

Santimukul Santra, Ph.D.
Assistant Professor

Department of Chemistry, Pittsburg State University. 1701 S. Broadway Street, Pittsburg, KS 66762.
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OBJECTIVE

Teaching and pursuing cutting-edge research in the interdisciplinary area of organic chemistry / polymer synthesis / chemical biology / nanobiotechnology / drug delivery / systems biology / cancer imaging and therapy / infectious disease detection.

EXPERTISE

Blend of expertise in the design and synthesis of novel dendritic biopolymers and formulation of functional nanotheranostics including nanomedicines and nanosensors for the targeted treatment of cancer and early detection of infectious diseases. Application of magnetic relaxation and other imaging technologies.

EMPLOYMENT PROFILE

- 2013 - Present **Assistant Professor.** Department of Chemistry, Pittsburg State University, Pittsburg, KS, USA.
- 2015 **Visiting Assistant Professor.** Department of Chemistry and Chemical Biology, Rensselaer Polytechnic Institute, Troy, New York, USA.
- 2010 - 2012 **Research Assistant Professor.** Nanoscience Technology Center, University of Central Florida, Orlando, Florida, USA.
- 2007 - 2009 **Postdoctoral Research Associate.** Nanoscience Technology Center, University of Central Florida, Orlando, Florida, USA.

EDUCATION

- 2000 - 2006 **Ph. D. in synthetic polymer chemistry.** Department of Chemistry, Indian Institute of Technology-Bombay (IIT-Bombay), Mumbai, India.
Thesis Title: "*Design and Syntheses of Functional Biopolymers Based on 2, 2'-Bis(hydroxymethyl) Propionic Acid, Malonic Acid and β - Alanine*". Advisor: Prof. Anil Kumar.
- 1998 - 2000 **M. Sc. in Organic Chemistry.** Department of Chemistry, Banaras Hindu University (BHU), Varanasi, India.
- 1995 - 1998 **B. Sc. in Chemistry.** Ramakrishna Mission College-Narendrapur. University of Calcutta, India.
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PATENTS

- 12.** J. M. Perez, **S. Santra** "Synthesis of hyperbranched amphiphilic polyester and theranostic nanoparticles thereof." **US Patent Issued. Patent # 8,372,944 B1. Licensed by SEVA Therapeutics.**
- 11.** J. M. Perez, **S. Santra** "Multimodal, Multifunctional Polymer Coated Nanoparticles" **US Patent Issued. Patent # 8,236,284 B1.**
- 10.** A. Khaled, J. M. Perez, **S. Santra**, C. Kaittanis, O. Santiesteban, "Methods and compositions comprising theranostic nanoparticles". **U.S. patent Appl. No. 62/153,912.**
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9. J. M. Perez, A. Asati, **S. Santra**, C. Kaittanis "Application Device For Inducing Cytotoxicity to Tumor Cells via Coated Cerium Oxide Nanoparticles". **U.S. patent Appl. No. 14/862,559.**
8. J. M. Perez, **S. Santra**. "Activatable imaging contrast agents". **US Patent Appl. No. 13/936,933.**
7. J. M. Perez, A. Asati, **S. Santra**, C. Kaittanis. "Differential Tumor Cell Cytotoxicity via Contact with Coated Cerium Oxide Nanoparticles". **US Patent Appl. No. 14/862,548.**
6. J. M. Perez, A. Asati, **S. Santra**, C. Kaittanis "Surface Charge Dependent Cell Localization and Cytotoxicity of Cerium Oxide Nanoparticles". **U.S. patent Appl. No. 61/537,102.**
5. J. M. Perez, A. Asati, **S. Santra**, C. Kaittanis, S. Nath. "Oxidase activity of polymer coated cerium oxide nanoparticles". **U.S. patent Appl. No. 14/160,744.**
4. J. M. Perez, C. Kaittanis, A. Asati, **S. Santra** "A cerium-oxide-nanoparticle-based device for the detection of Reactive oxygen species and monitoring of chronic inflammation". **U.S. patent Appl. No. 12/924,976.**
3. **Santra, S.** Kumar, A. *et.al.*, "Malonic acid based monomers and polymers". **Indian Patent Appl. 664/MUM/2006.**
2. **Santra, S.** Kumar, A. *et al.*, "N-alkylation of amino acids and their application in polymer synthesis". **Indian Patent Appl. 775/MUM/2006.**
1. **Santra, S.** Kumar, A. *et.al.*, "O-alkylation of β , β -disubstituted hydroxyl- compounds and its applications in Polymer syntheses". **Indian Patent Appl. 776/MUM/2006.**

PEER REVIEWED PUBLICATIONS (3 more manuscripts to be submitted in 2017)

31. J. Kallu, T. Banerjee, S. Sulthana, R. Higginbotham, C. Fletcher, N. Gerasimchuk and **S. Santra**. "New Platinum-Based Anticancer Drug: Cytotoxicity Evaluation and Combination Therapy of NSCLC Using Magnetic Nanoplatforms". **2017, Submitted.**
30. A. Carr, A. Khaled, R. Bassiouni, O. Flores, D. Nierenberg, H. Bhatti , P. Vishnubhotla , J. Manuel Perez , **S. Santra** and A. Khaled. "A Therapeutic and Diagnostic for Small Cell Lung Cancer". **Oncotarget 2017**, under revision.
29. T. Shelby, T. Banerjee, I. Zegar and **S. Santra**. "Highly Sensitive, Engineered Magnetic Nanosensors to Study the Ambiguous Activity of Zika Virus". **Scientific Reports 2017**, 7, 7377.
28. T. Shelby, S. Sulthana, J. McAfee, T. Banerjee and **S. Santra**. "Foodborne Pathogens Screening Using Magneto-Fluorescent Nanosensor: Rapid Detection of E. coli O157:H7". **JoVE 2017**, 127, e55821.
27. O. Flores, **S. Santra**, C. Kaittanis, R. Bassiouni, Annette R. Khaled, J. Grimm and J. M. Perez. "PSMA-Targeted Theranostic Nanocarrier for Prostate Cancer". **Theranostics 2017**, 7, 2477-2494.
26. B. Heckert, T. Banerjee, S. Sulthana, S. Naz, R. Alnasser, D. Thompson, G. Normand, J. Grimm, J. M. Perez and **S. Santra**. "Design and Synthesis of New Sulfur-Containing Hyperbranched Polymer and Theranostic Nanomaterials for Bimodal Imaging and Treatment of Cancer". **ACS Macro Letters 2017**, 6, 235-240.

25. S. Sulthana, T. Banerjee, J. Kallu, SR. Vuppala, B. Heckert, S. Naz, T. Shelby, O. Yambem, **S. Santra**. "Combination Therapy of NSCLC Using Hsp90 Inhibitor and Doxorubicin Carrying Functional Nanoceria". *Molecular Pharmaceutics* 2017, 14, 875–884.
24. S. Naz, J. Beach, B. Heckert, T. Tummala, O. Pashchenko, T. Banerjee, **S. Santra**. "Cerium Oxide Nanoparticles: A "Radical" Approach to Neurodegenerative Disease Treatment". *Nanomedicine* 2017, 12, 545-553.
23. T. Banerjee, T. Shelby, **S. Santra**. "How nanosensors may detect pathogen contamination before it ever reaches the dinner table". *Future Microbiology* 2017, 12, 97-100.
22. T. Shelby, T. Banerjee, J. Kallu, S. Sulthana, I. Zegar, **S. Santra**. "Novel Magnetic Relaxation Nanosensors: An Unparalleled "Spin" on Influenza Diagnosis". *Nanoscale* 2016, 8, 19605.
21. T. Banerjee, S. Sulthana, T. Shelby, B. Heckert, J. Jewell, K. Woody, V. Karimnia, J. McAfee, **S. Santra**. "Multiparametric Magneto-fluorescent Nanosensors for the Ultrasensitive Detection of Escherichia coli O157:H721". *ACS Infectious Diseases* 2016, 2, 667–673.
20. C. Kaittanis, T. M. Shaffer, A. Ogirala, **S. Santra**, J. M. Perez, G. Chiosis, Y. Li, L. Josephson, J. Grimm. "Environment-responsive nanophores for therapy and treatment monitoring via molecular MRI quenching". *Nature Communications* 2014, 5, 3384.

Before joining Pittsburg State University as an Assistant Professor.

19. **Santra, S.** Jativa, D. J. Kaittanis, C. Normand, G. Grimm, J. Perez, J. M. "Gadolinium-Encapsulating Iron Oxide Nanoprobes as Activatable NMR/MRI Contrast Agent". *ACS Nano* 2012, 6, 7281.
18. Boohaker, R. Zhang, G. Lee, M. Nemeč, K. **Santra, S.** Perez, J. Manuel; Khaled, A. "Rational Development of a Cytotoxic Peptide to Trigger Cell Death". *Molecular Pharmaceutics* 2012, 9, 2080-2093.
17. C. Kaittanis, H. Boukhriss, **S. Santra**, J. F. Valentine, S. A. Naser, J. M. Perez. "Hybridizing magnetic relaxation nanosensors facilitate the rapid and sensitive detection of an intracellular pathogen in human peripheral leukocytes". *PLoS One*, 2012, 7, e35326.

*Featured in Genetic Engineering and Biotechnology News Magazine.*Featured in www.nano.gov website of National Nanotechnology Initiative group. *Posted on National Institute of General Medical Science (NIH) website. *Posted on Sciencedaily.com website. *Posted on Europapress.com website. *Posted on Eurekalert.com website. *Posted on today.ucf.com website. * Interviewed on FOX 35 news channel.

16. C. Kaittanis, **S. Santra**, A. Asati, J. M. Perez. "A Cerium Oxide Nanoparticle-based Device for the Detection of Chronic Inflammation via Optical and Magnetic Resonance Imaging". *Nanoscale* 2012, 4, 2117-2123.
15. **S. Santra**, C. Kaittanis, O. J. Santiesteban, J. M. Perez "Cell-Specific, Activatable and Theranostic Prodrug for Dual Targeted Cancer Imaging and Therapy". *J. Am. Chem. Soc.* 2011, 133, 16680-16688.
14. **S. Santra**, C. Kaittanis, O. J. Santiesteban, J. M. Perez "Trifunctional Targeting". *ACS Chem. Biol. (Spotlight)*, 2011, 6, 1143-1143.

13. **S. Santra**,* J. M. Perez. "Facile, One-Step, Selective N-Alkylation of Amino Acids: Novel Polyamino Acid-Based Theranostic Nanoagents for Targeted Cancer Therapy". *Biomacromolecules* **2011**, *12*, 3917-3927.
12. C. Kaittanis, **S. Santra**, O. J. Santiesteban, T. Henderson, J. M. Perez "The Assembly State between Magnetic Nanosensors and their Targets Orchestrates their Magnetic Relaxation Response". *J. Am. Chem. Soc.* **2011**, *133*, 3668-3676.
11. A. Asati, C. Kaittanis, **S. Santra**, J. M. Perez. "pH-Tunable Oxidase-Like Activity of Cerium Oxide Nanoparticles Achieving Sensitive Fluorogenic Detection of Cancer Biomarkers at Neutral pH". *Anal. Chem.* **2011**, *83*, 2547-2553.
10. C. Kaittanis, T. Banerjee, **S. Santra**, O. J. Santiesteban, K. Teter, J. M. Perez. "Identification of Molecular-Mimicry-Based Ligands for Cholera Diagnostics using Magnetic Relaxation". *Bioconjugate Chemistry*, **2011**, *22*, 307-314.
9. A. Asati, **S. Santra**, C. Kaittanis, J. M. Perez. "Surface chemistry-dependent cell localization and cytotoxicity of cerium oxide nanoparticles". *ACS Nano*, **2010**, *4*, 5321-5331.
8. **S. Santra**, C. Kaittanis, J. M. Perez. "Cytochrome c Encapsulating Theranostic Nanoparticles: A Novel Bifunctional System for targeted delivery of therapeutic membrane-impermeable proteins to tumors and imaging of cancer therapy". *Molecular Pharmaceutics*, **2010**, *7*, 1209-1222.
7. Kaittanis, C., **Santra, S.**, Perez, J. M. Emerging nanotechnology-based strategies for the identification of microbial pathogenesis. *Adv. Drug Deliv. Rev.* **2010**, *62*, 408.
6. **Santra, S.**, Kaittanis, C., Perez, J. M. Aliphatic Hyperbranched Polyester: A New Building Block in the Construction of Multifunctional Nanoparticles and Nanocomposites. *Langmuir* **2010**, *26*, 5364.
5. **Santra, S.**, Kaittanis C., Grimm J. and Perez J. M. Drug/Dye-Loaded, Multifunctional Iron Oxide Nanoparticles for Combined Targeted Cancer Therapy and Dual Optical/MR-Imaging. *Small* **2009**, *5*, 1862.
4. Asati, A., **Santra, S.**, Kaittanis, C., Nath, S., Perez, J. M. Oxidase-like activity of polymer-coated cerium oxide nanoparticles. *Angew. Chem. Int. Ed. Engl.* **2009**, *48*, 2308.
- * **Featured** as very important paper *Selected for cover picture of the journal *Featured in ACS Chemical & Engineering News Magazine *Invited by ACS Communication office for Media coverage *Posted on National Institute of General Medical Science (NIH) website.
3. Kaittanis, C., **Santra, S.**, Perez, J. M. Role of nanoparticle valency in the nondestructive magnetic-relaxation-mediated detection and magnetic isolation of cells in complex media. *J. Am. Chem. Soc.* **2009**, *131*, 12780.
2. **S. Santra** and A. Kumar. "Facile synthesis of aliphatic hyperbranched polyesters based on diethylmalonate and their irreversible molecular encapsulation". *Chem. Comm.* **2004**, 2126.
1. A. Kumar, A. Q. Contractor, A. V. Ambade, T. Ranganathan, K. Krishnamoorthy, S. P. Mishra, U. P. Ojha, **S. Santra**, M. Kanungo "Novel approaches for novel materials". *Int. J. Plast. Tech.* **2003**, *6*, 73.

GRANTS: Total number of 37 internal and external research proposals were submitted in last 4 years (2013-2017), received more than \$650,000 as external research fund and more than \$2M decision pending.

PENDING SUPPORTS *(Submitted grants with decision pending or under revision):*

29. "GRP78-Targeting Polymeric Nanoparticles for Delivery of a Cytotoxic Peptide". DoD BCRP Breakthrough Award Levels 1 & 2. Role: Partnering PI, \$341,785.00, 2018-2021.

28. "Development of "Click-ene" Chemistry: From A Basic Green Synthetic Approach to Industrial Applications". NSF CAREER, Role: PI, \$532,796.00, 2018-2023.

27. "Recruitment and Retention of Academically Talented, Economically Disadvantaged Students in Polymer Chemistry", S-STEM, NSF 17-527, Role: PI, \$999,985.00, 2017-2022.

26. "Multifunctional Magnetic Nanosensor for Rapid Diagnosis of Zika and Investigation of Viral Mechanisms Including Binding, Fusion and Antibody Responses", NIH, Parent R15, Role: PI, \$413,861.00, 2018-2021.

25. "Activatable magneto-fluorescent nanosensors for the rapid detection of food-, water- and blood-borne pathogens", NIH, Parent R03, Role: PI, \$137,356.00, 2018-2020.

24. "New Activatable Magnetic Nanoprobes for Multiparametric MR Imaging and Treatment of Cancer", NIH, Parent R03, Role: PI, \$137,356.00, 2018-2020.

CURRENT FUNDED PROJECTS:

23. "Magnetic Resonance Nanosensors for the Rapid Diagnosis of Influenza", NIH, Parent R03, ID: 1 R03 AI132832-01. Role: PI, \$142,558.00, 2017-2019.

22. "Magnetic nanotheranostics for MR imaging", NIGMS-NIH (Kansas INBRE): P20 GM103418, Bridging grant, Role: PI, \$54,695.00, 2017-2018.

21. "New soybean polymers for industrial applications", Kansas Soybean Commission, PSU/KSC # 1774, Role: PI, \$100,000.00, 2016-2017.

20. "New green chemistry approaches for the synthesis of petroleum-based building blocks, catalysts, linear and dendritic polymers for commercial applications", ACS PRF: 56629-UNI7, Role: PI, \$55,000.00, 2016-2018.

19. "Shimadzu Equipment Grant for Research", Shimadzu Scientific Instruments, Role: PI, \$130,000.00, 2016-2017

18. "Development of New soybean-based anti-oxidant topical lotion for skin care applications", Kansas Soybean Commission, PSU/KSC # 1763. Role: PI, \$100,000.00, 2015-2017.

17. "Multifunctional Magnetic Nanosensors for Rapid Diagnosis of Zika". K-INBRE Star-Trainee Award, K-INBRE, Role: PI, \$9,000, 2017-2018.

16. "Magneto-fluorescent nanosensors for the rapid detection of food-, water- and blood-borne pathogens". K-INBRE Semester Scholar Award, K-INBRE, Role: PI, \$4,000, 2017-2018.

15. "Novel polymeric materials for cancer imaging". K-INBRE University Scholar Award. Role: PI, \$3,000. 2017-2018.
 14. "Development of new synthetic protocol for the one-step synthesis commercial polymers" Independent research project, Pittsburg State University, Role: PI, \$2,000, 2017.
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Previous Completed Projects:

13. "Polycarbonate from soybean oil-based epoxide and carbon dioxide", Kansas Soybean Commission, Role: **Co-PI, \$50,000.00**, 2015-2016.
 12. "New soybean polymers for industrial applications", Kansas Soybean Commission, PSU/KSC # 1774, Role: **PI, \$50,000.00**, 2015-2016.
 11. "Development of novel sulfur-containing theranostic nanomedicines for the targeted X-ray/CT imaging and treatment of cancers". Kansas IDeA Network of Biomedical Research Excellence (K-INBRE), Role: **PI, \$31,000.00**, 2014-2015.
 10. "Development of New soybean-based anti-oxidant topical lotion for skin care applications", Kansas Soybean Commission, PSU/KSC # 1763. Role: **PI, \$50,000.00**, 2015-2016.
 9. "Activatable MR Contrast Agent for the PARP-1 Inhibitor-Assisted Combination Therapy of Prostate Cancers". Star-Trainee Award, K-INBRE, Role: **PI, \$9,000**, 2015-2016.
 8. "Hsp90 Inhibitor-Induced Combination Therapy of Lung Cancer Using Novel Magnetic Nanotheranostics". Summer Scholar Award, K-INBRE, Role: **PI, \$4,000**, 2015-2016.
 7. "Rapid and sensitive detection of bacterial contaminations in SEK environmental water resources using novel magnetic relaxation nanosensors", Campus Award, K-INBRE, NIGMS P20 GM103418, Role: **PI, \$2,000**, 2015-2016.
 6. "Design and Synthesis of Novel Polymeric Nanotheranostics for the Targeted Optical / X-ray CT Imaging and Treatment of Lung Cancer". Star Trainee Award, K-INBRE, Role: **PI, \$9,000**, 2014-2015.
 5. "Assessment of Molecular Interactions for the Rapid and Sensitive Detection of Influenza using Novel Magnetic Relaxation Nanosensors". Summer Scholar Award, K-INBRE, Role: **PI, \$4,000**, 2014-2015.
 4. "Nucleolin Targeting Novel Polymeric Nanotheranostics for the MR Imaging and Treatment of Breast Cancer". Semester Scholar Award, K-INBRE, Role: **PI, \$4,000**, 2014-2015.
 3. "Independent Research Project Grant", Pittsburg State University, Role: **PI, \$2,000.00**, 2014-2015.
 2. "Faculty proposal submission incentive grant", Pittsburg State University, Role: **PI, \$1,000.00**, 2014-2015.
 1. Polymer Chemistry Initiative, Pittsburg State University, Role: **PI**, 2013-2015.
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ADMINISTRATIVE EXPERIENCES

1. Experienced with new curriculum development. The new polymer chemistry program at the Pittsburg State University is funded by the State. Developed new courses for BS and MS degree programs, course legislation and worked with the university processes to bring into the catalog.
2. Committee member for hiring new instructors and staffs.
3. Organizing conferences and summer schools.

TEACHING EXPERIENCES

CHEM 215: General Chemistry I
CHEM 216: General Chemistry I Laboratory
CHEM 360: Introduction to Polymer Science and Technology
CHEM 325: Organic Chemistry I
CHEM 326: Organic Chemistry I Laboratory
CHEM 625: Polymer Synthesis and Characterizations
CHEM 626: Polymer synthesis laboratory
CHEM 687: Polymers in Nanotechnology
CHEM 720: Advanced Polymers
CHEM 850: Inorganic and Architecturally Unusual Polymers

AWARDS AND HONORS TO THE PI

2017: NIH-NIGMS Bridging Award through K-INBRE.
2017: Excellence in Research Award from the college of Arts and Sciences, Pittsburg State University.
2017: Outstanding Faculty Scholarship Award from the Pittsburg State University.
2016: Undergraduate New Investigator (UNI) Award from ACS-PRF !!
2015: Outstanding Undergraduate Research Faculty Mentor Award from the Pittsburg State University.
2012 Best Oral Presentation Award, NanoFlorida Symposium 2012, USF, Tampa.
2010 Best Poster Presentation Award, NanoFlorida Symposium 2010, UCF, Orlando.

AWARDS AND SCHOLARSHIPS TO THE STUDENTS FROM THE LAB

46. 2017: K-INBRE University Scholar Award to Quentin Austin from K-INBRE, NIH.
45. 2017: K-INBRE Star-Trainee Award to Sasha Pashchenko from K-INBRE, NIH.
44. 2017: K-INBRE Semester Scholar Award to Lok Shrestha from K-INBRE, NIH.
43. 2017: Excellence in Research Award to Shuguftha Naz from Department of Chemistry, PSU.
42. 2017: Excellence in Scholarship Award to Tanuja Tummala from Department of Chemistry, PSU.
41. 2017: Excellence in Teaching Award to James Beach from Department of Chemistry, PSU.
40. 2017: Excellence in Professional Service Award to Elaf Alattas from Department of Chemistry, PSU.
39. 2017: Undergraduate Research Award to Sasha Pashchenko from Department of Chemistry, PSU.
38. 2017: Undergraduate Research Award to Laci Hadorn from Department of Chemistry, PSU.
37. 2016: Travel Award to Shuguftha Naz, Tyler Shelby, Pittsburg State University.
36. 2016: Best Poster Presentation Award to Shuguftha Naz, ACS Pentasectional Conference in Oklahoma.
35. 2016: Best Oral Presentation Award to Jyothi Kallu, PSU Research Colloquium.
34. 2016: Best Poster Presentation Award to Shoukath Sulthana, PSU Research Colloquium.
33. 2016: Best Poster Presentation Award to Jyothi Kallu, PSU Research Colloquium.
32. 2016: Best Poster Presentation Award to Kalee Woody, PSU Research Colloquium.
31. 2016: Best Poster Presentation Award to Tyler Shelby, PSU Research Colloquium.
30. 2016: Best TA Award to Shoukath Sulthana by Chemistry.
29. 2016: Best GA Award to Jyothi Kallu by Polymer Chemistry.
28. 2016: Best Thesis Award to Blaze Heckert by Polymer Chemistry.
27. 2016: K-INBRE Star-Trainee Award to Laci Hadorn by K-INBRE, NIH.
26. 2016: K-INBRE Scholar Award to Sasha by K-INBRE, NIH.
25. 2016: Best BIO-KANSAS Graduate Poster Award to Shoukath Sulthana, Capitol Research Summit, Topeka.
24. 2016: K-INBRE Best Poster Award to Tyler Shelby.
23. 2016: K-INBRE Best Oral Presentation recognition to Jyothi Kallu.
22. 2015: K-INBRE Campus Scholar Award to Jessica Jewell.
21. 2015: K-INBRE Semester Scholar Award to Deaven Thompson.
20. 2015: K-INBRE Star-Trainee Award to Tyler Shelby.
19. 2015: Best UG Poster Presentation Award (1st) to Blaze Heckert, Annual Symposium, Pittsburg State University

18. 2015: Best Graduate Oral Presentation Award (1st) to Jyothi Kallu, Annual Symposium, Pittsburg State University
 17. 2015: Best UG Poster Presentation Award (2nd) to Deaven Thompson, Annual Symposium, Pittsburg State University
 16. 2015: Best Graduate Poster Presentation Award (2nd) to Shoukath Sulthana, Annual Symposium, PSU.
 15. 2015: PSU Best Undergraduate Poster Presentation Award to Kalee Woody, Capitol Research Summit, Topeka, KS
 14. 2015: Best Poster Award to Jyothi Kallu, Bio-Kansas, Capitol Research Summit, Topeka, KS
 13. 2015: PSU Best Graduate Poster Presentation Award to Jyothi Kallu, Capitol Research Summit, Topeka.
 12. 2015: Best Poster Presentation Award (2nd) to Kalee Woody, K-INBRE symposium, KS.
 11. 2015: Best Poster Presentation Award (1st) to Blaze Heckert, K-INBRE symposium, KS.
 10. 2014: K-INBRE Star-Trainee Award to Blaze Heckert
 9. 2014: PSU UG Best Oral Presentation (1st place) Award to Kalee Woody
 8. 2014: William & Mary Fern Souder Scholarship to Dagen Worthington
 7. 2014: PSU UG Best Poster Presentation (3rd place) Award to Blaze Heckert
 6. 2014: K-INBRE Semester Scholar Award to Kalee Woody
 5. 2014: PSU Chemistry Best UG Research Award to Blaze Heckert
 4. 2014: PSU Chemistry Graduate Teaching Award to Nelson Elbers
 3. 2014: PSU UG Best Poster Presentation (2nd place) Award to Kalee Woody
 2. 2014: K-INBRE Semester Scholar Award to Deaven Thompson
 1. 2013: K-INBRE Semester Scholar Award to Blaze Heckert
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STUDENTS' SUCCESS

8 Students graduated with thesis. Moved on for Ph. D. with scholarships and few with jobs in USA.

5 undergraduate students joined top US medical schools including Case Western, Rice and Yale school of medicine.

UNIVERSITY SERVICES

1. Member for the 2013-2014 session of "Leadership PSU".
 2. Member of Polymer Chemistry Curriculum committee.
 3. Active member of the college of Arts and Science "Honors Committee".
 4. Active member of the Master thesis committee
 5. Teaching at the 2014 Summer Workshop, Cottey College, MO, USA.
 6. Establishing state-of-the-art major instrument facilities.
 7. Outreach activities for student recruitment.
 8. Member of University "Host Family".
 9. Member of University "Moving Crew".
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PRESS AND MEDIA COVERAGE ON RESEARCH

19. ACS Press release: <https://www.acs.org/content/acs/en/pressroom/presspacs/2016/acs-presspac-september-21-2016/speedy-bacteria-detector-could-help-prevent-foodborne-illnesses.html>

18. Food Safety News: <http://www.foodsafetynews.com/tag/tuhina-banerjee/#.V-3IWfkrLIU>

17. New food Economy: <http://newfoodeconomy.com/rapid-e-coli-detection/AASCU> highlight: <https://www.aascu.org/email/ataascu/@aascu.html>

16. https://www.magnetmail.net/actions/email_web_version.cfm?recipient_id=1218090634&message_id=13667778&user_id=AASCU&group_id=1014095&jobid=35656608

15. URL source: <http://www.hindustantimes.com/health-and-fitness/scientists-develop-nanosensor-which-can-detect-bacteria-in-food-or-water/story-aXMjPaKbhUXdejttvZiil.html>
14. <https://cosmosmagazine.com/chemistry/a-quick-easy-test-for-e-coli-contamination>
13. <https://www.terumobct.com/location/north-america/pages/home.aspx>
12. <http://www.morningsun.net/news/20161018/finding-e-coli—researchers-target-killer-bacteria>
11. <http://www.fox14tv.com/story/33412276/pitt-state-researchers-develop-rapid-e-coli-detection>
10. <http://www.fourstateshomepage.com/news/new-pitt-state-research-could-help-shed-light-on-foodborne-illness-bacteria>
9. http://www.joplinglobe.com/news/local_news/psu-scientists-create-method-to-detect-harmful-bacteria-in-food/article_ba762d47-c35f-5fa9-b7f6-cd2934bfe617.html
8. www.pittstate.edu. University KRPS Radio and Caps 13 TV.
7. Students win top awards for research, Pittsburg State University webpage.
<http://www.pittstate.edu/press-media/detail.dot?id=de8074c6-0788-4ffc-a0b5-5cc6b33f7b8e>
6. Polymer chemistry and cancer targeting research was highlighted in COVER page of University magazine:
<http://magazine.pittstate.edu/issue/fall-2014/>
https://www.youtube.com/watch?v=LkymH_nmjzM
5. Collegio newspaper: <http://psucollegio.com/2014/09/fighting-cancer-one-nano-at-a-time/>
4. Joplinglobe newspaper: http://www.joplinglobe.com/news/article_b58ffdd4-3a1d-11e4-a02b-ff0a85e9562c.html
3. TV Channel CODE-12:<http://www.fourstateshomepage.com/story/d/story/polymer-chemistry-lab-cancer-research/42749/J4f-EjApuE6klcWmLA9y7Q>
2. The Morning Sun Newspaper:
<http://www.morningsun.net/article/20140617/NEWS/140619808/0/SEARCH/?Start=1>
1. FOX 35 News channel: <http://www.myfoxorlando.com/story/17586368/medical-tests-in-an-instant>

RESEARCH EXPERIENCES

ORGANIC / BIOPOLYMER SYNTHESIS:

More than 16 years of expertise in design and multi-step organic synthesis for biologically active small molecules / anti-cancer drugs / linear and dendritic biopolymers / hyperbranched polymers and dendrimers / Amino acid-based biopolymer / multi-step, air and moisture sensitive organic synthesis / nanochemistry / material science / column chromatography / NMR / MASS / FT-IR / UV-VIS / Fluoremeter / GPC / TGA / DSC.

NANO-BIOTECHNOLOGY:

More than 10 years of expertise in synthesis of polymer coated nanomaterials for targeted drug delivery: Polymeric, Iron oxide, Cerium oxide, Gold nanoparticles / Bioconjugation, click chemistry / Activatable MRI

probes for cancer imaging / Activatable theranostic prodrugs for cancer treatment / Nanomaterial-drug formulation / Fluorescence and Confocal microscopy / FACS / DLS / Magnetic relaxometer / STEM / TEM / Zetasizer / Tissue culture / In Vitro cell-based assays development.

DETECTION AND TREATMENT OF MALIGNANT CARCINOMAS AND INFECTIOUS DISEASES:

More than 8 years of expertise in Nanotheranostics / Cancer targeting, imaging and treatment: Lung, Prostate, Breast, Ovarian, colon and Cervical / Infectious disease detection: Cholera, Anthrax, Pathogens, Bowel diseases and other infectious diseases / Medical devices / Nanomedicine / Nanosensing / Bioimaging / In Vivo imaging / IVIS / FMT / X-Ray CT / MR Imaging.

REVIEWER OF THE FOLLOWING JOURNALS (SELECTED)

- ACS Applied Materials & Interfaces
- Langmuir
- Colloids and Surfaces B: Biointerfaces
- Journal of Nanoparticle Research
- Molecules
- IEEE Transactions on Information Theory
- International Journal of Nanomedicine
- Current Nanoscience

REVIEWER OF THE FOLLOWING RESEARCH GRANTS (SELECTED)

- Petroleum Research Fund (PRF)-American Chemical Society (ACS) grant (*Invited*).
- Davidson Institute for Talent Development (*Invited*)
- Swiss National Science Foundation (*Invited*).
- Florida Breast Cancer Foundation (*Invited*)

EDITORIAL BOARD MEMBER (SELECTED)

- Journal of Nanomedicine Research
- Journal of Nanomaterials (Guest editor)

JUDGE / CHAIR OF THE FOLLOWING CONFERENCES

- 2013-2016: Judge for the Research Colloquium at the Pittsburg State University for Graduate and Continuing Studies
- 2013: Chair of the technical session "Trends in Polymer Science" at the ACS MWRM conference, Springfield, MO

PROFESSIONAL AFFILIATIONS

2009-Present Member, American Chemical Society (ACS)

***SELECTED* CONFERENCE PROCEEDINGS AND PRESENTATIONS (After joining PSU, 2013-2017)**

58. "Synthesis and characterization of enzyme catalyzed biodegradable "click-ene" polymers for biomedical applications". Elaf Alattas, Richard Gross and Santimukul Santra. 254th ACS National Meeting & Exposition, Washington DC, Aug 20-25th, 2017 (poster presentation).

57. "Development of Designer Nanomedicines and Nanosensors: Important Roles in Human Health". Santimukul Santra, Tuhina Banerjee, Tyler Shelby, Blaze Heckert, Shoukath Sulthana, Shuguftha Naz, James McAfee and Irene Zegar. 253rd ACS National Meeting & Exposition, San Francisco, CA. Apr 2-6th, 2017 (poster presentation).

56. "Molecularly Targeted Nanomedicine: Role of Hsp90 Inhibitor and Sophorolipid in the Treatment of Cancer". Shuguftha Naz, Jyothi Kallu, Tuhina Banerjee, Richard Gross, Filbert Totsingan and Santimukul Santra. Research symposium, Pittsburg State University, KS, April 6th, 2017. (Oral Presentation).
55. "Dual modal Nanosensors for the Early Detection of Escherichia Coli O157:H7". Tuhina Banerjee, Shoukath Sulthana, Tyler Shelby, James Mcafee and Santimukul Santra. 253rd ACS National Meeting & Exposition, San Francisco, CA. Apr 2-6th, 2017 (poster presentation).
54. "Targeted combination therapy of prostate cancer". Tanuja Tummala, Shuguftha Naz, Tuhina Banerjee and Santimukul Santra. Research symposium, Pittsburg State University, KS, April 6th, 2017. (poster presentation).
53. "Drug Cocktail Carrying Nanomedicine for the Treatment of Prostate". Laci Hadorn,, Shuguftha Naz, Tuhina Banerjee, Shrikant Anant, Santimukul Santra. Research symposium, Pittsburg State University, KS, April 6th, 2017. (poster presentation).
52. "PSMA-Receptor Targeting Translational Magnetic Nanoprobes: Novel Nanotheranostics for the Treatment of Prostate Carcinomas". Shuguftha Naz, Laci Hadorn, Tuhina Banerjee, Shrikant Anant, Santimukul Santra. Pittsburg State University, KS, April 6th, 2017. (poster presentation).
51. "Combination Therapy of Prostate Cancer Utilizing Functionalized Iron Oxide Nanoparticles carrying TNF- α and Lactonic Sophorolipids". James Beach, Tuhina Banerjee, Jyothi Kallu, Ryan Higginbotham, Richard Gross and Santimukul Santra. Research symposium, Pittsburg State University, KS, April 6th, 2017. (oral presentation).
50. "One-step Synthesis and Characterization of Biodegradable 'Click-able' Polyester Polymer for Biomedical Applications". Wadha Alqahtani, Shuguftha Naz, James Beach, Tanuja Tummala, Richard Gross and Santimukul Santra. Research symposium, Pittsburg State University, KS, April 6th, 2017. (poster presentation).
49. "Rapid Diagnosis of H5N1 and H7N9 Influenza with Novel Magnetic Nanosensor". Oleksandra Pashchenko, Tuhina Banerjee, Tyler Shelby, and Santimukul Santra. Research symposium, Pittsburg State University, KS, April 6th, 2017. (poster presentation).
48. "PSMA-Receptor Targeting Translational Magnetic Nanoprobes: Novel Nanotheranostics for the Treatment of Prostate Carcinomas". Shuguftha Naz, Laci Hadorn, Tuhina Banerjee, Shrikant Anant, Santimukul Santra. ACS Pentasectional Conference, March 24-25th, 2017, Cameron University, Lawton, OK (poster presentation).
47. "Drug Cocktail Carrying Nanomedicine for the Treatment of Prostate". Laci Hadorn, Shuguftha Naz, Tuhina Banerjee, Shrikant Anant, Santimukul Santra. ACS Pentasectional Conference, March 24-25th, 2017, Cameron University, Lawton, OK. (poster presentation).
46. "Targeted combination therapy of prostate cancer". Tanuja Tummala, Shuguftha Naz, Tuhina Banerjee, Santimukul Santra. ACS Pentasectional Conference, March 24-25th, 2017, Cameron University, Lawton, OK. (poster presentation).
45. "PSMA-Receptor Targeting Translational Magnetic Nanoprobes: Novel Nanotheranostics for the Treatment of Prostate Carcinomas". Shuguftha Naz, Laci Hadorn, Tuhina Banerjee, Shrikant Anant, Santimukul Santra. Annual Capitol Research Summit, Feb 15th, 2017, Topeka, KS. (poster presentation).
44. "Drug Cocktail Carrying Nanomedicine for the Treatment of Prostate Cancer". Laci Hadorn, Shuguftha Naz, Tuhina Banerjee, Shrikant Anant, Santimukul Santra. Annual Capitol Research Summit, Feb 15th, 2017, Topeka, KS. (poster presentation).
43. "Nanomedicine: An emerging modern technology for the treatment of cancer". Santimukul Santra. Science Caf , Wichita. September 12th, 2016 (Invited Oral presentation).

42. "Non-Small-Cell-Lung-Cancer Treatment Using Hsp90 Inhibitor Carrying Magnetic Nanotheranostics". Kalee Woody, Jyothi Kallu, Deaven Thompson, Tuhina Banerjee, Nikolay N. Gerasimchuk and Santimukul Santra. K-INBRE conference at Kansas City, MO, Jan 16-17, 2016 (Poster presentation).
41. "Novel Magnetic Nanosensor for the Rapid Detection of Influenza Virus and Comparative Analysis of Entry Blocker Proteins". Tyler Shelby, Tuhina Banerjee, Jyothi Kallu, Irene Zegar and Santimukul Santra. K-INBRE conference at Kansas City, MO, Jan 16-17, 2016 (Best poster presentation award, 1st position).
40. "Designer Polymeric Nanotheranostics for the Detection and Treatment of Cancer". Blaze Heckert, Tuhina Banerjee, Riyadh Alnasser and Santimukul Santra. K-INBRE conference at Kansas City, MO, Jan 16-17, 2016 (Poster presentation).
39. "New MR Activatable Nanoprobe for the Multiparametric Imaging and Treatment of Prostate Cancer". Jyothi Kallu, Jessica Jewell, Tuhina Banerjee, and Santimukul Santra*. K-INBRE conference at Kansas City, MO, Jan 16-17, 2016 (Oral presentation recognition).
38. "New Multi-Functional Nanoceria for the Treatment of Lung Cancer". Shoukath Sulthana, Tuhina Banerjee, Jyothi Kallu and Santimukul Santra. Annual Capitol Research Summit, Feb 2nd, 2016, Topeka, Best BIO-KANSAS Poster presentation award).
37. "Novel Magnetic Nanosensor for the Rapid Detection of Influenza Virus and Comparative Analysis of Entry Blocker Proteins". Tyler Shelby, Tuhina Banerjee, Jyothi Kallu, Irene Zegar and Santimukul Santra. Annual Capitol Research Summit, Feb 18, 2016, Topeka, (PSU Best Poster presentation).
36. "Novel drug cocktail-carrying anti-oxidant nanoceria for the treatment of cancer". Shuguftha Naz, Tuhina Banerjee, Jyothi Kallu, Shoukath Sulthana, Filbert Totsingan, Richard Gross and Santimukul Santra. ACS Pentasectional Conference, April 8th, 2016, Oklahoma Wesleyan University, (Best Poster Poster presentation award).
35. "Novel Magnetic Nanosensor for the Rapid Detection of Influenza Virus and Comparative Analysis of Entry Blocker Proteins". Tyler Shelby, Tuhina Banerjee, Jyothi Kallu, Irene Zegar and Santimukul Santra. ACS Pentasectional Conference, April 8th, 2016, Oklahoma Wesleyan University, (Poster Presentation)
34. "Non-Small-Cell-Lung-Cancer Treatment Using Hsp90 Inhibitor Carrying Magnetic Nanotheranostics". Kalee Woody, Jyothi Kallu, Deaven Thompson, Tuhina Banerjee, Nikolay N. Gerasimchuk and Santimukul Santra. Research symposium, Pittsburg State University, KS, 2016 (Best poster presentation award).
33. "Novel drug cocktail-carrying anti-oxidant nanoceria for the treatment of cancer". Shuguftha Naz, Tuhina Banerjee, Jyothi Kallu, Shoukath Sulthana, Filbert Totsingan, Richard Gross and Santimukul Santra. Research symposium, Pittsburg State University, KS, 2016 (poster presentation).
32. "Novel Magnetic Nanosensor for the Rapid Detection of Influenza Virus and Comparative Analysis of Entry Blocker Proteins". Tyler Shelby, Tuhina Banerjee, Jyothi Kallu, Irene Zegar and Santimukul Santra. Research symposium, Pittsburg State University, KS, 2016 (Best poster presentation award).
31. "New MR Activatable Nanoprobe for the Multiparametric Imaging and Treatment of Prostate Cancer". Jyothi Kallu, Jessica Jewell, Tuhina Banerjee, and Santimukul Santra. Research symposium, Pittsburg State University, KS, 2016 (Best poster and oral presentation awards).
30. "New Multi-Functional Nanoceria for the Treatment of Lung Cancer". Shoukath Sulthana, Tuhina Banerjee, Jyothi Kallu and Santimukul Santra. Research symposium, Pittsburg State University, KS, 2016 (Best poster presentation award).
29. "Novel drug cocktail-carrying anti-oxidant nanoceria for the treatment of cancer". Shuguftha Naz, Tuhina Banerjee, Jyothi Kallu, Shoukath Sulthana, Filbert Totsingan, Richard Gross and Santimukul Santra. ACS Midwest Regional Meeting (MWRM), Manhattan, KS, October 26, 2016 (oral presentation).

28. "In the Age of Nano-Bio Technology: Designer Nanotheranostics to Target Cancer and Infectious Diseases". Santimukul Santra. Colloquium presentation, Department of Biology, Wichita State University. September 21st, 2015 (Invited talk).
27. "Inhibitor-Induced Combination Therapy of K-RAS Driven NSCLC". Blaze Heckert, Deaven Thompson, Kalee Woody and Santimukul Santra. 250th ACS National Meeting & Exposition, Boston, MA. August 16-20th, 2015 (Poster Presentation).
26. "Innovative Anti-Oxidant Nanoceria for the Early Diagnosis and Treatment of Lung Cancer". Shoukath Sulthana, Blaze Heckert, Jyothi Kallu and Santimukul Santra. 250th ACS National Meeting & Exposition, Boston, MA. August 16-20th, 2015 (Poster Presentation).
25. "Non-Small-Cell-Lung-Cancer Treatment Using Hsp90 Inhibitor Carrying Magnetic Nanotheranostics". Jyothi Kallu, Blaze Heckert, Shoukath Sulthana and Santimukul Santra. 250th ACS National Meeting & Exposition, Boston, MA. August 16-20th, 2015 (Poster Presentation).
24. "Functional Magnetic Nanoprobe: Novel Nanotheranostics for the Treatment of Prostate Carcinomas". Deaven Thompson, Blaze Heckert, Shoukath Sulthana, Santimukul Santra. 250th ACS National Meeting & Exposition, Boston, MA. August 16-20th, 2015 (Poster Presentation).
23. "Non-Small-Cell-Lung-Cancer Treatment Using Hsp90 Inhibitor Carrying Magnetic Nanotheranostics". Jyothi Kallu, Blaze Heckert, Shoukath Sulthana and Santimukul Santra. Research symposium, Pittsburg State University, KS, 2015 (Best Oral presentation award, 1st position).
22. "Inhibitor-Induced Combination Therapy of K-RAS Driven NSCLC". Blaze Heckert, Deaven Thompson, Kalee Woody and Santimukul Santra. Research symposium, Pittsburg State University, KS, 2015 (Best poster presentation award, 1st position).
21. "Functional Magnetic Nanoprobe: Novel Nanotheranostics for the Treatment of Prostate Carcinomas". Deaven Thompson, Blaze Heckert, Shoukath Sulthana and Santimukul Santra. Research symposium, Pittsburg State University, KS, 2015 (Best poster presentation award, 2nd position).
20. "Innovative Anti-Oxidant Nanoceria for the Early Diagnosis and Treatment of Lung Cancer". Shoukath Sulthana, Blaze Heckert, Jyothi Kallu, Santimukul Santra. Research symposium, Pittsburg State University, KS, 2015 (Best poster presentation award, 1st position).
19. "PSMA-Receptor targeting magnetic nanoprobe: Novel nanotheranostics for the treatment of prostate carcinomas". Kalee Woody, Shoukath Sulthana, Jyothi Kallu and Santimukul Santra. Annual Capitol Research Summit, Feb 11-12th, 2015, Topeka, PSU undergraduate poster award winner.
18. "Non-Small-Cell Lung Cancer treatment using Hsp90 inhibitor carrying magnetic nanotheranostics". Jyothi Kallu, Kalee Woody, Tuhina Banerjee and Santimukul Santra. Annual Capitol Research Summit, Feb 11-12th, 2015, Topeka, Best poster BIO-KANSAS award and best PSU graduate poster award winner.
17. "PSMA-Receptor targeting magnetic nanoprobe: Novel nanotheranostics for the treatment of prostate carcinomas". Kalee Woody, Shoukath Sulthana, Jyothi Kallu and Santimukul Santra. K-INBRE, Jan 17-18th, 2015, Best poster award winner.
16. "Inhibitor-induced combination therapy of K-RAS driven NSCLC". Blaze Heckert, Deaven Thompson, Kalee Woody and Santimukul Santra. K-INBRE, Jan 17-18th, 2015, Best poster award winner.
15. "Gadolinium-Encapsulating Iron Oxide Nanoprobe as Activatable NMR/MRI Contrast Agent". Santimukul Santra, Shoukath Sulthana, Deaven Thompson, J. Manuel Perez. ACS Midwest Regional Meeting, University of Missouri, Columbia, Nov 12-15th, 2014 (Oral presentation).

14. "Highly economic, one-step synthesis of soybean polyols for industrial applications". Santimukul Santra. Kansas Soybean Commission (KSC), KS, Dec 4th, 2014 (Invited talk, \$100K grant winner).
13. "Development of new soybean-based anti-oxidant topical lotion for skin care applications". Santimukul Santra. Kansas Soybean Commission (KSC), KS, Dec 4th, 2014 (Invited talk, \$100K grant winner).
12. "Targeting PSMA-Receptors with Glutamated Magnetic Nanoparticles: Novel Nanotheranostics for the Treatment of Prostate Carcinomas". Kalee Woody, Blaze Heckert, Jyothi Kallu and Santimukul Santra. ACS Midwest Regional Meeting, University of Missouri, Columbia, Nov 12-15th, 2014 (Poster presentation).
11. "Designer Polymeric Nanotheranostics for the Detection and Treatment of Cancer". Blaze Heckert, Kalee Woody, Deaven Thompson and Santimukul Santra. K-INBRE conference at Kansas City, MO, Jan 17-18, 2014 (Poster presentation).
10. "Activatable nanoprobe for cancer targeting". Santimukul Santra, Blaze Heckert, Kalee Woody and Deaven Thompson. K-INBRE conference at Kansas City, MO, Jan 17-18, 2014 (Poster presentation).
9. "Design and Synthesis of Novel Polymeric Nanotheranostics for the Targeted Imaging and Treatment of Cervical Cancer". Matthew Reddick, Blaze Heckert and Santimukul Santra. Topeka, Feb 12, 2014 (Poster presentation).
8. "Targeting PSMA-Receptors with Glutamate-Conjugated Magnetic Nanoparticles: Novel Nanotheranostics for the Treatment of Prostate Carcinomas". Kalee Woody, Santimukul Santra. Graduate Research symposium, Pittsburg State University, KS, April 16, 2014 (Best oral presentation award, 1st position).
7. "Polymeric Nanotheranostics for the Detection and Treatment of Cancer". Blaze Heckert, Santimukul Santra. Annual Research symposium, Pittsburg State University, KS, April 16, 2014 (Best poster presentation award, 3rd position).
6. "Targeting PSMA-Receptors with Glutamate-Conjugated Magnetic Nanoparticles: Novel Nanotheranostics for the Treatment of Prostate Carcinomas". Kalee Woody, Santimukul Santra. Annual Research symposium, Pittsburg State University, KS, April 16, 2014 (Best poster presentation award, 2nd position).
5. "Polymeric Nanotheranostics for the Detection and Treatment of Cancer" Graduate symposium, Pittsburg State University, KS, 2014 (Poster).
4. "Introducing Soybean-Based Therapeutic Nanogels for the Treatment of Cancers and Soybean Diseases". Kansas Soybean Commission (KSC), KS, USA, 2013 (Invited talk).
3. "Introducing Soybean-Based Anti-oxidant and Theranostic Nanogels for Human Health". Missouri Soybean Merchandising Council (MSMC), MO, USA, 2013 (Invited talk).
2. "Designer Polymeric Nanotheranostics for the Detection and Treatment of Cancer". K-INBRE conference at Kansas City, MO, Jan 17-18, 2014 (Poster).
1. "In the Age of Polymer Science: Polymeric "Nano-Bio" Theranostics to Solve the Environmental and Human Health Problems". ACS MWRM conference at Springfield, MO, Oct 16-19, 2013 (Invited speaker).

For details, plz visit lab web: www.nanotheranosticlab.com