1. **CURRICULUM VITAE**

Karol S. Bruzik, Ph.D., D.Sc.

**Addresses**

*Work: Home:*

Department of Medicinal Chemistry 3929 Hobson Gate Court

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**Personal**

married, two children

U.S. and Polish citizen

**Education**

D.Sc. Institute of Organic Chemistry, Polish Academy of Sciences, Warsaw, Poland, 1988

Ph.D. Center of Molecular and Macromolecular Studies, Polish Academy of Sciences, Lodz, Poland; 1980; Major: Organic Chemistry

M.Sc. Technical University of Lodz, Lodz, Poland; 1972, Major: Organic Chemistry

**Positions**

2012-present Assistant Head for Curricular Affairs, Department of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, University of Illinois at Chicago

2011-present Professor of Medicinal Chemistry, Department of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, University of Illinois at Chicago

Note: *The University of Illinois at Chicago (UIC) is a satellite-campus of a larger University of Illinois system of higher education. In 2010, the TIME magazine ranked UIC at 197th position among the world universities. Except for universities in California, no other satellite-campus in the US was ranked that high. It is the largest university in the Chicago area with 27,000 students enrolled in 2009-10. The College of Pharmacy (COP) is the oldest part of UI system established in 1859. Currently, COP graduates more than 30% of all pharmacists in the State of Illinois, and the graduate programs in COP are ranked 9 in USA. In 2009, UIC COP ranked 3rd nationally (among 73 research colleges of pharmacy in US) as a recipient of NIH funds for research. The Department of Medicinal Chemistry and Pharmacognosy ranked 6th overall in the US.*

1998-2011 Associate Professor of Medicinal Chemistry, Department of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, University of Illinois at Chicago

1993-1998 Assistant Professor of Medicinal Chemistry, Department of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, University of Illinois at Chicago

1990 - 1993 Visiting Scholar (1990-1991), Research Scientist (1992-1993), Department of Chemistry, The Ohio State University, Columbus, OH

1988 - 1989 Docent and Head, The Regional Spectroscopic Laboratory of The Polish Academy of Sciences, Lodz, Poland

1984-1987 Adjunct (Senior Research Associate) at The Polish Academy of Sciences, Lodz, Poland

1981 - 1983 Postdoctoral Researcher (with Prof. M. -D. Tsai, Department of Chemistry, The Ohio State University, Columbus, OH

1974 - 1980 Graduate Research Associate, Polish Academy of Sciences, Lodz, Poland

**Honors and Awards**

1987Annual Award of the Secretary of the Polish Academy of Sciences

2001 Title of *Professor of Chemistry* awarded by the President of the Republic of Poland, Alexander Kwasniewski. The awarding of this title is preceded by a thorough review of scientific and/or pedagogical achievements of the candidate by the reviewers appointed by the Central Qualifying Committee of the Ministry of Education of the Republic of Poland.

**Memberships**

American Chemical Society, Divisions of Organic, Biological, Carbohydrate and Medicinal Chemistry

### Professional Services

1976 - 1980 Secretary, Division of Heteroorganic Chemistry, Polish Chemical Society.

1986 Organized International Symposium (Executive and Scientific Secretary) on “Phosphorus Chemistry Directed Toward Biology”, Lodz, Poland, 09/86.

1995 Co-chair, XVth Midwest Conference on Enzyme Mechanisms, Chicago, October 14, 1995.

1995 Co-chair, Symposium on Inositol Phosphates, International Conference of Phosphorus Chemistry, Jerusalem, Israel, July 1995.

1. Organizer of the Symposium on “Advances in Phosphoinositides”, ACS, Division of Carbohydrate Chemistry, Las Vegas, September 9-10, 1997.

1998 Co-Chair, Minisymposium on Signal Transduction at “International Conference of Phosphorus Chemistry, Cincinnati, July 1998.

1999 Editor, ACS Symposium Series Volume, Vol. 718, “Phosphoinositides: Chemistry, Biochemistry and Biomedical Applications”, Oxford University Press, 1999

**Grant Reviewer and Other Public Work**

*NIH Study Sections*

Physical Biochemistry Study Section, 06/2004 (telephone reviewer)

Special Emphasis Panel, ZRG1 BPC-B 02 M 11/2004, ad hoc

Biochemistry and Biophysics of Membranes 06/2005, ad hoc

Biochemistry and Biophysics of Membranes 10/2005, ad hoc

Biochemistry and Biophysics of Membranes 02/2006, ad hoc

Biochemistry and Biophysics of Membranes, permanent member, since 02/2009

*European Research Council, Grant Reviewer, since 2011*

*National Science Foundation, 2006 (mail reviewer)*

Reviewer of scientific achievements of Dr. Barbara Nawrot, Polish Academy of Sciences, in consideration of awarding her the presidential professorship in Poland, 02/2006

Valteich Research Award Committee, 02/2006 and 12/2009

Tuberculosis Research Award Committee, 02/2006

UIC Senator, since 09/2010

**Reviewer For Scientific Journals**

*Biochemistry*, since 1993

*Journal of American Chemical Society*, since 1993

*Journal of Organic Chemistry*, since 1993

*Chemistry and Physics of Lipids*, since 1996

*Biochemical Pharmacology*, since 1993

*Nucleic Acid Research*, since 1997

*Carbohydrate Research*, since 1997

*Bioorganic and Medicinal Chemistry*, since 1998

*Organic Letters*, since 2005

*ChemMedChem*, since 2007

*ChemBioChem*, since 2008

**Consulting**

Cayman Chemical Company, 2007-2009, phosphoinositide manufacturing

Foley and Lardner, LLC, 2007-2008, patent litigation

**Editorial Boards**

Acta Biochimica Polonica, since 2001

**Teaching**

*Workshop on Organophosphorus Chemistry*, 07/1990, Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA

*Introduction to Medicinal Chemistry*, PMMP.300, College of Pharmacy, University of Illinois at Chicago, 1995-1996

World Wide Web “*Stereochemistry of Drug Molecules*”, http://www.uic.edu/~kbruzik/text/phar331.htm

*Medicinal Organic Chemistry*, MDCH.460, Graduate + Undergraduate, College of Pharmacy, University of Illinois at Chicago, 1993-2001

*Medicinal Organic Chemistry*, MDCH.560, Graduate, College of Pharmacy, University of Illinois at Chicago, 2002-present

*Principles of Medicinal Chemistry*, MDCH.561, Graduate, College of Pharmacy, University of Illinois at Chicago, 2002-present

*Advanced Organic Medicinal Chemistry*, MDCH.571, Graduate, College of Pharmacy, University of Illinois at Chicago, 1993-present

*Principles of Three-Dimensional Structure of Drug Molecules*, MDCH.573, Graduate, College of Pharmacy, University of Illinois at Chicago, 2002-present

*Fundamentals of Drug Action I*, PHAR.331, College of Pharmacy, University of Illinois at Chicago, 1997-present (current enrollment 220 students), Since 2007 coordinator of this course. In 2010 implemented distance teaching to a satellite campus in Rockford, Illinois. Currently, teaching in PharmD curriculum at UIC COP involves real-time telecast of instructions to the audience in Rockford, and real-time in-class and remote-class interactions using an advanced interactive system (Student Response System).

**Present and Past Postdoctoral Associates and Graduate Students**

Pavel Savechenkov, PhD., postdoctoral rsearcher, 2009-present

Michal Pawlowski, PhD., postdoctoral researcher, 2007-present

Anna Zawadzka, PhD., postdoctoral researcher, 2006-2007

Mikhailo Dukh, PhD., postdoctoral researcher, 2007-2008

Heinrich Wasner, Ph.D., visiting scholar, University of Düsseldorf, 2004-2009

Piotr Dybowski, Ph.D., postdoctoral researcher, 2005-2006

Iwona Maciagiewicz, Ph.D., postdoctoral researcher, 2004-2006

Xjangjun Yue, Ph.D. Research Associate, 1996-2003.

Nanaji K. Bhamare, Ph.D., National Chemical Laboratory, Poona, India, 1994-1996

Chengsong Li, 2010-present

Chuan Bai, 2006-2010, Major and Thesis advisor, graduated with Ph.D, 2010

Hua Liu, 2002-2007

Yinghui Liu, 1998-2005, Major and Thesis advisor, graduated with Ph.D., 2005

Anand Gowda, graduate student, 2002

Cornelia Mihai, Major and Thesis advisor, graduated with Ph.D., 2000.

Robert J. Kubiak, Major and Thesis advisor, Ph.D., 05/1999.

Guan H. Zhiwen, Major and Thesis Advisor, graduated with M.Sc.1996.

Yaping Wang, Major and Thesis Advisor, graduated with M.Sc. 1995.

Ahmed A. Hakeem, Major and Thesis Advisor, graduated with M.Sc., 1995.

**Member of Ph.D. Committees**

Sanxing Sun, Department of Chemistry, UIC, 07/97

Robert Kubiak, Department of Medicinal Chemistry and Pharmacognosy, UIC, 03/1999

Yong-Zhong Zhao, Department of Medicinal Chemistry and Pharmacognosy, UIC, 03/1999

Yana Snitko, Department of Chemistry, UIC, 12/1999

T Praveen, Division of Organic Chemistry, National Chemical Laboratory, University of Pune, India, 1999

Cornelia Mihai, Department of Medicinal Chemistry and Pharmacognosy, UIC, 2001

Krzysztof Ochwat, Department of Chemistry, UIC, 2002

Bharath Ananthanarayan, Department of Chemistry, UIC, 2003

Dragos Albinescu, Department of Chemistry, UIC, 2001

Sudipto Das, Department of Chemistry, UIC, 2003

Adriana Velter, Department of Chemistry, UIC, 2003

Hui Lei, Department of Chemistry, UIC, 2003

Chungfeng Liu, Department of Chemistry, UIC, 2003

Robert Stahelin, Department of Chemistry, UIC, 2003

Mignon Marie Hernreiter, Department of Chemistry, UIC, 2004

Aura Burian, Department of Chemistry, UIC, 2005

Manisha Iyer, Department of Medicinal Chemistry and Pharmacognosy, UIC, 2005

Yi Li, Department of Medicinal Chemistry and Pharmacognosy, UIC, 2005

Yinghui Liu, Department of Medicinal Chemistry and Pharmacognosy, UIC, 2005

Joseph Fritz, Department of Chemistry, UIC, 2006

Kevin T Mc Henry, Department of Chemistry, UIC, 2006

Jialin Mao, Department of Medicinal Chemistry and Pharmacognosy, UIC, 2006

Wenju Li, Department of Chemistry, UIC, 2007

Todd Schwier, Department of Chemistry, UIC, 2008

David Dickson, Department of Chemistry, UIC, 2008

Tian Yang, Department of Medicinal Chemistry and Pharmacognosy, UIC, 2008

Edward G. Bowen, Department of Chemistry, UIC, 2008

Kyle Butler, Department of Medicinal Chemistry and Pharmacognosy, UIC, 2009.

Isaac Schiefer, Department of Medicinal Chemistry and Pharmacognosy, UIC, 2010

Samanthi Waidyarachchi, Department of Chemistry, UIC, 2010

Brad Michalsen, Department of Medicinal Chemistry and Pharmacognosy, UIC, 2011

Barry White, Department of Medicinal Chemistry and Pharmacognosy, UIC, 2011

Aditya Vaidya, Department of Medicinal Chemistry and Pharmacognosy, UIC, 2011

Nan Zhang, Department of Medicinal Chemistry and Pharmacognosy, UIC, 2011

Isaac Schiefer, Department of Medicinal Chemistry and Pharmacognosy, UIC, 2012

Jay Kalin, Department of Medicinal Chemistry and Pharmacognosy, UIC, 2012

Mikhail Gerasimov, Department of Chemistry, UIC, 2014

**Research Funding, Awarded**

Faculty Seed, College of Pharmacy, University of Illinois at Chicago, 1994-1995.

University of Illinois at Chicago, Structure and Configuration of *chiro*-Phosphoinositides, PI, 1994.

University of Illinois at Chicago, Determination of Biological Target of Antiangiogenic Drug, AGM-1470, 1996

University of Illinois at Chicago, A WWW-Based Stereochemistry Learning Tools For Pharmaceutical Education, 1997.

Mechanism of Inositol-Related Enzymes, co-I, NIH GMS, 1993-1997.

Acquisition of 400 MHz NMR Spectrometer, PI, NIH, 1997.

Matreya LLC, 1994-1999, ca. $70,000, unrestricted gifts.

Conformational Change in Phospholipase C. PI, 1999-2002, GM57568-01.

Total Synthesis and Biological Activity of Insulin Second Messenger: Prostaglandylinositol Phosphate, PI, Valteich Foundation, 2003-2004.

Cellular and Molecular Aspects of General Anesthesia, GM62195, co-Investigator, Chemistry Core, (Neil Harrison, Weil Medical College, NY, PI), 2003-2007.

Verification of the US patent 5968976, Foley and Lardner, LLC, 2007.

Mechanism of Ca-Dependent Phospholipase C, PI, 2004-2010, GM57568-05.

Development of Nanoscale Modulating Platform, co-Investigator, EY016094, (David Pepperberg, UIC, PI), 2006-2011.

General Anesthetic Sites on Ligand-Gated Ion Channels, PO1-GM58448-11 (Keith Miller, PI, Harvard University), 2009-2014.

Inositol Polyphosphate in DNA Double-Strand Break Repair - a Novel Target for Radiosensitizers, UIC Cancer Center Pilot Grant (Hanakahi/Bruzik-MPI), 2013-2014.

Nanoparticle-Based Photo-activator of Voltage-Gated Sodium Channels, R21 EY023430-01, UIC, (David Pepperberg, PI), 2013-2015.

General Anesthetic Sites on Ligand-Gated Ion Channels, PO1-GM58448-16 (Keith Miller, PI, Harvard University), 2015-2019.

# Invited Lectures

1. Phospholipids Chiral at Phosphorus. Synthesis, Absolute Configuration and Applications; 9th International Conference of Phosphorus Chemistry, Nice, France, 1983.

2. From Molecular Conformation to Phospholipid Bilayer Organization; 11th International Conference of Phosphorus Chemistry, Tallinn, Estonia, 1989.

3. Application of CP-MAS NMR for the Investigation of Model Phospholipid Bilayers, M. D. Anderson Health Center, Houston, 1989.

4. Synthesis and Properties of Analogs of Phosphoinositides and Sphingolipids, National ACS Meeting, New York, 1991.

5. Studies on Stereospecificity of Phosphoinositide - Specific Phospholipase from Bovine Brain and *Bacillus cereus*. Parallel *vs*. Sequential Mechanism of Formation of Inositol 1-Phosphate, 11th Midwest Conference on Enzyme Mechanisms, Chicago, 1991.

6. Stereospecific Syntheses of Phosphoinositides and Their Analogs. Application to Studies of Mechanism of Phosphoinositide-Specific Phospholipase C, Chemistry Department, University of Illinois at Chicago, 1992.

7. Oligomeric Phospholipids. Building Blocks for Advanced Biomaterials and Biomembrane Mimetics, Department of Chemistry, Southern Methodist University, Dallas, TX, 1993.

8. Towards the Mechanism of Bacterial and Mammalian Phosphoinositide-Specific Phospholipase C, NIH-FDA, 1993.

9. Efficient and Systematic Synthesis of Phosphoinositides, University of Delaware, Department of Chemistry, 1993.

10. Chemical and Enzymatic Synthesis of Inositol Phosphates and Phospholipids: Application in Enzymology, Center of Molecular and Macromolecular Studies, Polish Academy of Sciences, June 7, 1996

11. Graduate program in Medicinal Chemistry at UIC. Promotional seminar to chemistry students at the Technical University, Lodz, Poland, June 12, 1996.

12. Systematic Syntheses of Phosphoinositides and Their Applications in Biological Studies, Institute of Organic Chemistry, Warsaw, Poland, June 11, 1996.

13. Chemical and Enzymatic Synthesis of Phosphoinositides, Department of Chemistry, The Ohio State University, April 3, 1997.

14. The Use of 13C and 31P CP-MAS NMR to Study Organization of Phospholipid Bilayers and Mechanisms of Phospholipid Phase Transition. NMR User Symposium, Lisle, July 11, 1997.

1. Stereospecific Syntheses of Inositol Phosphates and Phospholipids and Their Analogues From Simple Inositol Precursors. ACS Symposium on “Advances in Phosphoinositides” September 9-10, 1997.
2. Synthesis and Application of Analogs of Phosphatidylinositol to Study Mechanism of Phosphatidylinositol-Specific Phospholipase C. International Conference of Phosphorus Chemistry, Cincinnati, July 12-17, 1998.
3. Novel Catalytic Mechanism of Phosphodiesterase Reactions, Department of Pharmaceutics and Pharmacodynamics, University of Illinois at Chicago, January 1999.
4. Systematic Syntheses of Phosphoinositides: Phosphates, Phosphorothioates and Conformationally Restricted Analogs, Insititute of Bioorganic Chemistry, Polish Academy of Sciences, Poznan, June 1999.
5. Identification of a Novel Catalytic Mechanism in Enzymatic Cleavage of the Phosphorus-Oxygen Bond: The Power of Combined Use of Synthesis, Site-Directed Mutagenesis and Linear Free-Energy Relationship, Center of Molecular and Macromolecular Studies, Polish Academy of Sciences, Lodz, Poland, June 1999.
6. Systematic Syntheses of Phosphoinositides: Phosphates, Phosphorothioates and Conformationally Restricted Analogs, Polish Chemical Society, Lodz, Poland, June, 1999.
7. Conformational Transitions in Phospholipid Bilayers: Effect of Packing Forces and Hydration, Institute of Organic Chemistry, Polish Academy of Sciences, Warsaw, Poland, June 1999.
8. Synthesis of Biophosphates in the Postgenomic Era, plenary lecture, 4th Congress of Chemical Technology, Lodz, Poland, September 8-12, 2003.
9. Thio-Effects as Probes of Mechanisms of Phosphotransferases, Phosphorus Chemistry Directed Toward Biology – 25 Years Later, Lodz, Poland, October 15, 2005.
10. Diaminoinositol Inhibitors of Phospholipase C and Phosphatidylinositol 3-Kinase, Li, H., Mihai, C., Yue, X., Bruzik, K. S., ACS Meeting, Chicago, April 24-28, 2007.
11. Probing Mechanisms of Phosphotransferases with Thio Effects, 17th International Conference on Phosphorus Chemistry, Xiamen, China, April 15-21, 2007.
12. Diaminoinositol-Based Inhibitors of Phospholipase C and Phosphatidylinositol 3-Kinase, Bruzik, K. S., Li, H., 2nd European Conference on Chemistry for Life Sciences, Wroclaw, Poland, Sept 4-8, 2007.
13. Enzyme Mechanism- and QSAR-Based Design and Synthesis of Potential Drugs, Bruzik, K. S., Polish Pharmaceutical Society, Katowice, September 25-28, 2007.
14. Mechanism-Based Design and Synthesis of Phosphatidylinositol Analogs as Inhibitors of Inositol Signaling Pathways. Li, H., Bruzik, K. S., XV International Conference on Chemistry of Phosphorus Compounds, St. Petersburg, Russia, May 25-20, 2008.
15. Phosphorothioates as Probes of Phosphoryl Transfer Mechanisms: The Past and Present, Bruzik, K. S., Bai, C. Regional ACS Meeting, Columbus, Ohio, June 14, 2008.
16. A Novel Phosphatidylinositol-Specific Phospholipase C with *trans*-Cyclization Mechanism, Department of Chemistry, Loyola University, Aug. 27, 2009.
17. Phosphatidylinositol-Specific Phospholipase C from *Streptomyces*: Unique Mechanism and Substrate Specificity, Bai, C., Zhao, L., Tsai, M.-D., Selby, T. L., Bruzik, K. S. International Drug Design Institute, Workshop on Neglected Diseases, June 28-July 1, 2010, Siena, Italy.
18. How Sulfur Found Its Groove, Bruzik, K. S., XVIth International Conference on Phosphorus Chemistry, Wroclaw, Poland, July 10-14, 2010.
19. Variations on the Theme of Propofol: From General Anesthesia to Light-Modulated Ligand-Gated Ion Channels, Bruzik, K. S., Medical University of Lodz, Poland, July 8, 2010.
20. What Can We Learn from Marie Curie? Symposium commemorating a centennial of Marie Curie Nobel Prize in Chemistry. Marie Curie Metropolitan High School, Chicago, November 4, 2011.
21. Controlling Retinal and Brain GABA Receptors by Illumination, Bruzik, K.S., Nencki Institute for Experimental Biology, June 10, 2013, Warsaw, Poland
22. Positive Modulator Binding Sites on GABA-A Receptor, Bruzik, K.S. Polish Chemical Society, September 15-17, 2014, Czestochowa, Poland.
23. Mechanisms of GABA-A Receptor Modulation by General Anesthetics. Bruzik, K.S., Polish Chemical Society, Gdansk, Sept. 21-26, 2015

## Publications

1. Protic Acid Catalyzed Thiono-Thiolo Rearrangement of Phosphorus Esters, W. J. Stec, B. Uznanski, K. S. Bruzik and J. Michalski, *J. Org. Chem.* 1976, **41**, 1291-3.

2. Stereochemistry of Thiono-Thiolo Rearrangement of Phosphorothioic Esters, K. S. Bruzik and W. J. Stec, *J. Org. Chem.* 1979, **44**, 4488-92.

3. Phosphorus-31 NMR Reinvestigation of the Iodine Oxidation Process of Dialkyl Phosphoroselenothioates, K. S. Bruzik, A. R. Katritzky, J. Michalski and W. J. Stec, *Pol. J. Chem*. 1980, **54**, 141-4.

4. Thiono-Thiolo Rearrangement and Solvolysis of the Secondary Alkyl Phosphorothioates, K. S. Bruzik and W. J. Stec, *J. Org. Chem.* 1981, **46**, 1618-24.

5. Stereochemistry and Product Distribution in the Thiono-Thiolo Rearrangement of Phosphorothioic Esters, K. S. Bruzik and W. J. Stec, *J. Org. Chem.* 1981, **46**, 1625-30.

6. Bicyclic Phosphoranes with a Phosphino Group: Stable Tautomers and Potential Precursors of Cyclic Dialkoxyphosphanes, K. S. Bruzik, W. J. Stec, D. Houalla and R. Wolf, *J. Chem. Res., Synop.* 1981, **11**, 348.

7. Internal Recombination of Ion-Pair and External Nucleophilic Attack in the Thiono-Thiolo Rearrangement of Benzyl Dialkyl Phosphorothionates, K. S. Bruzik and W. J. Stec, *Pol. J. Chem.* 1982, **56**, 753-9.

8. Phospholipids Chiral at Phosphorus. Stereochemistry of Transphosphatidylation Catalyzed by Phospholipase D, K. S. Bruzik and M.-D. Tsai, *J. Am. Chem. Soc.* 1982, **104**, 863-5.

9. Phospholipids Chiral at Phosphorus. Preparation, Property, and Application of Chiral Thiophospholipids, K. S. Bruzik, S. M. Gupte and M.-D. Tsai, *J. Am. Chem. Soc.* 1982, **104**, 4682-4.

10. Phospholipids Chiral at Phosphorus. Preparation and Spectral Properties of Chiral Thiophospholipids, K. S. Bruzik, R.-T. Jiang and M.-D. Tsai, *Biochemistry* 1983, **22**, 2478-86.

11. Phospholipids Chiral at Phosphorus. Could Membranes be Chiral at Phosphorus?, M.-D. Tsai, R.-T. Jiang and K. S. Bruzik, *J. Am. Chem. Soc.* 1983, **105**, 2478-80.

12. Effect of Oxygen-17 and Oxygen-18 on Phosphorus-31 NMR: Further Investigations and Applications, R. D. Sammons, P. A. Frey, K. S. Bruzik and M.-D. Tsai, *J. Am. Chem. Soc.* 1983, **105**, 5455-61.

13. Phospholipids Chiral at Phosphorus. Synthesis, Absolute Configurations and Applications, K. S. Bruzik, R.- T. Jiang and M.-D. Tsai, *Phosphorus Sulfur* **1983**, 18, 369-372.

14. Phospholipids Chiral at Phosphorus. Synthesis and Configurational Analysis of Chiral [17O,18O]Phosphatidylethanolamine, K. S. Bruzik and M.-D. Tsai, *J. Am. Chem. Soc.* 1984, **106**, 747-54.

15. Phospholipids Chiral at Phosphorus. Synthesis of Chiral Phosphatidylcholine and Stereochemistry of Phospholipase D, K. S. Bruzik and M.-D. Tsai, *Biochemistry* 1984, **23**, 1656-61.

16. Phospholipids Chiral at Phosphorus. Use of Chiral Thiophosphatidylcholine To Study Metal-Binding Properties of Bee Venom Phospholipase A2, T.-C. Tsai, J. Hart, R.-T. Jiang, K. S. Bruzik and M.-D. Tsai, *Biochemistry* 1985, **24**, 3180-88.

17. Phospholipids Chiral at Phosphorus: Use of Chiral Thiophospholipids to Study the Mechanism of Phospholipase A2, M.-D. Tsai, K. S. Bruzik, J. Hart, R.-T. Jiang, T. Rosario-Jansen, T.-C. Tsai and D. Wisner, in "*Mechanisms of Enzymatic Reactions: Stereochemistry* P. A. Frey, Ed., pp. 115-125, Elsevier, 1986.

18. NMR Methods Involving Oxygen Isotopes in Biophosphates, M.-D. Tsai and K. Bruzik, *Biol. Magn. Res.* 1983, **5**, 129-80.

19. Synthesis and Absolute Configuration of Thiosphingomyelin, K. S. Bruzik, *J. Chem. Soc., Chem. Commun.* 1986, 329-31.

20. A General Method for Synthesis of Glycerophospholipids, K. S. Bruzik, G. M. Salamonczyk and W. J. Stec, *J. Org. Chem.* 1986, **51**, 2368-70.

21. Phospholipids Chiral at Phosphorus. Stereochemical Effects on the Thermotropic Properties of Thiophosphatidylcholines and Thiosphingomyelins, M. -D. Tsai, K. S. Bruzik, D. Wisner and S. -H. Liu, *Bioact. Mol*. 1987, **3** *(Biophosphates and Their Analogues),* 561-70.

22. Synthesis and Spectral Properties of Chemically and Stereochemically Homogeneous Sphingomyelin and Its Analogues, K. S. Bruzik, *J. Chem. Soc., Perkin Trans 1* 1988, 423-31.

23. Alkoxyphosphonium Salt Intermediates in Thiono-Thiolo Rearrangement of Phosphylthionates in Protic Acid Media, K. S. Bruzik and W. J. Stec, *Phosphorus Sulfur* 1988, **35**, 229-40.

24. Conformation of the Polar Head Group of Sphingomyelin and Its Analogues, K. S. Bruzik, *Biochim. Biophys. Acta* 1988, **939**, 315-26.

25. A Calorimetric Study of the Thermotropic Behavior of Pure Sphingomyelin Diastereomers, K. S. Bruzik and M.-D. Tsai, *Biochemistry* 1987, **26**, 5364-68.

26. The Synthesis of Enantiomeric 1,4,5,6-Tetrabenzyl-*myo*-Inositols, K. S. Bruzik and G. M. Salamonczyk, *Carbohydr. Res.* 1989, **195**, 67-73.

27. The Structure of Sultone Formed in Reychler's Reaction, R. Antkowiak, W. Antkowiak and K. S. Bruzik, *Tetrahedron Lett*. **1989**, 7515-22.

28. Spektroskopia 31P NMR in vivo, K. S. Bruzik, *Polski Przeglad Radiologii* **1989**, a review in Polish.

29. Fosforany Inozytolu. Synteza, Struktura i Funkcja w Procesach Sygnalizacji Komorkowej, K. S. Bruzik and G. M. Salamonczyk, *Wiad. Chem.* 1989, **43**, 527- 52; a review in Polish.

30. Cystic Fibrosis. IV. Structural Analysis of a Chloroform Soluble Compound Isolated from Gastric Juice, H. Witas and K. S. Bruzik, *Cytobios* 1990, **62**, 175-80.

31. Conformation of Diastereomers of Phosphorothioate Analogue of cAMP, K. S. Bruzik, A. Grajkowski, Z. Lesnikowski, G. M. Salamonczyk and W. J. Stec, *Nucleosides Nucleotides* 1990, **9**, 827-36.

32. Reversible Oxidation of Phosphylthionates and Phosphylselenonates with Trifluoroacetic Acid, K. S. Bruzik and W. J. Stec, *J. Org. Chem.* 1990, **55**, 6131-35.

33. An Improved Synthesis of 6-(Phosphorylcholine)hexanoic Acid, P. Knopik, K. S. Bruzik and W. J. Stec, *Org. Prep. Proc. Intl.* 1991, **23**, 214-6.

34. 13C CP-MAS Study of the Gel Phases of 1,2-Dipalmitoylphosphatidylcholine, K. S. Bruzik, G. M. Salamonczyk and B. Sobon, *Biochim. Biophys. Acta* 1990, **1023**, 143-6.

35. From Molecular Conformation to Phospholipid Bilayer Organization, K. S. Bruzik, G. M. Salamonczyk and B. Sobon, *Phosphorus Sulfur* 1990, **51**-**52**, 39-42.

36. Nuclear Magnetic Resonance Study of Sphingomyelin Bilayers, K. S. Bruzik, B. Sobon and G. M. Salamonczyk, *Biochemistry* 1990, **29**, 4017-21.

37. Synthesis of Diastereomers of Phosphorothioate Analogue of Dipalmitoyl-phosphatidylinositol, G. M. Salamonczyk and K. S. Bruzik *Tetrahedron Lett.* **1990***, 30,* 2015-16.

38. Phospholipids Chiral at Phosphorus. Determining Phospholipases Stereospecificity at Phosphorus, K. S. Bruzik and M.-D. Tsai, *Meth. Enzymol*. 1991, **197**, 258-269.

39. Phosphorothioate Analogues of Phosphatidylinositol and Inositol 1,2-Cyclic Phosphate: Application to the Mechanism of Phospholipase C, K. S. Bruzik, G. Lin and M.-D. Tsai, *ACS Symp. Ser.* 1991, **463**, 172-85.

40. Practical Synthesis of Enantiomerically Pure *myo*-Inositol Derivatives, K. S. Bruzik, J. Myers and M. -D. Tsai, *Tetrahedron Lett.* 1992, 1009-1012.

41. Phospholipids Chiral at Phosphorus. Stereochemical Mechanism For the Formation of Inositol 1-Phosphate Catalyzed by Phosphatidylinositol-Specific Phospholipase C, K. S. Bruzik, A. M. Morocho, D.-Y. Jhon, S. G. Rhee and M.-D. Tsai, *Biochemistry* 1992, **31**, 5183-93.

42. Efficient and Systematic Syntheses of Enantiomerically Pure and Regiospecifically Protected *Myo*-Inositols, K. S. Bruzik and M. -D. Tsai, *J. Am. Chem*. *Soc*. 1992, **104**, 6361-6374.

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