

CURRICULUM VITAE

SIVANADANE MANDJINY

Associate Professor, Chemistry

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EDUCATION

Universite de Technologie de Compiègne, France	Biological Engineering	Ph.D., 1992
University of Toronto, Toronto, Canada	Chemical Engineering	M.Eng., 1984
Indian Institute of Technology, New Delhi, India	Biochemical Engineering	M. Tech., 1981
University of Madras, Madras, India	Chemical Engineering	B. Tech., 1979

PROFESSIONAL EMPLOYMENT

2002-till date Associate Professor, Department of Chemistry and Physics, The University of North Carolina at Pembroke, NC.

1996-2002 Teaching Associate, Department of Chemistry and Physics, The University of North Carolina at Pembroke, NC.

1995-1995 Post Doctoral Fellow, Department of Chemical Engineering, University of Thessaloniki, Thessaloniki, Greece.

1994-1995 Post Doctoral Fellow, Laboratoire Pierre Sue, CNRS-CEA, CE/SACLAY, France.

1993-1993 Post Doctoral Fellow, LPCB, CNRS, Université de Paris Val de Marne, Thiais, France.

1992-1993 Post Doctoral Fellow, Division de Biomechanique, CNRS, URA 858, Université de Technologie de Compiègne, Compiègne, France.

1985-1989 Senior Project Engineer, VAM Organic Chemicals Ltd., New Delhi, India.

RESEARCH EXPERIENCE

I am working with undergraduate research students at UNCP in the following areas:

Biofuels:

- Biodiesel production with 45 gallons reactor, process optimization
- Biodiesel production research with enzyme in the lab scale of operation
- Ethanol production from sweet potato starch and skin

Removal of Cu^{2+} and Zn^{2+} from water:

- Immobilization of ligands on various solid matrices such as beads and flat sheet membranes to chelate Cu^{2+} and Zn^{2+} .
- Encapsulation of Cu^{2+} within calcium alginate beads

Protein Crystallization:

- Protein Crystallization in capillary tubes
- Protein Crystallization by different techniques
- Effect of Strong Magnetic Field on Crystallization

Protein Purification:

- Separation IgG by chromatographic method
- Biomolecular Interaction

Educational Research:

- Problem Based Learning in Environmental Biotechnology

Lately, I have been supervising students in Biofuels Research area to produce Biodiesel by using the transesterification process from vegetable oil and from waste vegetable oil by continuous enzymatic process. The Provost, Dr. Harrington, has initiated and approved this idea of the Biofuels for the first time in UNCP history. Under this program many students are working with several faculty members including myself. Also for the last three years, I have been supervising undergraduate research students from the summers of 2004, 2005 and 2006. This research was funded by NSF-REU grant program. Results from this research were disseminated at various national level conferences.

From 1991 to 1995, I have worked on the separation of Cu^{2+} and Zn^{2+} ions from water using different solid matrices by selective adsorption. This project was carried out both in France and in Greece.

From 1989 to 1991, I have worked on the purification of IgG from human placenta by pseudo-affinity chromatographic method. In this project I have immobilized the ligand L-histidine on various solid matrices such as different polymeric beads and flat sheet membranes to compare the effectiveness of purification. This project was carried out at The University of Compiegne,

France.

From 1979 to 1981, I have worked on “Production of α -amylase from *Bacillus subtilis* by fermentation for my Masters Research Project at The Indian Institute of Technology, New Delhi, India.

In 1979, I have worked on “Sorbitol Production from Glucose” as an Undergraduate Research Project at The University of Madras, India. Currently, I am one of their consultants for this project. More information can be obtained from the following site:

<http://www.primaryinfo.com/projects/sorbitol.htm>

PROFESSIONAL ACTIVITIES, MEMBERSHIPS, HONORS AND AWARDS

Courses Taught:

CHM 110 General Chemistry Lab I
CHM 111 General Chemistry Lab II
CHM 112 Chemistry for Health Science Lab I
CHM 113 Chemistry for Health Science Lab II
CHM 130 General Chemistry I
CHM 131 General Chemistry II
CHM 140 Chemistry for Health Science I
CHM 141 Chemistry for Health Science II
CHM 230 Environmental Chemistry
CHM 226 Inorganic Chemistry
CHM 311 Biochemistry I
CHM 312 Biochemistry Lab I
CHM 321 Biochemistry II
CHM 331 Bioanalytical Chemistry
CHM 351 Bioprocessing
CHM 361 Bioseparations Technology
CHM 399 Research in Chemistry
CHM 410 Physical Chemistry Lab
PHS 110 Physical Science

Faculty Level Activities:

Biofuels advisory Committee
Undergraduate Research Committee (PURC Council)
SPARC subcommittee
Student’s Grievance Panel
Faculty Evaluation Review Subcommittee
Peer Evaluation Committees
Chancellor’s Installation Planning Committee

Multicultural Center Formation Committee
Women in Biosciences Coordinator
Life sciences Curriculum Development Committee
Optometry school committee
Mentor Mentee Relationship Committee between the doctors and the students
Committee on Interdepartmental Biotechnology Program
Served as a Committee Chair to Recruit The Director of CSRP.
Committee on Biouruguay Biotechnology Program
Departmental committee includes
 Seminar coordinator
 Outreach program
 Library Liaison
 PEC for the new faculty members
 PEC for the promotion and tenure
 PEC for the post tenure review
 Departmental social
 Search committee for the new faculty

Professional Development:

- Worked with Robeson Community College (RCC) very closely to develop a course in Biotechnology.
- Worked with Dr. Holmes on Biotechnology Distance Education with Central Carolina Community College.
- Organized a one day Biotechnology Symposium at UNCP. The distinguished speaker was Dr. Carl Bauer from Indiana University.
- Attended a one day NSF conference at Winsten Salem in March 2005.
- Participant in Biochromatography Conference held at the Universite de Technologie de Compiegne, France; November 30, 2005
- Attended a meeting at UNC-Charlotte on “Emerging Role in Biotechnology” in September 2005.
- Participated in a STEM workshop organized by Dr. D’Arruda in April 2004.
- Organized a one day Chemistry Program at UNCP for the local High School Students in March 2004.
- Participant in Biochromatography Conference held at the Universite de Technologie de Compiegne, France; November 14, 2004
- Attended a one day NSF conference at UNCP in September 2003.
- Participated in a MUSPIN workshop organized by NASA and NCCU in March 2003, 1999.
- Attended National American Chemical Society conference at Orlando, Florida for 3 days in April 2002.
- Conducted JobReady Robeson Workshop for High School students about Biotechnology in March 2002, 2001, 2000, 1999.
- Attended a MUSPIN workshop organized by NASA at Norfolk, VA in April 2002.

- Participated in a National level workshop on Protein Crystallization organized by NASA at The University of Alabama, Huntsville, AL in March 2001, 2000, 1999.
- Attended ATOM PROJECT meeting at Norfolk State University about Minority Education in Physical Sciences for 2 days in May 2001.
- Participated in a National level grants writing program organized by NSF at The Duke University, in February 2000.
- Attended a National American Chemical Society Conference at The University of Tennessee, Knoxville, TN in March 2000.
- Organized a one day program in Biotechnology. We invited Dr. Michael Dan from Canada in April 1999.
- Attended a one day National level grant writing workshop at Whiteville Community College, Whiteville, VA in January 1999.

Professional Affiliations:

Member of the American Chemical Society since 1996
Bioaffinity Chromatography, France

Honors and Awards:

Recipient of UNC Pembroke Outstanding Teacher Award-2006.
Recipient of UNCP Pembroke Outstanding Services-2003.
Inclusion in Who's Who in American Teachers- 2002.
Inclusion in Who's Who in American Teachers- 2003.

PUBLICATIONS

1. D.Muller-Schulte, S.Mandjiny and M.A.Vijayalakshmi
Comparative affinity chromatography studies using novel grafted polyamide and poly(vinyl alcohol) media.
J. Chromatogr., 539, pp.307-314 (1991).
2. A.El-Kak, S.Mandjiny and M.A.Vijayalakshmi
Interaction of Immunoglobulin G (IgG) with immobilized histidine: Mechanistic and kinetic aspects.
J. Chromatogr., 604, pp.29-37 (1991).
3. S.Mandjiny and M.A.Vijayalakshmi
Membrane based pseudobioaffinity chromatography of placental IgG using immobilized L-histidine.
Biotechnology of Blood Proteins. Eds.C.Rivat, J.F.Stoltz. Colloque INSERM/John Libbey Eurotext Ltd., vol.227, pp.189-195 (1993).
4. S.Mandjiny and M.A.Vijayalakshmi
Quantitation of adsorption capacity of Immunoglobulin G (IgG) on Histidyl-Aminohexyl-

Sepharose and determination of affinity constant.
J. Chromatogr., 616, pp.189-195 (1993).

5. S.Mandjiny, A.I.Zouboulis and K.A.Matis
Removal of cadmium from dilute solutions by hydroxyapatite: Part I. Sorption studies.
Sep. Sci. Technol., 30(15), pp.2963-2978 (1995).
6. K.A.Matis, A.I.Zouboulis, S.Mandjiny and D.Zamboulis
Removal of cadmium from dilute solutions by hydroxyapatite: Part II. Flocculation studies.
Sep. Sci. Technol., 32, pp.2107-2128 (1997).
7. S.Mandjiny, K.A.Matis, A.I.Zouboulis, M. Fedoroff, J. Jeanjean, J.C. Rouchaud, N. Toulhoat, V. Potocek, C. Loos-Neskovic, P. Maireles-Torres and D. Jones
Calcium hydroxyapatites: evaluation of sorption properties for cadmium ions in aqueous solution.
Journal of Material Science, 33, pp.1-7 (1998).
8. Sivanadane Mandjiny, Jose D'Arruda and Shelia Brayboy
A novel approach to mentor middle school students in science.
Journal of Theoretical and Applied Research, 13, pp. 93-97 (2005).
9. Melanie Shaver, Siva Mandjiny and Len Holmes
Problem based learning in the undergraduate science classroom.
Journal of Theoretical and Applied Research, 13, pp. 100-102 (2005).

CONFERENCE PRESENTATIONS (ORAL)

1. W. DiBiase, W. H. Hilger, T. Steck, C. Wang, F. L. de los Reyes III, L. Holmes, S.Mandjiny, S. Luster-Teasley, K. Schimmel (2007)
Problem Based Learning Courses in Environmental Biotechnology with Interdisciplinary Learning: Results from a Multi Campus Program, AEESP Conference, July 17, 2007, Blacksburg, VA.
2. W. H. Hilger, W. DiBiase, T. Steck, C. Wang, F. L. de los Reyes III, S. L. Teasley, K. Schimmel, L. Holmes, S. Mandjiny (2007)
Multi-Campus Design and Implementation of Problem-Based Learning Courses in Environmental Biotechnology with Interdisciplinary Learning, ASEE Conference, June 24, 2007, Honolulu, Hawaii.
3. Siva Mandjiny (2006)
An Introduction to Bioprocessing
NSF Grant Project Bio Summer Biotechnology Symposium, July 28, 2006, UNCP.

4. S. Mandjiny (2005)
Separation, Purification and Analysis of Proteins-Hands on Experience to Community Colleges Faculty Members
NSF Grant Project Bio Summer Biotechnology Symposium, July 29, 2005, UNCP.
5. Siva Mandjiny (2005)
The effect of magnetic field on lysozyme crystallization in capillary tube.
North Carolina American Association of Physics Teachers (NCAAPT) conference held at UNCP, October 29, 2005.
6. Siva Mandjiny (2004)
Separation, Purification and Analysis of Proteins-Hands on Experience to Community College Students.
NSF Grant Project Bio Summer Biotechnology Symposium, October 21, 2004, UNCP.
7. Siva Mandjiny (2003)
Seminar to Recruitment Students from Community Colleges
NIH Grant, NCTABS Program, September 2003, UNCP.
8. Siva Mandjiny (2003)
All about Protein Chemistry to UNCP, NCLSAMP Students.
NCLSAMP Grant, Program, October 2003, UNCP.
9. Siva Mandjiny (2002)
Student Presenter: Margaret Brown
Plastocyanin: Protein Purification, Characterization and Crystallization.
NC-LSAMP, NC State University, Undergraduate Research Symposium, April 26, 2002.
10. Siva Mandjiny (2000)
Student presenter: Anna Roberts
Lysozyme Enzyme Crystallization both by Sitting Drop and Hanging Drop Method
NC-LSAMP Conference, Winston Salem State University, April 14, 2000.
11. Siva Mandjiny (2000)
Student presenter: Kris Stanton
Crystallization of Canavalin Protein.
NC-LSAMP Conference, Winston Salem State University, December 1, 2000.
12. Siva Mandjiny (2001)
Student presenter: Kris Stanton
Crystallization of Canavalin Protein
NC Space Grant Consortium, NC Central University, April 2001.

13. Siva Mandjiny (2001)
Student Presenter: Jason Deese
Peroxidase: Enzyme Assay with Inhibition Studies
SERMACS, 53rd Regional Meeting of the American Chemical Society, September 23-26, 2001.
14. Siva Mandjiny (2001)
Student Presenter: Margaret Brown
Plastocyanin: Protein Purification, Characterization and Crystallization
SERMACS, 53rd Regional Meeting of the American Chemical Society, September 23-26, 2001.
15. Siva Mandjiny (1997)
Seminar on Protein Crystallization Techniques.
NCLSAMP Grant, Program, October 1997, UNCP
16. Siva Mandjiny (1996)
Membrane Based Affinity Chromatography
Science Seminar, April 2, 1996, UNCP

MY STUDENT'S PRESENTATIONS (POSTER)

The following are poster presentations by students who worked directly under my guidance.

1. Qahtan Alsaedi, Ashley Clark, Ladipo Eso (2007)
Advisors: Siva Mandjiny, Cornelia Tirla, Tom Dooling and Maria Pereira
Production of Biodiesel by Transesterification with ethyl Acetate by Continuous Enzymatic Method.
NC OPT-ED symposium, September 28, 2007 held at UNC Greensboro.
2. Joseph Lamanski and Bradley Eidschun (2007)
Advisor: Siva Mandjiny
Isoelectric Point [pI] Determination for Amino Acids and Peptides
NC OPT-ED symposium, September 28, 2007 held at UNC Greensboro.
3. Qahtan Alsaedi, Ashley Clark, Ladipo Eso (2007)
Advisors: Siva Mandjiny, Cornelia Tirla, Tom Dooling and Maria Pereira
Production of Biodiesel by Transesterification with ethyl Acetate by Continuous Enzymatic Method.
Summer Undergraduate Research symposium, August 17, 2007 held at UNCP.
4. Joseph Lamanski and Bradley Eidschun (2007)
Advisor: Siva Mandjiny
Isoelectric Point [pI] Determination for Amino Acids and Peptides

Summer Undergraduate Research Symposium, August 17, 2007 held at UNCP.

5. Jay Sibett and Rebekah Locklear (2007)
Advisor: Siva Mandjiny
Sorption Study of Cu^{2+} and Zn^{2+} using Alginate as Gel Matrix
Undergraduate Research and Creativity Symposium (PURC), March 16, 2007 held at UNCP.
6. Shannon Moynihan, Jessica Ortiz and Melvin Woodland (2007)
Advisor: Siva Mandjiny
Transesterification of Waste Vegetable Oil to Produce Biodiesel
Undergraduate Research and Creativity Symposium (PURC), March 16, 2007 held at UNCP.
7. Jay Sibett and Rebekah Locklear (2006)
Advisor: Siva Mandjiny
Sorption Study of Cu^{2+} and Zn^{2+} using Alginate as Gel Matrix
State of North Carolina Undergraduate Research and Creativity Symposium (SNCURCS),
November 18, 2006 held at NCSU.
8. Jay Sibett and Rebekah Locklear (2006)
Advisor: Siva Mandjiny
Sorption Study of Cu^{2+} and Zn^{2+} using Alginate as Gel Matrix
South Eastern Regional Meetings of American Chemical Society (SERMACS), November
1, 2006 held at Augusta, GA.
9. Hong Tran and Fallen Lowrey (2006)
Advisor: Siva Mandjiny
Sorption studies of Metal Ions on Flat Sheet Membranes
20th National Conference on Undergraduate Research, NCUR, April 6-8, 2006 held at
Asheville, NC.
10. Matthan Easterlin (2005)
Advisors: Siva Mandjiny, Len Holmes and Maria Pereira
Lutein Extraction and Purification.
First Annual State of North Carolina Undergraduate Research Symposium, November 12,
2005.
11. Megan Grimsley and Matthan Easterlin (2005)
Advisors: Siva Mandjiny, Len Holmes and Maria Pereira
Extraction and Purification of Lutein from Marigold.
At the Capitol, North Carolina, March 2005.

12. Korey Revels (2005)
Advisors: Siva Mandjiny, Len Holmes, Tom Dooling and Paul Flowers (2005)
Crystallization of Lysozyme in Capillary Tube.
NC-LSAMP Undergraduate Research Conference, 3rd Annual FSU-RISE Research Colloquium, March 18, 2005.
WON 1st Place in Chemistry Division
13. Brian Backner and Matthan Easterlin (2004)
Advisor: Siva Mandjiny
Metal Sorption on Affinity Membranes
56th Southeastern Regional Meeting of the American Chemical Society (SERMACS), November 2004 held at Raleigh, NC.
14. Siva Mandjiny, Len Holmes, Sylvia Pate, Roger Brown (2004)
Project Bio
Capitol Hill, Washington DC, June 22, 2004.
15. Indee Smith (2003)
Advisor: Siva Mandjiny
Quantitation of Adsorption Capacity of Albumin on Cibacron Blue 3GA Immobilized on Sepharose 4B
SACNAS National Conference, New Mexico, October 2-5, 2003
16. Indee Smith (2003)
Advisor: Siva Mandjiny
Determination of Affinity Constant between Albumin on Cibacron Blue
55th Southeastern Regional Meeting of the American Chemical Society (SERMACS), November 16-19, 200, Atlanta, GA.
17. Siva Mandjiny, Len Holmes, Tom Dooling (2003)
Protein Crystallization at UNCP.
NC Space Grant Consortium, UNCP, May 16, 2003.
18. Indee Smith (2003)
Advisor: Siva Mandjiny
Determination of K_D between Albumin on Cibacron Blue 3GA immobilized on Sepharose 4B
NCLSAMP Conference, UNC Charlotte, 2003
19. Cynthia Sherman (2001)
Advisor: Siva Mandjiny
Crystallization of Conalbumin Protein
NC-LSAMP Conference, Winston Salem University, April 20, 2001.

MY STUDENTS ORAL PRESENTATION AT THE HONORS COLLEGE

1. Jessica Ortiz (2007)
Advisor: Siva Mandjiny
Transesterification of Waste Vegetable Oil to Produce Biodiesel
May 2007
2. Hong Tran (2006)
Advisor: Siva Mandjiny
Sorption Studies of Metal Ions on Flat Sheet Membranes
April 13, 2006
3. Jessica Locklear (2004)
Advisor: Siva Mandjiny
To construct a Lumina Meter and Develop a Method to Assay ATP in a Given Extract
April 2004
4. Jennifer Chasons (2001)
Advisor: Siva Mandjiny
Choline Kinase activity Measurement
April 2001
5. Ben Gersh (1999)
Advisor: Siva Mandjiny
Purification of IgG from the Bovine Blood by Cold Alcohol precipitation and further
Purification by Affinity Chromatography using Hydroxyapatite.
April 1999

MEETINGS

- NC-LSAMP Undergraduate Research Conference, March 2006
- NCAAPT meeting, October 2005 at UNCP.
- STEM meeting at East Carolina University, April 2004
- NSF meeting, UNCP, September 2003
- Organized one day Biotechnology Symposium at UNCP. The distinguished speaker was Dr. Carl Bauer from Indiana University, Sponsored by NC Biotechnology Center, 2005.
- NSF Conference at Winsten Salem University, March 2005.
- Participated on a National level grant writing workshop at Duke University, NC.
- Participated on a National level grant writing workshop at Whiteville Community College, Whiteville, VA.
- Participated a one day workshop on “Endocrinology” a short course organized by HCOP office at UNCP.

- Attended a one-day NSF conference at Charleston, SC in February 2003.
- Attended a MUSPIN (Minority University Space Initiative Network) workshop organized by NASA at NCCU.
- Attended a MUSPIN (Minority University Space Initiative Network) workshop organized by NASA at Norfolk, VA.
- Attended a three-day National American Chemical Society conference at Orlando, Florida, April 7-9, 2002.
- Participated on a National level workshop on Protein crystallization organized by NASA at the University of Alabama, Huntsville, AL.
- Attended a meeting organized by UNC Charlotte on “Emerging Role in Biotechnology, September 14, 2005.

GRANT ACTIVITIES

Year: 2007 – 2008

1. Title: Developing an Interdisciplinary Course in Environmental Biotechnology
Principle Investigator: UNC-Charlotte (In collaboration with NC State Univ., NC A&T Univ. and UNC Pembroke)
Co-Principle Investigators: Len Holmes and Siva Mandjiny
Funding Source: Department of Education (FIPSE Grant)
Funding Amount: (\$51, 278)/4
Result: Awarded (Year Four)
2. Title: Protein Crystallization in Capillary Tube in the Presence of Strong Magnetic Field Strength.
Principle Investigator: Dr. Jose D’Arruda (I work with Dr. D’Arruda)
Funding Source: NC Space Grant Consortium
Funding Amount: \$1000
Result: Awarded (every year)

Year: 2006 - 2007

3. Title: Developing an Interdisciplinary Course in Environmental Biotechnology
Principle Investigator: UNC-Charlotte (In collaboration with NC State Univ., NC A&T Univ. and UNC Pembroke)
Co-Principle Investigators: Len Holmes and Siva Mandjiny
Funding Source: Department of Education (FIPSE Grant)
Funding Amount: (\$51, 278)/4
Result: Awarded (Third Year)

4. NSF REU GRANT

I helped Dr. Paul Flowers to develop a summer NSF REU grant. The grant was awarded and will allow myself, along with Dr. Flowers and Dr. Tom Dooling to conduct faculty directed student research in the summer.

(Year Third)

5. Title: Protein Crystallization in Capillary Tube in the Presence of Strong Magnetic Field Strength.

Principle Investigator: Dr. Jose D'Arruda (I worked with Dr. D'Arruda)

Funding Source: NC Space Grant Consortium

Funding Amount: \$1000

Result: Awarded (every year)

6. Title: Increasing the Biotechnology Workforce Through Student Recruitment for Education and Training

Principle Investigator: Siva Mandjiny

Funding Source: NC Biotechnology Center

Funding Amount: \$48, 137

Result: Not Funded

7. Title: Transesterification of Waste Vegetable Oil to Produce Biodiesel in Batch and Continuous Flow Reactors by Enzymatic Process

Principle Investigator: Siva Mandjiny

Funding Source: NC Biotechnology Center

Funding Amount: \$75, 000

Result: Not Funded

8. Title: Acquisition of an Electron Microprobe and Carbon Coater for Fayetteville State University and the University of North Carolina at pembroke

Co-Principle Investigators: Siva Mandjiny and Lee Philips

Funding Source: NSF under MRI division

Funding Amount: \$ 1,334,270

Result: Not Funded

Year: 2005 - 2006

9. Title: Developing an Interdisciplinary Course in Environmental Biotechnology

Principle Investigator: UNC-Charlotte (In collaboration with NC State Univ., NC A&T Univ. and UNC Pembroke)

Co-Principle Investigators: Len Holmes and Siva Mandjiny

Funding Source: Department of Education (FIPSE Grant)

Funding Amount: (\$51, 278)/4

Result: Awarded (Second Year)

10. Title: Recovery of High value Nutraceuticals from Duckweed using a Gas Anti-Solvent (GAS) Process
Principle Investigators: Peter Kilpatrick, Ruban Carbonell, Anne Stomp
Co-Principle Investigators: Len Holmes, Siva Mandjiny and Maria Pereira
Funding Source: NC Biotechnology Center (Multidisciplinary Research Grant, MRG)
Funding Amount: (\$157, 789)/2
Result: Awarded (Year Second)

11. NSF REU GRANT

I helped Dr. Paul Flowers to develop a summer NSF REU grant. The grant was awarded and will allow myself, along with Dr. Flowers and Dr. Tom Dooling to conduct faculty directed student research in the summer.
(Year Second)

12. Title: Production and Purification of Urease Oxidase

Principle Investigator: Dr. Jose D'Arruda (I worked with Dr. D'Arruda)
Funding Source: NC Space Grant Consortium
Funding Amount: \$2000
Result: Awarded

Year: 2004 – 2005

13. Title: Southeastern Consortium for Agricultural Biotechnology Summer Academy

Principle Investigators: Sylvia Pate, Len Holmes and Siva Mandjiny
Funding Source: NC Biotechnology Center
Funding Amount: \$17, 000
Result: Awarded

14. Title: Developing an Interdisciplinary Course in Environmental Biotechnology

Principle Investigator: UNC-Charlotte (In collaboration with NC State Univ., NC A&T Univ. and UNC Pembroke)
Co-Principle Investigators: Len Holmes and Siva Mandjiny
Funding Source: Department of Education (FIPSE Grant)
Funding Amount: (\$51, 278)/4
Result: Awarded (First Year)

15. NSF REU GRANT

I helped Dr. Paul Flowers to develop a summer NSF REU grant. The grant was awarded and will allow myself, along with Dr. Flowers and Dr. Tom Dooling to conduct faculty directed student research in the summer.
(Year One)

16. Title: Production and Purification of Uricase
Principle Investigators: Marquita Lilly (Siva Mandjiny)
Funding Source: NC Space Grant Consortium
Funding Amount: \$5,000
Result: Awarded
17. Title: Production and Purification of Urease Oxidase
Principle Investigator: Dr. Jose D'Arruda (I worked with Dr. D'Arruda)
Funding Source: NC Space Grant Consortium
Funding Amount: \$1000
Result: Awarded

Year: 2003 – 2004

18. Title: Help Minority Students to Engage in Scientific Research
Principle Investigator: Dr. Jose D'Arruda and Siva Mandjiny
Funding Source: NC Department of Transportation
Funding Amount: \$3500
Result: Awarded
19. Title: Protein Structure and Evolution at the Environmental Limits of Life
Principle Investigator: Dr. Joseph Ng, University of Alabama at Huntsville, Marshall Space Flight Center, NASA, UGA and VCU
Co-Principle Investigator: Siva Mandjiny
Funding Source: NSF
Funding Amount: \$5, 600, 000
Result: Not Funded
20. Title: UNCP Biotechnology Business and Industrial Training Center
Principle Investigators: Dr. Len Holmes
Co-Principle Investigator: Siva Mandjiny
Funding Source: NSF
Funding Amount: \$600, 000
Result: Not Funded
21. Title: Course Curriculum & Laboratory Improvement Program with UNC Charlotte
Principle Investigators: UNC Charlotte
Co-Principle Investigators: Len Holmes and Siva Mandjiny
Funding Source: NSF
Funding Amount: \$25, 000
Result: Not Funded

22. Title: Crystallization of Urease
Principle Investigator: Dr. Tom Dooling (Worked with Dr. Dooling)
Funding Source: NC Space Grant Consortium
Funding Amount: \$2000
Result: Awarded

Year: 2002 – 2003

23. Title: Undergraduate Research for Minority Students
Principle Investigators: Jose D'Arruda and Siva Mandjiny
Funding Source: Department of Transportation
Funding Amount: \$3500
Result: Awarded

24. Title: To Develop Biochemistry Experiments
Principle Investigators: Len Holmes and Siva Mandjiny
Funding Source: UNCP
Funding Amount: \$1291.80
Result: Awarded

Year: 2001 – 2002

25. Title: Undergraduate Research for Minority Students
Principle Investigators: Jose D'Arruda and Siva Mandjiny
Funding Source: Department of Transportation
Funding Amount: \$3500
Result: Awarded

26. Title: To Develop Biochemistry Experiments
Principle Investigators: Len Holmes and Siva Mandjiny
Funding Source: UNCP
Funding Amount: \$1109
Result: Awarded

Year: 2000 – 2001

27. Title: Undergraduate Research for Minority Students
Principle Investigators: Jose D'Arruda and Siva Mandjiny
Funding Source: Department of Transportation
Funding Amount: \$3500
Result: Awarded

28. Title: Protein Structure/Function Workshop using the Internet
Principle Investigators: Len Holmes, John Reissner and Siva Mandjiny
Funding Source: NC Biotechnology Center
Funding Amount: \$5670
Result: Not Funded
29. Title: Environmental Health Risk Factors
Principle Investigators: Len Holmes and Siva Mandjiny
Funding Source: Defense Intelligence Agency
Funding Amount: \$44, 480
Result: Not Funded
30. Title: Educational Trip to Cape Canaveral
Principle Investigator: Siva Mandjiny
Funding Source: UNCP
Funding Amount: \$1500
Result: Awarded

Year: 1999 – 2000

31. Title: The Carolinas Symposium on Bioprocessing
Principle Investigators: Len Holmes and Siva Mandjiny
Funding Source: NC Biotechnology Center
Funding Amount: \$27, 704
Result: Not Funded
32. Title: Undergraduate Research for Minority Students
Principle Investigators: Jose D'Arruda and Siva Mandjiny
Funding Source: Department of Transportation
Funding Amount: \$3500
Result: Awarded
33. Title: Crystallization of canavalin Protein
Principle Investigator: Siva Mandjiny
Funding Source: NC Space Grant Consortium
Funding Amount: \$5000
Result: Awarded

Year: 1998 – 1999

34. Title: Educational Enhancement of Biotechnology
Principle Investigators: Len Holmes and Siva Mandjiny
Funding Source: NC Biotechnology Center

Funding Amount: \$5000
Result: Not Funded

35. Title: Pilot Curriculum in Biotechnology
Principle Investigators: Len Holmes and Siva Mandjiny
Funding Source: Department of Education (FIPSE)
Funding Amount: \$216, 600
Result: Not Funded
36. Title: Visiting Industrial Scientist
Principle Investigator: Siva Mandjiny
Funding Source: NC Biotechnology Center
Funding Amount: \$2500
Result: Awarded
37. Title: A Collaborative Program in Bioprocessing Education
Principle Investigators: Len Holmes and Siva Mandjiny
Funding Source: NSF (CCLI Grant)
Funding Amount: \$254, 637
Result: Not Funded
38. Title: Protein Crystallization
Principle Investigators: Len Holmes and Siva Mandjiny
Funding Source: NSF (ATE Grant)
Funding Amount: \$479, 000
Result: Not Funded
39. Title: Protein Crystallization Curriculum Development
Principle Investigators: Len Holmes and Siva Mandjiny
Funding Source: NASA
Funding Amount: \$30, 000
Result: Not Funded

Year: 1997 – 1998

40. Title: An Introduction to Bioseparations
Principle Investigators: Len Holmes and Siva Mandjiny
Funding Source: NC Biotechnology Center
Funding Amount: \$3714
Result: Not Funded
41. Title: Purification of IgG from bovine Blood
Principle Investigators: Ben Gersh (student) and Siva Mandjiny
Funding Source: UNCP

Funding Amount: \$200
 Result: Awarded

42. Title: North carolina Transition Student worker
 Principle Investigators: Siva Mandjiny
 Funding Source: NC Department of Community Colleges
 Funding Amount: \$1500
 Result: Not Funded

Year: 1996 – 1997

43. Title: An Introduction to Bioprocessing
 Principle Investigators: Len Holmes and Siva Mandjiny
 Funding Source: NC Biotechnology Center
 Funding Amount: \$2000
 Result: Awarded

44. Title: An Introduction to Bioprocessing
 Principle Investigators: Len Holmes and Siva Mandjiny
 Funding Source: NC Biotechnology Center
 Funding Amount: \$6600
 Result: Not Funded

UNDERGRADUATE MENTORSHIP

	Student Name	Research Project	Dates	Notes*
1	Ladipo Eso	Biodiesel Production by Transesterification with Ethyl Acetate	Fall 2007	2, 6
2	Ashley Clark	Biodiesel Production by Transesterification with Ethyl Acetate	Fall 2007	2, 6
3	Qahttan Alsaedi	Biodiesel Production by Transesterification with Ethyl Acetate	Fall 2007	2,6
4	Arika Patel	Enzymatic Hydrolysis of Sweet Potao Starch to Produce Ethanol	Fall 2007	6
5	Mark Stevens	Kinetics of Biodiesel Production by HPLC Method	Fall 2007	6

6	Samantha Lowery	Protein Crystallization in Capillary Tube	Fall 2007	2,6
7	Ladipo Eso	Biodiesel Production by Transesterification with Ethyl Acetate	Summer 2007	2, 4,6
8	Ashley Clark	Biodiesel Production by Transesterification with Ethyl Acetate	Summer 2007	2, 4,6
9	Qahtan Alsaedi	Biodiesel Production by Transesterification with Ethyl Acetate	Summer 2007	2, 4,6
10	Reese Bell	Separation of Proteins by Ion Exchange Chromatography	Summer 2007	5
11	Arika Patel	Enzymatic Hydrolysis of Sweet Potato Starch to Produce Ethanol	Summer 2007	6
12	Joseph Lamanski	Isoelectric Point Determination [pI] of Amino Acids and Peptides	Summer 2007	4, 6
13	Bradely Eidschun	Isoelectric Point Determination [pI] of Amino Acids and Peptides	Summer 2007	4, 6
14	Shannon Moynihan	Transesterification of Waste Vegetable Oil to Produce Biodiesel	Spring 2007	5
15	Melvin Woodland	Transesterification of Waste Vegetable Oil to Produce Biodiesel	Spring 2007	5
16	Tashina Harris	Transesterification of Waste Vegetable Oil to Produce Biodiesel	Spring 2007	6
17	Mark Stevens	Butanol Fermentation by Clostridium acetobutylicum	Spring 2007	2, 6
18	Jesica Ortiz	Transesterification of Waste Vegetable Oil to Produce Biodiesel	Spring 2007	3, 5
19	Samantha Schrock	Crystallization of lysozyme Protein in Capillary Tube	Fall 2006	2,6
20	Jay Sibbett	Affinity Membranes for Metal Sorption	Summer 2006	2, 4, 6
21	Rebekha Locklear	Affinity Membranes for Metal Sorption	Summer 2006	2, 4, 6

22	Marquitta Lilly	Immobilization and Characterization of Urease and Glutamate dehydrogenase Enzymes on Chitin and other Gel Beads	Spring 2006	5
23	Lisa Marie Hayden	Crystallization of Lysozyme in the Presence of Strong Magnetic Field Strength	Spring 2006	2, 5
24	Denise Busbin	Media Optimization of Wine Making Process	Fall 2005	5
25	Mark Cummings	Media Optimization of Wine Making Process	Fall 2005	5
26	Hassan Allen	Media Optimization of Wine Making Process	Fall 2005	5
27	Korey Revels	Crystallization of Lysozyme in a Capillary Tube Under Strong Magnetic Field Strength	Fall 2005	2, 5
28	Hong Tran	Affinity Membranes for Metal Sorption	Summer 2005	1, 2, 3, 4, 5
29	Fallen Lowery	Affinity Membranes for Metal Sorption	Summer 2005	2, 4, 6
30	Megan Grimsley	Lutein Extraction and Purification	Summer 2005	1, 2, 4, 5
31	Matthen Easterlin	Lutein Extraction and Purification	Summer 2005	2, 4, 6
32	Reese Bell	Separation of Lysozyme from Egg White using CM Sepharose	Spring 2005	5
33	Ezra Locklear	Separation of Lysozyme from Egg White using CM Sepharose	Spring 2005	5
34	Jason Townsend	Separation of Lysozyme from Egg White using CM Sepharose	Spring 2005	1, 5
35	Colbi Locklear	Encapsulation of Lysozyme in Calcium Alginate	Spring 2005	5
36	Indee Smith	β -galactosidase Enzyme Activity Measurement	Fall 2004	5
37	Andrew Oxendine	Separation of Lysozyme by Phase Partitioning (using Dextran and PEG)	Fall 2004	5
38	Rachel Serrano	Development of a Technique	Fall 2004	5

		to Measure Glucose Concentration using GOD, POD Enzymes		
39	Shannon Stark	ATP Assay Development Technique	Fall 2004	1, 5
40	Eric Duncan	Fermentation of Butanol using Clostridium acetobutalism	Fall 2004	1, 5
41	Robert Stubbins	Fermentation of Butanol using Clostridium acetobutalism	Fall 2004	1, 5
42	Hong Tran	Separation of Cu ²⁺ ions from Water	Fall 2004	1, 2, 3, 4, 5
43	Brian Buckner	Affinity Membranes for Metal Sorption	Summer 2004	1, 2, 4, 5
44	Matthan Easterlin	Affinity Membranes for Metal Sorption	Summer 2004	2, 4, 6
45	Megan Grimsley	Lutein Extraction and Purification	Summer 2004	1, 2, 4, 5
46	Jessica Locklear	To construct a Lumina Meter and Develop a Method to Assay ATP in a Given Extract	Spring 2004, Fall 2003	1, 3,4, 5
47	Traci Armstrong	Immobilization of IDA (Iminodiacetic Acid) on Membrane to Reomove Metal Ions such as Cu ²⁺ and Zn ²⁺	Spring 2004	1, 5
48	Wajdi Alsaedi	Inhibition of Xanthine Oxidase to Control the Production of Uric Acid in the Blood Serum	Spring 2004	5
49	Wajdi Alsaedi	Crystallization of Cytochrome C	Fall 2003	5
50	Diana Galloway	Quantitative and Qualitative Analysis of Lectin by ELISA	Fall 2003	5
51	Indee Smith	Development of a technique to Assay Oleic Acid, Linoleic Acid and Arachidonic Acid by HPLC	Fall 2003	5
52	Indee Smith	Determination of Affinity Constant between Albumin and Cibocran Blue Coupled to Sepharose Gel	Summer 2003	2, 4, 5
53	Chico Locklear	Novel Protein Crystallization Technique	Summer 2003	2, 5
54	Bruce Pier	Analytical Technique of	Spring 2003	1, 5

		Allopurinol a Medicine used for the Disease "GOUT" by HPLC		
55	Joseph Oxendine	Method to find the Affinity Constant (K_D) between Albumin and Coomassie Blue (CBB) Dye Immobilized on Sepharose Gel	Spring 2003	5
56	LaTanya Gills	Isoelectric Point (pI) Determination of Various Proteins	Spring 2003	1, 2, 5
57	Ryan Rodriguez	Development of Experimental Protocol for the Extraction Organic Compounds by Ternary System	Spring 2003	1, 2, 5
58	Margaret Brown	Plastocyanin: Protein Purification, Characterization and Crystallization	Fall 2002	2, 4, 5
59	September Neal	Amino Acid Analysis by HPLC	Summer 2002	2, 5
60	Don Owens	Separation of Amino Acids by HPLC	Spring 2002	1, 5
61	Donald Jacobs	Vitamin C Measurement in Various Samples	Spring 2002	5
62	Brian Bang	Method to Assay Galactose-1-Phosphate Uridyl Transferase	Spring 2002	5
63	Brad Neil	Method to Assay Galactose-1-Phosphate Uridyl Transferase	Spring 2002	5
64	Margaret Brown	Plastocyanin: Protein Purification, Characterization and Crystallization	Summer 2001	2, 4, 5
65	Jason Deese	Peroxidase: Enzyme Assay with Inhibition Studies	Summer 2001	1, 2, 4, 5
66	Susan Phy	Glucose Assay in Apples by Glucose Oxidase and Peroxidase Enzymes	Spring 2001	1, 5
67	Don Owens	Separation of Amino Acids by HPLC	Spring 2001	1, 5
68	Lisa Laws	Crystallization of Satellite Tobacco Mosaic Virus	Spring 2001	1, 5
69	Jennifer Chasons	Choline Kinase Activity Measurement	Spring 2001	1, 3, 4, 5

70	Andrea Locklear	Crystallization of Lysozyme in Capillary Tube	Spring 2001	1, 4, 5
71	Cynthia Sherman	Conalbumin and Hemoglobin Protein Crystallization	Spring 2001	1, 2, 4, 6
72	Shanna May	Method to Assay Lipoprotein A by ELISA	Fall 2000	1, 5
73	Cris Stanton	Protein Crystallization	Fall 2000	1,2,4,5
74	Sara Locklear	To Develop a Protocol to Assay Glucose using Glucose Oxidase and Peroxidase	Summer 2000	1, 2, 4, 5
75	Jimmy Locklear	To Develop a Protocol to Assay Glucose using Glucose Oxidase and Peroxidase	Summer 2000	1, 2, 4, 5
76	Shirley McLaurin	Purification of Lysozyme Enzyme	Fall 2000	1, 5
77	Alen Wilson	Method to Assay Lysozyme Enzyme	Fall 2000	1, 5
78	Anna Roberts	Lysozyme Crystallization	Spring 2000	1,2,4,5
79	Charlene Locklear	Lysozyme Separation from Chicken Egg White	Summer 1999	1, 2, 5
80	Jadda Locklear	Chromatographic Technique to Purify Lactate Dehydrogenase Enzyme using CM-Sepharose	Summer 1999	1, 2, 5
78	Shannon Chavis	Chromatographic Technique to purify Lactate Dehydrogenase Enzyme using Sepharose Cibocron Blue Dye	Spring 1999	5
79	Ben Gersh	Purification of IgG from the Bovine Blood by Cold Alcohol Precipitation and further Purification by Affinity Chromatography using Hydroxyapatite	Fall 1998	1, 3, 5
80	Dorothy Blew	Separation of Water Soluble Vitamins by HPLC	Fall 1998	5
81	Melody Pooler	Development of Techniques to Assay Different Sugars	Fall 1998	5
82	Luis Garcia	Separation of Proteins such as Bovine Serum Albumin, Cytochrome C and Lysozyme using Weak Ion Exchanger	Summer 1998	1, 2, 5

83	Melinda Davis	Separation of Proteins such as Bovine Serum Albumin, Cytochrome C and Lysozyme using Weak Ion Exchanger	Summer 1998	5
84	Keith Miller	Purification of IgG from the Bovine Blood by Cold Alcohol Precipitation and further Purification by Affinity Chromatography using Hydroxyapatite	Spring 1998	1, 5
85	Janice Foushee	Purification of IgG from the Bovine Blood by Cold Alcohol Precipitation and further Purification by Affinity Chromatography using Hydroxyapatite	Spring 1998	5
86	Shannon Chavis	Chromatographic Technique to purify Lactate Dehydrogenase Enzyme using Sepharose Cibocron Blue Dye	Spring 1998	2, 5
87	Ashley Lowery	Extraction and Purification of Lactate Dehydrogenase enzyme from the Bovine Heart	Summer 1997	1, 2, 5
88	Ramon Jacobs	Growth Kinetics of Yeast Cell Fermentation	Summer 1997	1, 2, 5
89	Candice Hellier	Determination of Purification Conditions of LDH Enzyme by Affinity Chromatography	Spring 1997	1, 5
90	Meredith Wilcox	Determination of Kinetic parameters of LDH from Bovine Heart	Spring 1997	1, 4, 5

***Notes:**

- 1 - attending or attended graduate or professional school
- 2 – received on-campus research stipend
- 3 – Chancellor’s Scholar / University Honors (research thesis)
- 4 – Conference presentation
- 6 – Attending UNCP

COMMUNITY SERVICE

- UNCP Biodiesel Outreach will be starting from October 30th, 2007

- Organizing member of the Women in Biosciences
- Worked with HCOP (Health Career Opportunity Program) office to teach chemistry for the sixth graders in Robeson County School Systems, 2006, 2005, 2004, 2003, 2002, 2001, 2000.
- Worked with HCOP office to teach chemistry for High School Students from the local High School Students in Summer for six weeks (6 hrs per week), 2006,2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998, 1997.
- Worked to develop a course in biotechnology between UNCP and Robeson Community College.
- Recruiter for UNCP Biotechnology Program
- UNCP Biodiesel Project Team
- Helping admissions office to recruit students for UNCP.
- Participated as Science Fair Judge
- Participated in “Chemistry Today” UNCP TV-Interview by Dr. Bruce Ezzel on October 11, 2005
- Organized a one day Biotechnology Symposium at UNCP. The distinguished speaker was Dr. Carl Bauer from Indiana University.
- Organized Job Ready Robeson Workshop for the high School Students for 3 years from 1997-1999.
- Served as a chair on a committee to recruit the director of CSRP at UNCP.
- Served on UNCP Fermentation Facility Project Team.
- Directed Science Fair Research Projects with High School Students to be presented at the Regional Fair.
- *One student was awarded the 1st Prize on a Statewide competition.*
- Judge for science projects at Max Abbott Middle School
- Organized Workforce development for Biotechnology at UNCP.

PROFESSIONAL COLLABORATORS

1. Dr. Joseph Ng, Professor, Department of Structural Biology, University of Alabama at Huntsville, Huntsville, AL.
2. Dr. Alexander McPherson, University of California at Riverside, Riverside, California.
3. Mr. J. Woody Robbins, Bioprocess Engineer, The University of Alabama at Birmingham, Birmingham, Alabama.
4. Mr. David H. Yarley, Manager, Ajinomoto USA, Inc., Raleigh, NC.
5. Dr. Ruben Carbonel, Professor, Dept. of Chemical Engineering, NCSU, Raleigh, NC.
6. Dr. Peter Kilpatrick, Professor, Dept. of Chemical Engineering, NCSU, Raleigh, NC.
7. Dr. Steven Peretti, Associate Professor, Dept. of Chemistry and Physics, NCSU, Raleigh, NC.

GRADUATE AND POSTDOCTORAL ADVISORS

1. Dr.M.A.Vijayalakshmi, LIMTech, CNRS, Universite de Technologie de Compiègne, Compiègne, France. (Thesis Advisor).
2. Post Doctoral work with Dr.K.A.Matis and Dr.Zouboulis, Department of Chemical Engineering, University of Thessaloniki, Thessaloniki, Greece.
3. Post Doctoral work with Dr.C.Neskovic, Research Engineer, Laboratoire Pierre Sue, CNRS - CEA, CE/SACLAY, France.
4. Post Doctoral work with Dr.Claire Vidal Madjar, Research Engineer, LPCB, CNRS, Universite de Paris Val de Marne, Thiais, France.
5. Post Doctoral work with Dr. Michael Jaffrin, Division de Biomechanique, CNRS, URA 858, Universite de Technologie de Compiègne, France.