UNIVERSITY OF OREGON

Dr. Ramesh Jasti

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DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY &
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BIRTHDATE AND PLACE

October 27, 1975: Concord, North Carolina, United States of America

EDUCATION HISTORY

Ph.D., Organic Chemistry, 07/2006
University of California, Irvine, CA, USA
Advisor: Professor Scott D. Rychnovsky

B.S., Chemistry with Honors and Distinction, 05/1998
University of North Carolina, Chapel Hill, NC, USA
Honors Thesis Advisor: Professor Royce W. Murray

EMPLOYMENT RECORD

Associate Professor, Department of Chemistry and Biochemistry, 07/2014 to present
Secondary Affiliation with Materials Science Institute
University of Oregon, Eugene, OR, USA

Assistant Professor, Department of Chemistry, 08/2009 to 06/2014
Secondary Appointment with Division of Materials Science and Engineering
Boston University, Boston, MA, USA

Post Doctoral Fellow, 08/2006 to 07/2009
University of California & The Lawrence Berkeley National Laboratory, Berkeley, CA, USA
Advisor: Professor Carolyn R. Bertozzi

Research Associate Level II, 07/2000 to 05/2001
Pharmaceutical Product Development, Inc. (PPD, Inc.)
Advisor: Dr. Daniel J. Ricca

Research Associate Level I, 07/1998 to 06/2000
SARCO, Inc. (Startup Co. in Research Triangle Park, NC, purchased by PPD, Inc.)
Advisor: Dr. Jon L. Collins

AWARDS AND HONORS

University of Oregon CURE Faculty Mentoring Award (2018)
University of Oregon Fund for Faculty Excellence Award (2018)
Camille Dreyfus Teacher-Scholar Award (2014-2019)
Boston University Innovation Professorship (2013-2014, declined 2014-2016)
Alfred P. Sloan Fellowship (2013-2015)
NSF CAREER Award (2013-2018)
Boston University Materials Science and Engineering Innovation Award (2013)
Boston University Ignition Award (2013)
Profilee, Early Excellence in Physical Organic Chemistry (2013)
American Chemical Society Young Academic Investigator Award (2013)

Thieme Journal Award (2012)
Fred Morrison Scholarship, 1994–1998 (funded entire undergraduate education)

PUBLICATIONS

Independent Career

52. Leonhardt, E. J.; Van Raden, J. M.; Miller, David; Zakharov, L. N.; Alemán, B.*; Jasti, R. "A Bottom-Up Approach to Solution-Processed, Atomically Precise Graphitic Cylinders on Surfaces." *Nano Letters*, **2018**, accepted.

51. Schaub, T. A.; Margraf, J. T.; Zakharov, L. N.; Reuter, K.; Jasti, R. "Strain-promoted reactivity of alkyne-containing cycloparaphenylenes." *Angew. Chem. Int. Ed.* **2018,** accepted.

50. White, B. M.; Zhao, Y.; Kawashima, T. E.; Branchaud, B. P.; Pluth, M. D.; Jasti, R. "Expanding the Chemical Space of Biocompatible Fluorophores: Nanohoops in Cells." *ACS Cent. Sci.* **2018,** *4*, 1173-1178.

49. Spisak, N. S.; Wei, Z.; Darzi, E.; Jasti, R.; Petrukhina, M. A. "Highly strained [6]cycloparaphenylene: crystallization of an unsolvated polymorph and the first mono- and dianions." *Chem. Commun.* **2018,** 5*4,* 7818-7821

48. Qiu, L.; Peña-Alvarez, M.; Taravillo, M.; Evans, P. J.; Darzi, E. R.; Jasti, R.; Burrezo, P. M.; López Navarrete, J. T; Baonza, V. G.; Casado, J.; Kertesz, M. "High Pressure Chemistry and the Mechanochemical Polymerization of [5]-Cyclo-p-phenylene." *Chem. Eur. J.,* **2017,** *23,* 16593-16604.

47. Golder, M. R.; Zakharov, L. N.; Jasti, R. "Stereochemical Implications Toward the Total Synthesis of Aromatic Belts." *Pure Appl. Chem.* **2017,** *89,* 1603-1617.

46. Li, P.; Zakharov, L. N.; Jasti, R. "A Molecular Propeller with Three Nanohoop Blades: Synthesis, Characterization, and Solid State Packing." *Angew. Chem. Int. Ed.* **2017**, *56,* 5237-5241.

45. Van Raden, J. M.; Louie, S.; Zakharov, L. N.; Jasti, R. "2,2'-Bipyridyl-embedded Cycloparaphenylenes as a General Strategy to Investigate Nanohoop-based Coordination Complexes." *J. Am. Chem. Soc.* **2017**, *139*, 2936.

44. Darzi, E. R.; White, B. W.; Loventhal, L. K.; Zakharov, L. N.; Jasti, R. "An Operationally Simple and Mild Oxidative Homocoupling of Aryl Boronic Esters to Access Conformationally Constrained Macrocycles." *J. Am. Chem. Soc.*, **2017**, *139*, 3106.

43. Taber, B.; Gervasi, C.; Mills, J.; Kislitsyn, D.; Darzi, E. D.; Crowley, W.; Jasti, R.; Nazin, G. "Quantum Confinement of Surface Electrons by Molecular Nanohoop Corrals." *J. Phys. Chem. Lett.* **2016**, *7*, 3073.

42. Golder, M. R.; Colwell, C. E.; Wong, B. M.; Zakharov, L. N.; Zhen, J.; Jasti, R. "Iterative Reductive Aromatization/Ring-Closing Metathesis Strategy Towards the Synthesis of Strained Aromatic Belts." *J. Am. Chem. Soc.*, **2016**, *138*, 6577.

41. Peña Alvarez, M.; Ruiz Delgado, M. C.; Taravillo, M.; Baonza, V.; López Navarrete, J. T.; Evans, P.; Jasti, R.; Yamago, S.; Kertesz, M.; Casado, J. "The Raman

Fingerprint of Cyclic Conjugation: The case of the Stabilization of Cations and Dications in Cycloparaphenylenes." *Chem. Sci.,* **2016**, *7*, 3494.

40. Li, P.; Wong, B. M.; Zakharov, L. N.; Jasti, R. "Investigating the Reactivity of 1,4-Anthracene-Incorporated Cycloparaphenylene." *Org. Lett.*, **2016**, *18*, 1574.

39. Jackson, E. P.; Sisto, T. J.; Darzi, E. R.; Jasti, R. "Probing Diels-Alder Reactivity on a Model CNT Sidewall." *Tetrahedron,* **2016,** *72*, 3754.

38. Sisto, T. J.; Zakharov, L. N.; White, B. M.; Jasti, R. "Towards Pi-Extended Cycloparaphenylenes as Seeds for CNT Growth: Investigating Strain Relieving Ring-Openings and Rearrangements." *Chem. Sci.*, **2016**, *7*, 3681.

37. Van Raden, J. M.; Darzi, E. R.; Zakharov, L. N.; Jasti, R. "Synthesis and Characterization of a Highly Strained Donor- Acceptor Nanohoop." *Org. Biomol. Chem.*, **2016**, *14*, 5721.

36. Alvarez, M. P.; Qiu, L.; Delgado, M. C. R.; Taravillo, M.; Baonza, V. G.; Yamago, S.; Jasti, R.; Navarrete, J. T. L.; Casado, J.; Kertesz, M. "From Linear to Cyclic Oligoparaphenylenes: Electronic and Molecular Changes Traced in the Vibrational Raman Spectra and Reformulation of the Bond Length Alternation Pattern." *Phys. Chem. Chem. Phys.*, **2016**, *18*, 11683.

35. Talipov, M.; Jasti, R.; Rathore, R. "A Circle Has No End: Role of Cyclic Topology and Accompanying Structural Reoganization on the hole Distribution in Cyclic and Linear Poly-p-phenylene Molecular Wires." *J. Am. Chem. Soc.* **2015**, *137*, 14999.

34. Darzi, E. R.; Hirst, E. S.; Weber, C. D.; Zakharov, L. N.; Lonergan, M. C.; Jasti, R. "Synthesis, Properties, and Design Principles of Donor-Acceptor Nanohoops." *ACS Cent. Sci.* **2015**, *1*, 335-342.

33. Hines, D.; Darzi, E. R.; Jasti, R.; Kamat, P. "Carbon Nanohoops: Excited Singlet and Triplet Behavior of aza[8]CPP and 1,15-diaza[8]CPP." *J. Phys. Chem. A* **2015**, *119*, 8083.

32. Kayahara, E.; Patel, V. K.; Xia, J.; Jasti, R.; Yamago, S. "Selective and Gram-scale Synthesis of [6]Cycloparaphenylene." *Synlett* **2015**, *26*, 1615.

31. Darzi, E. R.; Jasti, R. "The dynamic, size-dependent properties of [5]-[12]cycloparaphenylenes." *Chem. Soc. Rev.* **2015**, *44*, 6401. Invited publication in "Challenges in Aromaticity: 150 Years after Kekule's Benzene" themed issue.

30. Golder, M. R.; Jasti, R. "Syntheses of the Smallest Carbon Nanohoops and the Emergence of Unique Physical Phenomena." *Acc. Chem. Res.* **2015**, *48*, 557**.**

29. Chen, H.; Golder, M. R.; Wang, F.; Doorn, S. K.; Jasti, R.; Tretiak, S.; Swan, A. K. "Raman-Active Modes of Even-Numbered Cycloparaphenylenes: Comparisons between Experiments and Density Functional Theory (DFT) Calculations with Group Theory Arguments." *J. Phys. Chem. C* **2015**, *119*, 2879.

28. Adamska, L.; Nayyar, I.; Chen, H.; Swan, A. K.; Oldani, N.; Fernandez-Alberti, S.; Golder, M. R.; Jasti, R, Doorn, S. K.; Tretiak, S. "Self-trapping of Excitons, Violation of Condon Approximation and Efficient Fluorescence in Conjugated Cycloparaphenylenes." *Nano Lett.* **2014**, *14*, 6539.

27. Reddy, V. S.; Camacho, C.; Xia, J.; Jasti, R.; Irle, S. "Quantum Dynamics Simulations Reveal Vibronic Effects on the Optical Properties of [n]Cycloparaphenylenes." J. Chem. Theory Comput. **2014**, *10*, 4025.

26. Alvarez, M. P.; Burrezo, P. M.; Artacho, A.; Kertesz, M.; Yamago, S.; Xia, J.; Jasti, R.; Navarette, J. T. L.; Taravillo, M.; Baonza, V. G.; Casado, J. "Structural and Electronic Properties of Sizeable [n]Cycloparaphenylenes By Raman Spectroscopy: Response Under Physical Stress and Electron-Transfer Under Pressure." *Angew. Chem. Int. Ed.* **2014**, *53*, 7033.

25. Evans, P. J.; Darzi, E. R.; Jasti, R. "Efficient Room-Temperature Synthesis of a Highly Strained Carbon Nanohoop Fragment of Buckminsterfullerene." *Nat. Chem.* **2014**, *6*, 404.

24. Hines, D. A.; Darzi, E. R.; Jasti, R.; Kamat, P. V. "Carbon Nanohoops: Excited Singlet and Triplet Behavior of [9]- and [12]Cycloparaphenylene" *J. Phys. Chem. A.*, **2014**, *118*, 1595.

23. Chen, H.; Golder, M. R.; Wang, F.; Jasti, R.; Swan, A. K. "Raman Spectroscopy of Carbon Nanohoops." *Carbon*, **2014**, *67*, 203.

22. Li, P.; Sisto, T. S.; Darzi, E. R.; Jasti, R. "Effects of Bending and Cyclic Conjugation on the Properties of Oligophenylenes." O*rg. Lett.* **2014**, *16*, 182.

21. Golder, M. R.; Wong, B.; Bacon, J. W.; Jasti, R. "Physical and Theoretical Investigations of the Quinoidal [8]Cycloparaphenylene Radical Cation." *Chem. Sci.* **2013**, *4*, 4285.

20. Zabula, A.; Spisak, S.; Filatov, A. S.; Xia, J.; Jasti, R.; Petrukhina, M. A. "The Tetraanion of [8]Cycloparaphenylene." *Angew. Chem. Int. Ed.* **2013**, *55*, 5033.

19. Hirst, E. S.; Jasti, R. "Bending Benzene: Syntheses of [n]Cycloparaphenylenes." *J. Org. Chem.* **2012**, *77*, 10473.

18. Xia, J.; Golder, M. R.; Foster, M. E.; Wong, B.; Jasti, R. "Synthesis, Characterization, and Computational Studies of Cycloparaphenylene Dimers." *J. Am. Chem. Soc.* **2012**, *134*, 19709.

17. Evans, P. J.; Jasti, R. "Molecular Belts." *Topics in Curr. Chem.* **2013**.

16. Darzi, E. R.; Sisto, T. J.; Jasti, R. "Selective Syntheses of [7]-[12]Cycloparaphenylenes Using Orthogonal Suzuki-Miyaura Coupling Reactions." *J. Org. Chem.* **2012**, *77*, 6624-6628.

15. Xia, J.; Bacon, J. W.; Jasti, R. "Gram-Scale Synthesis and Crystal Structures of [8]- and [10]CPP, and the Solid-State Structure of C_{60}@[10]CPP." *Chem. Sci.* **2012**, *3*, 3018-3021.

14. Sisto, T. J.; Tian, X.; Jasti, R. "Synthesis of Tetraphenyl-Substituted [12]Cycloparaphenylene: Towards a Rationally Designed Ultra-Short Carbon Nanotube." *J. Org. Chem.* **2012**, *77*, 5857-5860.

13. Xia, J.; Jasti, R. "Synthesis, Characterization, and Crystal Structure of [6]Cycloparaphenylene." *Angew. Chem. Int. Ed.* **2012**, *51*, 2474-2476.

12. Sisto, T. J.; Jasti, R. "Overcoming Molecular Strain: Synthesis of [7]Cycloparaphenylene." *Synlett*, Invited Article, **2012**, *23*, 483-489.

11. Hirst, E. S.; Wang, F.; Jasti, R. "Theoretical Analysis of [5.7]$_n$Cyclacenes: Closed-Shell Cyclacene Isomers." *Org. Lett.* **2011**, *13*, 6220-6223.

10. Sisto, T. J.; Golder, M. R.; Hirst, E. S.; Jasti, R. "Selective Synthesis of Strained [7]Cycloparaphenylene: An Orange-Emitting Fluorophore." *J. Am. Chem. Soc.* **2011**, *133*, 15800-15802.

9. Tian, X.; Jasti, R. "Syntheses of Cycloparaphenylenes: The Shortest-Possible Segments of Armchair Carbon Nanotubes." In *Fragments of Fullerenes and Carbon Nanotubes: Designed Synthesis, Unusual Reactions, and Coordination Chemistry*; Petrukhina, M.A., Scott, L. T. Ed.; Wiley, 2011.

8. Jasti, R.; Bertozzi, C. R. "Progress and Challenges for the Bottom-Up Synthesis of Carbon Nanotubes with Discrete Chirality." Invited Frontier Article, featured on the cover. *Chem. Phys. Lett.* **2010,** *494,* 1-7.

Postdoctoral, Graduate, and Undergraduate

7. Jasti, R.; Bhattacharjee, J.; Neaton, J. B.; Bertozzi, C. R. "The Synthesis, Characterization, and Theory of [9]-, [12]-, and [18]Cycloparaphenylene: Carbon Nanohoop Structures." *J. Am. Chem. Soc.* **2008,** *130,* 17646-17647.

6. Van Orden, L. J.; Jasti, R.; Rychnovsky, S. D. "Product Class 1: Dialkyl Ethers. Synthesis from Esters, Aldehydes, Ketones, and Acetals by Reduction or Alkylation." In *Science of Synthesis*; Forsyth, C, J., Jacobsen, E. N. Ed.; Georg Thieme Verlag KG: Stuttgart, 2008; Vol. 37, pp. 9-46.

5. Jasti, R.; Rychnovsky, S. D. "Racemization in Prins Cyclization Reactions." *J. Am. Chem. Soc.* **2006,** *128,* 13640-13648.

4. Jasti, R.; Rychnovsky, S. D. "Solvolysis of a Tetrahydropyranyl Mesylate: Mechanistic Implications for the Prins Cyclization, 2-Oxonia-Cope Rearrangement, and Grob Fragmentation." *Org. Lett.,* **2006**, *8*, 2175-2178.

3. Jasti, R.; Anderson, C. D; Rychnovsky, S. D. "Utilization of an Oxonia-Cope Rearrangement as a Mechanistic Probe for Prins Cyclizations." *J. Am. Chem. Soc.*, **2005,** *127*, 9939-9945.

2. Jasti, R.; Vitale, J.; Rychnovsky, S. D. "Axial-Selective Prins Cyclizations by Solvolysis of alpha-Bromo Ethers." *J. Am. Chem. Soc.*, **2004,** *126*, 9904-9905.

1. Hicks, J. F.; Templeton, A. C.; Chen, S.; Sheran, K. M.; Jasti, R.; Murray, R. W.; Debord, J.; Schaaff, T. G.; Whetten, R. L. "The Monolayer Thickness Dependence of Quantized Double-Layer Capacitances of Monolayer-Protected Gold Clusters." *Anal. Chem.*, **1999,** *71*, 3703-3711.

UNITED STATES PATENTS AND PROVISIONAL APPLICATIONS

6. Jasti, R.; Van Raden, J. M. "Catalysis Inside of Radially-Oriented π-Systems." Provisional application drafted.

5. Jasti, R.; Branchaud, B. B.; White, B. M. "Nanohoop Compounds for Use in Biotechnolgy and Methods of Making the Same." Provisional application filed.

4. Jasti, R.; Van Raden, J. M.; Leonhardt, E. J. "Halogenated Nanohoop Ccompounds and Methods of Making and Using the Same." Provisional application filed.

3. Jasti, R.; Darzi, E. R. "Donor-acceptor nanohoop compounds and methods of making and using the same." Patent Application No. 20160372684.

2. Jasti, R.; Xia, J. "[N]cycloparaphenylenes (CCP), [N]macrocycle intermediates and methods of making same." U.S. Patent No. 9090473.

1. Jasti, R.; Bertozzi, C. "Carbon nanohoops and methods of making." U.S. Patent No. 8461403, 8987538 and 9162939.

INVITED UNIVERSITY AND INDUSTRY LECTURES

45. Loyola University Chicago (April 12,2018)

44. Stanford University (February 21, 2018)

43. Reed College (November 2, 2017)

42. Portland State University (October 6, 2017)

41. University of Southern California (Mach 31, 2017)

40. University of Houston (March 21, 2017)

39. California Polytechnic State University (February 24, 2017)

38. University of California, Riverside (June 1, 2016)

37. Eastern Washington University (April 14, 2016)

36. Oregon State University (January 28, 2016)

35. Idaho State University (September 25, 2015)

34. Université de Montréal (April 22, 2015)

33. Georgetown University (February 26, 2015)

32. Auburn University (December 4, 2014)

31. Colorado State University (November 3, 2014)

30. University of California, Berkeley (April 25, 2014)

29. University of St. Thomas (April 11, 2014)

28. University of Minnesota (April 10, 2014)

27. Lehigh University (March 26, 2014)

26. New York University (March 11, 2014)

25. Princeton University (March 4, 2014)

24. University of Pittsburgh (February 27, 2014)

23. University of North Carolina at Chapel Hill (February 21, 2014)

22. Northwestern University (February 6, 2014)

21. University of Illinois at Chicago (February 4, 2014)

20. Los Alamos National Laboratory (January 30, 2014)

19. Dartmouth College (January 23, 2014)

18. University of Michigan (January 15, 2014)

17. Tulane University (January 13, 2014)

16. University of California, San Diego (November, 25, 2013)

15. Johns Hopkins University (November 19, 2013)

14. University of California, Los Angeles (November 14, 2013)

13. California Institute of Technology (November 13, 2013)

12. University of New Hampshire (September 24, 2013)

11. University of Massachusetts, Lowell (September 13, 2013)

10. PerkinElmer, Boston, MA (April 23, 2013)

9. Columbia University (April 3, 2013)

8. University of Oregon (February 18, 2013)

7. University of Nevada (February 15, 2013)

6. University of California, Irvine (February 13, 2013)

5. University of Vermont (January 24, 2013)

4. University of Albany-SUNY (October, 2, 2012)

3. Agilent Technologies, Inc. Cupertino, CA (July 16, 2012)

2. University of Massachusetts, Dartmouth (February 22, 2012)

1. Boston College (January 26, 2010)

CONFERENCE LECTURES

18. Curved Organic Pi-Molecules and Materials (CURO-Pi III), Oxford, UK (September 6, 2018)-Invited

17. Symposium "Complex Synthetic Chemistry with Simple Starting Materials," Spring ACS National Meeting, New Orleans, LA (March 19, 2018)-Invited

16. 17th International Symposium on Novel Aromatics (ISNA-17) Stonybrook, NY (July 28, 2017)-Invited

15. 100th Canadian Society for Chemistry Conference, Toronto (May 28, 2017)-Invited

14. Flow Chemistry Congress 2016, Miami, FL (November 3, 2016)-Invited

13. Pacifichem 2015, Hawaii (December 15, 2015)-Invited

12. 3rd Erlangen Symposium on Synthetic Carbon Allotropes, Erlangen, Germany (October 4-7, 2015)-Invited

11. 16th International Symposium on Novel Aromatic Compounds (ISNA-16), Madrid, Spain (July 5, 2015)-Invited

10. Curved Organic pi-Molecules and Materials (CURO-pi), Kyoto, Japan (October 20, 2014)-Invited

9. Fusion Conference, From Carbon-Rich Molecules to Carbon-Based Materials, El Jadida, Morocco (September 22, 2014)-Invited

8. SOCCER Graduate Symposium, Memorial University of Newfoundland (August 14, 2014)-Invited

7. Northeastern Section of the American Chemical Society Meeting, Boston, MA (October 10, 2013)-Invited

6. Young Academic Investigators Award Symposium, Fall 2013 ACS, Indianapolis, IN (September 8, 2013)-Invited

5. 2nd International RSC Crystal & Graphene Symposium-2013, Waltham, MA (September 4, 2013)-Invited

4. Gordon Research Conference: Graphitic Carbon Materials, Chemistry and Physics of, Davidson College, Davidson, North Carolina, June 20, 2012-Invited.

3. 14th International Symposium on Novel Aromatic Compounds (ISNA-14), Eugene, Oregon, July 26, 2011.

2. 244th ACS National Meeting & Exposition, Philadelphia, PA, United States, August 19-23, 2012 (2012), ORGN-42.

1. 241st ACS National Meeting & Exposition, Anaheim, CA, United States, March 27-31, 2011 (2011), ORGN-644.

CURRENT FUNDING

NSF CHE Synthesis (CHE-1800586) – "Synthetic Methods to Access Aromatic Molecular Belts," Role: PI: Total Award $450,000 (08-01-18 to 07-31-21).

NSF CHE MSN (CHE-1808791) – "Nanohoops as Modular Building Blocks to Molecular Cylinders and Machines," Role: PI: Total Award $240,000 (08-01-18 to 07-31-22).

DOE BES Materials Chemistry – "Exploration of Radial Conjugation Pathways in Pi-Electron Materials," Role: Co-Pi: Total Costs to UO: $294,592 (07-01-18 to 06-30-21).

UO/OHSU Collaborative Seed Grant – "Nanohoops as New Materials for Multiplexed Biological Imaging," Role: Co-Pi: Total Costs: $50,000 ($30,000 to UO, 07-01-18 to 06-30-19).

Camille Dreyfus Teacher-Scholar Award, Total Award $75,000 (2014-2019).

NSF MRI (CHE-1531189) – "MRI: Acquisition of an epifluorescent microscope for research and education at the UO CAMCOR facility"; Role: Co-PI: Total Award $115,346 (08-01-15 to 07-31-18).

NSF MRI (CHE-1531189) – "MRI: Acquisition of a High Resolution Mass Spectrometer for Research and Education at the University of Oregon CAMCOR facility," Role: Co-PI: Total Award $174,076 (08-15-16 to 07-31-19).