

Rajashekhar Kanchanapally, PhD

Texas A&M University - San Antonio
One University Way, SciTech 311M
San Antonio, TX 78224
210-784-2699

Email: Rajashekhar.kanchanapally@tamusa.edu

EDUCATION

Ph.D.: Chemistry Jackson State University, Jackson, MS	2015
M.Sc.: Organic Chemistry Kakatiya University, Warangal, India	2007
B.Sc.: Chemistry, Computer Applications and Biotechnology Kakatiya University, Warangal, India	2005

PROFESSIONAL EXPERIENCE

Asst. Professor of Chemistry Texas A&M University - San Antonio, Department of Natural Science, San Antonio, TX	2025-Present
➤ Taught Quantitative Analysis, and General Chemistry courses. ➤ Mentored undergraduate students in research, providing guidance on experimental design, data analysis, and scientific communication. ➤ Held regular office hours and offered additional support through email, special appointments, and review sessions prior to midterm and final exams to enhance student performance. ➤ Provided timely feedback by promptly grading and returning assignments. ➤ Utilized the Blackboard learning management system extensively to organize course content, assessments, and communication. ➤ Established and conducted research projects on the application of nanomaterials in cancer treatment. ➤ Actively contributed to departmental and university committees.	
Asst. Professor of Chemistry Mississippi Valley State University, Department of Natural Science and Environmental Health, Itta Bena, MS	2022-2025
➤ Taught Organic Chemistry, General Chemistry, Chemical Instrumentation, Survey of Physical Sciences, and Chemistry Seminar courses ➤ Provided academic advising and research mentoring to students ➤ Dedicated office hours for assisting students ➤ Promoted students' grades by making myself available outside classroom through email, special appointments, and a special review session before midterm and final exams ➤ Promptly returned graded assignments to students ➤ Extensively used learning management system the "Canvas" ➤ Selected for a MS-INBRE developmental grant ➤ Established and conducted research involving nanomaterials' application in cancer treatment	

- Took a course titled “Creating an Inclusive and Supportive Learning Environment” offered by the Association of College and University Educators (ACUE)
- Actively participated in departmental and university committees

Asst. Professor of Chemistry**2020-2022****Tougaloo College**, Department of Chemistry and Physics, Tougaloo, MS

- Taught Organic Chemistry and Biochemistry courses
- Developed a new “Green Chemistry” course
- Used visual communication tools along with a conventional molecular model set to help students understand the molecular geometry
- Extensively used learning management systems the “Canvas” and the “Moodle”
- Actively participated in departmental, divisional, and all faculty meetings
- Developed a research program to develop Exosome-based drug delivery for the eradication of advanced stage breast cancer tumors
- Submitted a grant to MS-INBRE within the first year of joining

Postdoctoral Fellow**2019-2020****University of Memphis**, Department of Chemistry, Memphis, TN

- Non-invasive Raman imaging of circulating exosomes for cancer diagnosis
- Establishing exosomal markers for early detection of cancers

Postdoctoral Fellow**2016-2019****University of South Alabama**, Mitchell Cancer Institute, Mobile, AL

- Development of exosome-based drug delivery for improved therapeutic efficacy and reduced toxicity
- Development of a novel nano-formulation for co-delivery of chemo drugs to treat cancer
- Development of natural product-based metal nanoparticles for combined chemotherapy and photothermal therapy
- Determination of molecular mechanism in cancer progression

Graduate Research Assistant**2010-2015****Jackson State University**, Department of Chemistry & Biochemistry, Jackson, MS

- Malignant melanoma detection from infected blood by SERS using label-free hybrid graphene oxide
- Development of a long-range SERS ruler to measure molecular level distances beyond FRET limits
- Development of graphene oxide based hybrids for sensing of toxic chemicals by SERS
- Trace level identification of toxic metals and chemicals by nanoparticle based techniques
- Sensing and selective removal of toxic metal ions from water, using 3-D graphene oxide -based hybrid nanomaterials
- Drug delivery using protein-based nanoparticles
- Cancer cells imaging and photothermal therapy using Gold, Iron oxide and Ag-Au alloy nanoparticle based techniques
- Efficient removal and effective killing of multiple drug resistant bacteria using graphene oxide membrane
- Cancer cells imaging and photothermal therapy using graphene oxide-based hybrid nanomaterials
- Cancer cell imaging and photothermal therapy using CNT based hybrid nanomaterials

- Development of 2D graphene oxide based magnetic nano platforms for isolation, detection and combined therapy of different cancer cells
- Development of 2D graphene oxide based plasmonic-magnetic nano platforms for separation and identification of Alzheimer's disease biomarker

Teaching Assistant**2011-2013****Jackson State University**, Department of Chemistry & Biochemistry, Jackson, MS

Fall 2011: CHML 141 (TA: Under Graduate General Chemistry lab)

Fall 2012: CHML 141 (TA: Under Graduate General Chemistry lab)

Spring 2013: CHML 241 (TA: Under Graduate Organic Chemistry lab)

- Created writing assignments for students to encourage student involvement in the course
- Held special sessions for students with weak mathematical background
- Dedicated office hours for assisting students
- Promoted students grades by making myself available outside class room through email, special appointments, and a special review session before midterm and final exams
- Assisted in the development of course content and evaluated student performance
- Participated in weekly review of the TA course, where I interacted with fellow TAs to discuss the week's targets and challenges
- Promptly returned graded assignments to students
- Received excellent evaluations from my students and supervisors
- Participated in "Institutional Change through Faculty Advancement in Instruction and Mentoring" (May 11-15, 2015) workshop offered by the Jackson State University

Student Mentoring in Research Lab**2011-Present**

Mentored high school and undergraduate students during the summer semesters of five consecutive years (2011-2015). As an Asst. Professor, I continued mentoring summer, undergraduate, and graduate students. My role as a mentor is to help students smoothly execute their day-to-day tasks to successfully finish their projects. As each student works on a different project, it is important for me to train them to efficiently complete their respective projects. Safety is always the top priority under my supervision. I am always available to my lab members whenever they need my help.

Quality Analyst**2007-2009****Dr. Reddy's Laboratories**, API manufacturing unit, Hyderabad, India

- Quality analysis of raw material, in-process goods, finished products, water samples
- Stability study of finished products
- Calibration of balances, FTIR, UV-Vis spectrophotometer, HPLC, GC, Karl Fischer titrator, Potentiometric titrator and Malvern mastersizer
- Maintenance of lab, equipment as per cGMP/GLP
- Maintenance of customer product specifications
- Making sure that shipments conform to specifications through procedures

Synthetic Skills

- Synthesis and surface modification of various nanoparticles
- Chemical modification of Graphene and SWCNT

- Graphene-nanoparticle/SWCNT-nanoparticle hybrid preparation
- DNA origami (DNA self-assembly)
- Liposome synthesis

Biological, Imaging and Analytical Skills

- | | |
|--|-----------------------------|
| ➤ Surface Enhanced Raman Spectroscopy (SERS) | ➤ HPLC |
| ➤ TEM | ➤ GC Cell/Bacteria culture |
| ➤ SEM | ➤ RT-PCR |
| ➤ Immunoblotting | ➤ Cell proliferation assays |
| ➤ UV/Vis | ➤ Staining |
| ➤ DLS | ➤ Fluorescence Microscopy |
| ➤ NTA | ➤ Imaging |
| ➤ AAS | ➤ ELISA |
| ➤ FTIR | ➤ Nanodrop |

PUBLICATIONS

Peer-reviewed journal articles:

Total No. of publications: 23

Total No. of citations: 1755

h-index: 20

1. Cancer Cell-Derived Exosomes as the Delivery Vehicle of Paclitaxel to Inhibit Cancer Cell Growth. **Kanchanapally, R.***; and K. Brown. *J Cancer Discovery* 2022, 1, 49.
2. Exosomal Formulation Escalates Cellular Uptake of Honokiol Leading to the Enhancement of Its Antitumor Efficacy. **Kanchanapally, R.**; Khan, M. A.; Deshmukh, S. K.; Srivastava, S.K.; Khushman, M.; Singh, S.; Ajay Pratap Singh. *ACS Omega* 2020, 5, 23299.
3. Epigallocatechin Gallate-Gold Nanoparticles Exhibit Superior Antitumor Activity Compared to Conventional Gold Nanoparticles: Potential Synergistic Interactions. Chavva, S.R.; Deshmukh, S.K.; **Kanchanapally, R.**; Tyagi, N.; Coym, J.W.; Singh, A.P.; Singh, S. *Nanomaterials* 2019, 9 (3), 396.
4. Drug-loaded exosomal preparations from different cell types exhibit distinctive loading capability, yield, and antitumor efficacies: a comparative analysis. **Kanchanapally, R.**; Deshmukh, S. K.; Chavva, S. R.; Tyagi, N.; Srivastava, S. K.; Patel, G. K.; Singh, A. P.; Singh, S. *Int J Nanomedicine* 2019, 14, 531-541.
5. Multifunctional Three-Dimensional Chitosan/Gold Nanoparticle/Graphene Oxide Architecture for Separation, Label-Free SERS Identification of Pharmaceutical Contaminants, and Effective Killing of Superbugs Jones, S.; Pramanik, A.; **Kanchanapally, R.**; Viraka Nellore, B. P.; Begum S.; Sweet, C.; and Ray, P. C. *ACS Sustainable Chem. Eng.*, 2017, 5 (8), 7175–7187
6. Hybrid Theranostic Platform for Second Near-IR Window Light Triggered Selective Two-Photon Imaging and Photothermal Killing of Targeted Melanoma Cells Tchounwou, C.; Sinha, S. S.; Viraka Nellore, B. P.; Pramanik, A.; **Kanchanapally, R.**; Jones, S.; Chavva, S. R.; Ray, P. C. *ACS Appl. Mater. Interfaces* 2015, 7 (37), 20649–20656.

7. Bio-Conjugated CNT-Bridged 3D Porous Graphene Oxide Membrane for Highly Efficient Disinfection of Pathogenic Bacteria and Removal of Toxic Metals from Water Viraka Nellore, B. P.; **Kanchanapally, R.**; Pedraza, F.; Sinha, S. S.; Pramanik, A.; Hamme, A. T.; Arslan, Z.; Sardar, D.; Ray, P. C. *ACS Appl. Mater. Interfaces* 2015, 7 (34), 19210–19218.
8. Hybrid Graphene Oxide Based Plasmonic-Magnetic Multifunctional Nanoplatfrom for Selective Separation and Label-Free Identification of Alzheimer's Disease Biomarkers Demeritte, T.; Viraka Nellore, BP.; **Kanchanapally, R.**; Sinha, S. S.; Pramanik, A.; Chavva, S. R.; Ray P. C. *ACS Appl. Mater. Interfaces*, 2015, 7(24), 13693-13700.
9. Antimicrobial Peptide-Conjugated Graphene Oxide Membrane for Efficient Removal and Effective Killing of Multiple Drug Resistant Bacteria **Kanchanapally, R.**; Viraka Nellore, BP.; Sinha, S.S.; Pedraza, F.; Jones, S.; Pramanik, A.; Chavva, S. R.; Tchounwou, C.; Shi, Y.; Vangara, A.; Sardar, D.; Ray. P. C. *RSC Adv.* 2015, 5, 18881-18887.
10. Long Range Two-Photon Scattering Spectroscopy Ruler For Screening Prostate Cancer Cells Sinha, S.S.; Paul, D.; **Kanchanapally, R.**; Pramanik, A.; Chavva, S. R.; Viraka Nellore, BP.; Jones, S.; Ray. P. C. *Chem. Sci.*, 2015, 6, 2411-2418.
11. Aptamer-Conjugated Graphene Oxide Membranes for Highly Efficient Capture and Accurate Identification of Multiple Types of Circulating Tumor Cells Viraka Nellore, BP; **Kanchanapally, R.**; Pramanik, A.; Sinha, S. S.; Chavva, S. R.; Hamme, II, A.; Ray P. C. *Bioconjugate Chem.*, 2015, 26(2), 235-242.
12. Accurate Identification and Selective Removal of Rotavirus Using a Plasmonic–Magnetic 3D Graphene Oxide Architecture. Fan, Z.; Yust, B.; Viraka Nellore, BP; Sinha, S. S.; **Kanchanapally, R.**; Crouch, R. A.; Pramanik, A.; Chavva, S. R.; Sardar, D.; Ray, P. C. *J. Phys. Chem. Lett.* 2014, 5, 3216–3221
13. Theranostic Graphene Oxide for Prostate Cancer Detection and Treatment. Chavva, S. R.; Pramanik, A.; Nellore, B. P. V.; Sinha, S. S.; Yust, B.; **Kanchanapally, R.**; Fan, Z.; Crouch, R. A.; Singh, A. K.; Neyland, B.; Ray, P.C. *Part. Part. Syst. Charact.* 2014, 31, 1252-1259.
14. Graphene Oxide–Gold Nanocage Hybrid Platform for Trace Level Identification of Nitro Explosives Using a Raman Fingerprint. **Kanchanapally, R.**; Sinha, S. S.; Fan, Z.; Dubey, M.; Zakar, E.; Ray, P. C. *J. Phys. Chem. C* 2014, 118, 7070–7075.
15. Aptamer-Conjugated Theranostic Hybrid Graphene Oxide with Highly Selective Biosensing and Combined Therapy Capability. Viraka Nellore, B. P.; Pramanik, A.; Chavva, S. R.; Sinha, S. S.; Robinson, C.; Fan, Z.; **Kanchanapally, R.**; Grennell, J.; Weaver, I.; Hamme, A. T.; Ray, P.C. *Faraday Discuss* 2014, 175, 257-271.
16. Multifunctional Hybrid Graphene Oxide for Label-Free Detection of Malignant Melanoma from Infected Blood. **Kanchanapally, R.**; Fan, Z.; Singh, A. K.; Sinha, S. S.; Ray, P. C. *J. Mater. Chem. B* 2014, 2, 1934–1937.
17. Hybrid Graphene Oxide Based Ultrasensitive SERS Probe for Label-Free Biosensing. Fan, Z.; **Kanchanapally, R.**; Ray, P. C. *J. Phys. Chem. Lett.* 2013, 4, 3813–3818.
18. Development of a Long-Range Surface-Enhanced Raman Spectroscopy Ruler. Singh, A. K.; Khan, S. A.; Fan, Z.; Demeritte, T.; Senapati, D.; **Kanchanapally, R.**; Ray, P. C. *J. Am. Chem. Soc.* 2012, 134, 8662–8669.

19. A Gold nanocage–CNT Hybrid for Targeted Imaging and Photothermal Destruction of Cancer Cells. Khan, S. A.; **Kanchanapally, R.**; Fan, Z.; Beqa, L.; Singh, A. K.; Senapati, D.; Ray, P. C. *Chem. Commun.* 2012, 48, 6711–6713.
20. Length Dependent NLO Properties of 2D Hollow Gold Nanoprisms Formed by Guided Assembly. Senapati, D.; Senapati, T.; Wate, P. S.; **Kanchanapally, R.**; Fan, Z.; Singh, A. K.; Ray, P. C. *Chem. Commun.* 2012, 48, 6034–6036.
21. Synthesis of Highly Fluorescent Water-Soluble Silver Nanoparticles for Selective Detection of Pb(II) at the Parts per Quadrillion (PPQ) Level. Singh, A. K.; **Kanchanapally, R.**; Fan, Z.; Senapati, D.; Ray, P. C. *Chem. Commun.* 2012, 48, 9047–9049.
22. Highly Efficient SERS Substrate for Direct Detection of Explosive TNT Using Popcorn-Shaped Gold Nanoparticle-Functionalized SWCNT Hybrid. Demeritte, T.; **Kanchanapally, R.**; Fan, Z.; Singh, A. K.; Senapati, D.; Dubey, M.; Zakar, E.; Ray, P. C. *Analyst* 2012, 137, 5041–5045.
23. Highly Selective SERS Probe for Hg(II) Detection Using Tryptophan-Protected Popcorn Shaped Gold Nanoparticles. Senapati, T.; Senapati, D.; Singh, A. K.; Fan, Z.; **Kanchanapally, R.**; Ray, P. C. *Chem. Commun.* 2011, 47, 10326–10328.

Profile in Google Scholar

<https://scholar.google.com/citations?user=npQMWRgAAAAJ&hl=en&oi=ao>

Book Chapters:

1. “The Potential of Antimicrobial Peptides in Breast Cancer Treatment”. Viraka Nellore, BP.; **Kanchanapally, R.** *Antimicrobial Peptides: Functions, Mechanisms of Action and Role in Health and Disease*. Nova Science Publishers, NY.
2. “Antimicrobial Peptide-Modified Nanomaterials for Detection and Extermination of Bacteria”. **Kanchanapally, R.**; Shodubi, O. P.; Okanlawon, M. R.; Viraka Nellore, B. P. *Antimicrobial Peptides: Functions, Mechanisms of Action and Role in Health and Disease*. Nova Science Publishers, NY.
3. "Two-Dimensional Graphene Material for Food Pathogen Diagnosis". Viraka Nellore, BP.; **Kanchanapally, R.**; Demeritte, T.; Ray, P. C. *Food Poisoning: Outbreaks, Bacterial Sources and Adverse Health Effects*. Nova Science Publishers, NY.
4. "Detection of Melamine from Food in Parts per Quadrillion Level Using Functionalized Graphene Oxide-Gold Nanoparticle Hybrid SERS Platform". **Kanchanapally, R.**; Fan, Z.; Wesley, W.; Viraka Nellore, BP.; Crouch, R. A.; Sinha, S. S.; Pramanik, A.; Chavva S. S.; Ray, P.C. *Food Poisoning: Outbreaks, Bacterial Sources and Adverse Health Effects*. Nova Science Publishers, NY.
5. “Bioconjugated Gold Nanoparticle for Rapid Capture and Targeted Photothermal Lysis of Pathogenic Bacteria”. Ray, P.C.; Khan, S. A.; Singh A. K.; Senapati D.; Fan, Z.; Demeritte, T.; **Kanchanapally, R.**; In *Nanomaterials for Biomedicine*; ACS Symposium Series; American Chemical Society.

CONFERENCE PRESENTATIONS:

1. Highly Selective Label Free SERS Probe for Hg(II) Detection Using Tryptophan-Protected Popcorn

- Shaped Gold Nanoparticles. **Kanchanapally, R.;** Senapati, T.; Senapati, D.; Singh, A. K.; Fan, Z.; Ray, P. C. *8th International Symposium on Recent Advances in Environmental Health Research*, Jackson, Mississippi. **2011**
2. Hybrid CNT/gold nanomaterial for targeted imaging and photothermal destruction of biomolecules. **Kanchanapally, R.;** Khan, S. A.; Fan, Z.; Beqa, L.; Singh, A. K.; Senapati, D.; Ray, P. C. *245th American Chemical Society National Meeting & Exposition*, New Orleans, Louisiana. **2013**
 3. Selective detection and photothermal therapy of cancer cells using iron core gold shell nanoparticle-SWCNT hybrid nanostructures. Viraka Nellore, B. P.; Fan, Z.; **Kanchanapally, R.;** Ray, P. C., and Hamme, A. T. *MAS 77th Annual Meeting in the Chemistry and Chemical Engineering Division*, Hattiesburg, Mississippi. **2014**
 4. Synthesis and characterization of hybrid graphene oxide for chemical toxin detection. **Kanchanapally, R.;** Fan, Z.; Wesley, W.: and Ray, P. C. *247th American Chemical Society National Meeting & Exposition*, Dallas, Texas. **2014**
 5. Multifunctional hybrid graphene oxide for label-free detection of malignant melanoma from infected blood. **Kanchanapally, R.;** Fan, Z.; Singh, A. K.; Sinha, S.S.; and Ray, P. C. *14th Southern School on Computational Chemistry& Material Science Conference*, Jackson, Mississippi. **2014**
 6. Aptamer-Conjugated Graphene Oxide Membranes for Highly Efficient Capture and Accurate Identification of Multiple Types of Circulating Tumor Cells. **Kanchanapally, R.;** Viraka Nellore, B. P.; and Ray, P. C. *15th Southern School on Computational Chemistry& Material Science Conference*, Jackson, Mississippi. **2015**
 7. Porous 3-D Graphene Oxide Membrane for Efficient Separation of Multiple Drug Resistant Bacteria and Circulating Tumor Cells. **Kanchanapally, R.;** Viraka Nellore, B. P.; and Ray, P. C. *5th Annual Lester Andrew's Symposium*, Starkville, Mississippi. **2015**
 8. Membrane nanoparticle-based delivery of Doxorubicin for improved therapeutic efficacy. **Kanchanapally, R.;** Deshmukh S. K.; Chavva, S. R.; Tyagi, N.; Al-Ghadhban, A.; Singh, A. P.; and Singh S. *5th Annual Nano Bio Summit*, Atmore, Alabama. **2017**
 9. Epigallocatechin gallate-gold nanoparticles exhibit superior anti-tumor activity than conventional gold nanoparticles: potential synergistic interactions. Chavva, S. R.; Deshmukh S. K.; **Kanchanapally, R.;** Tyagi, N.; Al-Ghadhban, A.; Singh, A. P.; and Singh S. *5th Annual Nano Bio Summit*, Atmore, Alabama. **2017**
 10. Drug-loaded exosomal preparations from different cell types exhibit distinctive loading capability, yield, and anti-tumor efficacies: a comparative analysis **Kanchanapally R.;** Deshmukh S. K.; Chavva S. R.; Tyagi N.; Srivastava S. K.; Patel G. K.; Singh A. P.; Singh S. *12th Annual College of Medicine Research Forum*, Mobile, Alabama. **2018**
 11. EGCG-gold nanoparticles exhibit superior anti-tumor activity than conventional gold nanoparticles or EGCG. Chavva S. R.; Deshmukh S. K.; **Kanchanapally R.;** Tyagi N.; Coym J. W.; Singh A. P.; Singh S. *12th Annual College of Medicine Research Forum*, Mobile, Alabama **2018**
 12. Comparative analyses of drug-loaded exosomal preparations from different cell types reveal distinctive loading capability, yield, and anti-tumor efficacies. **Kanchanapally, R.;** Deshmukh, S. K.; Chavva, S. R.; Srivastava, S. K.; Patel, G. K.; Singh, A. P.; Singh, S. *American Association for Cancer Research Annual Meeting*, Atlanta, Georgia. **2019**

13. Epigallocatechin gallate-Gold Nanoparticles Exhibit Superior Anti-tumor Activity than Conventional Gold Nanoparticles: Potential Synergistic Interactions. Chavva, S. R.; Deshmukh, S. K.; **Kanchanapally, R.**; Tyagi, N.; Coym, J. W.; Singh, A. P.; Singh, S. *American Association for Cancer Research Annual Meeting*, Atlanta, Georgia. **2019**
14. Entrapment of Honokiol in exosomes enhances its antitumor activity. **Kanchanapally, R.** *Mississippi Academy of Sciences Annual Meeting*, Biloxi, MS. **2021**
15. Exosomes for efficient delivery of cancer therapeutics. **Kanchanapally, R.** *Mississippi Academy of Sciences Annual Meeting*, Biloxi, MS. **2022**

AWARDS

1. Mississippi INBRE Developmental Research Grant (\$200,000) (Selected but didn't accept due to technical reasons) **2024**
2. Mississippi INBRE Developmental Research Grant (\$300,000) **2020**
3. Travel award to attend American Association for Cancer Research Annual Meeting, Atlanta, GA **2019**
4. Travel award to attend Nanobio Summit, Atmore, AL **2017**
5. Second place in graduate poster presentation during the 15th Southern School on Computational Chemistry and Material Science Conference **2015**
6. Travel award to attend 5th Annual Andrews Graduate Symposium at Mississippi State University, Starkville, MS **2015**
7. First place in graduate poster presentation during the 14th Southern School on Computational Chemistry and Material Science Conference **2014**
8. Travel award to attend 247th American Chemical Society National Meeting & Exposition at Dallas, TX **2014**
9. Travel award to attend 245th American Chemical Society National Meeting & Exposition at New Orleans, LA **2013**
10. Full scholarship for PhD **2010**

PROFESSIONAL MEMBERSHIP

- American Chemical Society (ACS)
- American Association for Cancer Research (AACR)
- Mississippi Academy of Science (MAS)

OUTREACH ACTIVITIES:

- Served as a judge for Mississippi Science and Engineering Fair Region-II (2011-2015)
- Participated in raising funds for Making Strides of South Alabama-2016