Role of Hartree-Fock Exchange. *The Journal of Physical Chemistry A*, 2016, 120 (41) pp 8190–8198. DOI: 10.1021/acs.jpca.6b09014



4. Laura I. Mosquera-Giraldo, **Carlos H. Borca**, Xiangtao Meng, Kevin J. Edgar, Lyudmila V. Slipchenko, and Lynne S. Taylor. Mechanistic Design of Chemically Diverse Polymers with Applications in Oral Drug Delivery. *Biomacromolecules*, 2016, 17 (11), pp 3659–3671. DOI: 10.1021/acs.biomac.6b01156
3. Fulizi Xiong, **Carlos H. Borca**, Lyudmila V. Slipchenko, and Paul B. Shepson. Photochemical Degradation of Isoprene-derived 4,1-Nitrooxy Enal. *Atmospheric Chemistry and Physics*, 2016, 16, pp 5595–5610. DOI: 10.5194/acp-16-5595-2016
2. **Carlos H. Borca** and Carlos A. Arango. Molecular Dynamics of a Water-absorbent Nano-scale Material Based on Chitosan. *The Journal of Physical Chemistry B*, 2016, 120 (15), pp 3754–3765. DOI: 10.1021/acs.jpcc.5b11230  
Featured in the cover art.
1. Martín A. Mosquera, **Carlos H. Borca**, Mark A. Ratner, and George C. Schatz. Connection Between Hybrid Functionals and Importance of the Local Density Approximation. *The Journal of Physical Chemistry A*, 2016, 120 (9), pp 1605–1612. DOI: 10.1021/acs.jpca.5b10864



### In Preparation (Draft available upon request)

- **Carlos H. Borca** and C. David Sherrill. Multiscale Methods for Benchmark-level Lattice Energies of Molecular Crystals with CrystaLattE. *Manuscript in Preparation*, 2021.
- **Carlos H. Borca** and Lyudmila V. Slipchenko. Exploiting the Timescale Separation between Energy Contributions to Accelerate Molecular Dynamics in the Effective Fragment Potential. *Manuscript in Preparation*, 2021.

## Scientific Events

### Events Organized

**Second Annual Academic Event of the Colombian Student Association at Purdue University** - West Lafayette, IN, USA 10/2016  
*Head of the Academic Event Organization Committee*

### Invited Talks

Atlanta Theoretical Chemistry Symposium - Atlanta, GA, USA 9/2019  
*CrystaLattE: Automated Computation of Lattice Energies Exploiting the Many-body Expansion to Achieve Dual-level Parallelism*

**Telluride Science Research Center Workshop on Many-Body Interactions: From Quantum Mechanics to Force Fields** - Telluride, CO, USA 7/2018  
*CrystaLattE: Automated Computation of Benchmark-level Lattice Energies of Molecular Crystals*

Academic Presentations of the Colombian Student Association at Purdue University - West Lafayette, IN, USA 9/2015  
*Developing Software to Model van der Waals Interactions in Materials*

Special Guest Talk at the Graduate Physical Chemistry Seminar at Universidad del Valle - Cali, Valle del Cauca, Colombia 5/2014  
*Charge Distribution in Carbon Nanopores Via Density Functional Theory*

### Contributed Talks

Virtual PSI4 World Wide Developers Conference (PsiCon 2020) - Princeton, NJ, USA 12/2020  
*Polymer Featurization with PSI4 on the Azure Cloud*

**257th National Meeting & Exposition of the American Chemical Society (ACS Spring 2019)** - Orlando, FL, USA 4/2019

- *Crystallization Inhibition Properties of Cellulose Esters and Ethers for a Group of Chemically Diverse Drugs*
- *Automated Multiscale Methods for Benchmark-level Lattice Energies of Molecular Crystals with CrystaLattE*

**256th National Meeting & Exposition of the American Chemical Society (ACS Fall 2018)** - Boston, MA, USA 8/2018  
*CrystaLattE: Automated Computation of Benchmark-level Lattice Energies of Molecular Crystals*

**Conference on Machine Learning in Science and Engineering (MLSE 2018)** - Pittsburgh, PA, USA 6/2018  
*CrystaLattE: Automated Computation of Benchmark-level Lattice Energies of Molecular Crystals*

North Carolina State University Building Faculty of the Future Program (NCSU BFF 2018) - Raleigh, NC, USA 3/2018  
*CrystaLattE: Automated Computation of Benchmark-level Lattice Energies of Molecular Crystals*

47th Meeting of the Southeastern Theoretical Chemistry Association (SETCA 2017) - Oxford, MS, USA 5/2017  
*CAM-LDA0: Reincarnating the Local Density Approximation*

Graduate Physical Chemistry Seminar - West Lafayette, IN, USA 11/2016  
*Molecular Dynamics with the Effective Fragment Potential Method*

**252th National Meeting & Exposition of the American Chemical Society (ACS Fall 2016)** - Philadelphia, PA, USA 8/2016

- *CAM-LDA0: The Reincarnation of the Local Density Approximation*

○ <i>Timescale Separation between Energy Contributions in the Effective Fragment Potential</i>	
○ <i>Molecular Dynamics of Water-Absorbent Nanoscale Materials Based on Chitosan</i>	
48th Midwest Theoretical Chemistry Conference (MWTCC 2016) - Pittsburgh, PA, USA	6/2016
<i>Exploiting the Timescale Separation between Energy Contributions to Accelerate Molecular Dynamics in the Effective Fragment Potential</i>	
Academic Presentations of the Colombian Student Association at Purdue University - West Lafayette, IN, USA	6/2016
<i>Molecular Dynamics of a Water-Absorbent Nanoscale Material Based on Chitosan</i>	
<b>250th National Meeting &amp; Exposition of the American Chemical Society (ACS Fall 2015)</b> - Boston, MA, USA	8/2015
○ <i>Charge Transfer in the Lithium-Benzene Complex via Density Functional Theory</i>	
○ <i>Developing materials-modeling software for electron dynamics with van der Waals interactions</i>	
○ <i>Determining the Melting Point of Ice with the Effective Fragment Potential</i>	
V National Meeting of Theoretical and Computational Chemists (V ENQTC) - Guatapé, Antioquia, Colombia	5/2014
<i>Charge Distribution in Carbon Nanopores Via Density Functional Theory</i>	
IX National Congress of Pure and Applied Chemistry Students (IX CONEQ) - Cali, Valle del Cauca, Colombia	10/2009
<i>Computational Study of the Interactions between Carbon Nanotube/DNA Hybrids and Simple Molecules Relevant in Chemical Sensing</i>	
III National Symposium of Nanotechnology (NANOCOLOMBIA 2009) - Bogotá, D.C., Colombia	4/2009
<i>Electronic Properties of Chemical Transducers Based on Carbon Nanotubes Functionalized with Homo-DNA polynucleotides</i>	
<b>Posters</b> .....	
49th Meeting of the Southeastern Theoretical Chemistry Association (SETCA 2019) - Knoxville, TN, USA	5/2019
<i>CrystaLattE: Automated Calculation of Lattice Energies of Organic Crystals</i>	
Institute for Data Engineering and Science Industry Day - Atlanta, GA, USA	3/2018
<i>CrystaLattE: Automated Computation of Benchmark-level Lattice Energies of Molecular Crystals</i>	
49th Midwest Theoretical Chemistry Conference (MWTCC 2017) - East Lansing, MI, USA	6/2017
<i>CAM-LDA0: Reincarnating the Local Density Approximation</i>	
<b>7th Time-Dependent Density-Functional Theory: Prospects and Applications (7th TDDFT)</b> - Benasque, Aragón, Spain	9/2016
<i>CAM-LDA0: The Reincarnation of the Local Density Approximation</i>	
<b>IX Congress of the International Society for Theoretical Chemical Physics (IX ISTCP 2016)</b> - Grand Forks, ND, USA	7/2016
<i>Exploring the Temporal Evolution of the Energy Components in the Effective Fragment Potential Molecular Dynamics</i>	
2016 Conference on Excited State Processes (ESP 2016) - Santa Fe, NM, USA	6/2016
<i>Charge Transfer in the Lithium-Benzene Complex: Understanding the Role of the Hartree-Fock Exchange</i>	
First Annual Academic Event of the Colombian Student Association at Purdue University - West Lafayette, IN, USA	11/2015
<i>Developing Materials-modeling Software for Electron Dynamics with van der Waals Interactions</i>	
Lawrence Livermore National Laboratory Student Poster Symposium - Livermore, CA, USA	7/2015
<i>Developing Materials-modeling Software for Electron Dynamics with van der Waals Interactions</i>	
45th Meeting of the Southeastern Theoretical Chemistry Association (SETCA 2015) - Orlando, FL, USA	5/2015
<i>Charge Transfer in Lithium-Benzene via Density Functional Theory</i>	
248th National Meeting & Exposition of the American Chemical Society (ACS Fall 2014) - San Francisco, CA, USA	8/2014
<i>Charge Transfer in Lithium-Benzene via Density Functional Theory</i>	
46th Midwest Theoretical Chemistry Conference (MWTCC 2014) - Evanston, IL, USA	7/2014
<i>Charge Transfer in Lithium-Benzene via Density Functional Theory</i>	
VIII National Meeting of Neuroscience - Bogotá, D.C., Colombia	6/2012
<i>Computational Study of Glycosylation and Phosphorylation of Proteins Involved in Neurodegeneration</i>	
IV National Meeting of Theoretical and Computational Chemists (IV ENQTC) - Cali, Valle del Cauca, Colombia	5/2012
<i>Molecular Modelling of Water Absorbent Nanoscale Materials</i>	
Fourth Research Socialization Day at Universidad Icesi 2011 - Cali, Valle del Cauca, Colombia	3/2011
<i>Molecular Mechanics Study of Hydrogel-type Biopolymers at the Nanoscale</i>	
III National Meeting of Theoretical and Computational Chemists (III ENQTC) - San Gil, Santander, Colombia	4/2010
<i>Electronic Response of Chemical Transducers Constituted by Carbon Nanotubes Functionalized with DNA Homopolynucleotides</i>	
XXXV Congress of Theoretical Chemists of Latin Expression (QUITEL 2009) - San Andrés Islas, Colombia	9/2009
<i>Electronic Response of Chemical Transducers Constituted by Carbon Nanotubes Functionalized with DNA Homopolynucleotides</i>	

II National Meeting of Theoretical and Computational Chemists (II ENQTC) - Calarcá, Quindío, Colombia 5/2008  
*Computational Study of the Interactions between Carbon Nanotube/DNA Hybrids and Simple Molecules Relevant in Chemical Sensing*

## Participations

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Partnership for an Advanced Computing Environment (PACE) Virtual Workshop: Introduction to Deep Learning 6/2020  
Atlanta, GA, USA

Telluride Science Research Center Virtual Workshop on Many-Body Interactions: Quantum Mechanics to Force Fields 6/2020  
Telluride, CO, USA

Partnership for an Advanced Computing Environment (PACE) Workshop: Introduction to Machine Learning 11/2019  
Atlanta, GA, USA

**Conference on Machine Learning in Science and Engineering (MLSE 2019)** 6/2019  
Atlanta, GA, USA

PSI4 World Wide Developers Conference (PsiCon 2018) 11/2018  
Atlanta, GA, USA

**Cell Press LabLinks Meeting on Machine Learning in Material and Chemical Sciences at Harvard University** 5/2018  
Cambridge, MA, USA

PSI4 World Wide Developers Conference (PSI4 WWDC 2017) 11/2017  
Blacksburg, VA, USA

7th Time-Dependent Density-Functional Theory: Prospects and Applications School and Workshop (7th TDDFT) 9/2016  
Benasque, Aragón, Spain

**2015 Computational Chemistry and Materials Science Summer Institute (CCMS 2015)** 6/2015  
Livermore, CA, USA

Sustainable Software Innovation Institute for Computational Chemistry and Materials Modeling ((SICM)<sup>2</sup>) 7/2014  
Stony Brook, NY, USA

II Colombian School on Theory and Computation in Molecular Sciences (II ECTCCM) 5/2014  
Guatapé, Antioquia, Colombia

246th National Meeting & Exposition of the American Chemical Society (ACS Fall 2013) 8/2013  
Indianapolis, IN, USA

45th Midwest Theoretical Chemistry Conference (MWTCC 2013) 7/2013  
Urbana-Champaign, IL, USA

IX International Seminar of Neuroscience 6/2012  
Bogotá, D.C., Colombia

I Colombian School on Theory and Computation in Molecular Sciences (I ECTCCM) 5/2012  
Cali, Valle del Cauca, Colombia