UNIVERSITY OF MINNESOTA

2007
MRSEC
Summer Undergraduate Research Expo

Thursday, August 9, 2007
4:00-7:00 p.m.
Memorial Hall, McNamara Alumni Center
1. **Maari Hanson**, Joe Scanlon, Dr. Chris Cramer, Dr. Steve Kass  
*Are carboxyl groups the most acidic sites in amino acids? From gas phase to solution, considering the thermodynamic properties of variable deprotonation sites.*  
Home Institution: Gustavus Adolphus/UMN

2. **Mallory Richards**, Amanda Nienow  
*Photolysis of Sulfonyl Group Herbicides*  
Home Institution: Gustavus Adolphus College

3. **Tegan Presley**, Dr. Dan Besemann  
*Investigation of Liquid Phase Structure: Analysis of Methanol by Raman Spectroscopy*  
Home Institution: Hamline University

4. **Anthony Stender**, Dan Besemann  
*Separation of Racemic Tryptophan using Hollow–Fiber Membranes*  
Home Institution: Hamline University

5. **Thomas Chapman**, Feng Jing, Marc Hillmyer  
*Synthesis and Characterization of Alkyl–substituted Polylactides*  
Home Institution: University of Minnesota

6. **Christopher Hale**, R. Lee Penn  
*Oriented Aggregation of Iron Oxide Nanoparticles*  
Home Institution: University of Minnesota

7. **Angela Holmberg**, David A. Olson, Marc A. Hillmyer  
*Synthesis of New Diblock Copolymer, Poly(4-Bromostyrene)–b–Poly(D,L-Lactide), for High Temperature Nanoporous Templates*  
Home Institution: University of Minnesota

8. **Patrick Konold**, Dr. Aaron Massari  
*Electrical and Optical Characterization of Processible Polyaniline Gels*  
Home Institution: University of Minnesota

9. **Kristen Seim**, Joseph Scanlon, Shana Sturla, Christopher Cramer  
*Evaluation of Selective Adduct–Binding Nucleoside Probes*  
Home Institution: University of Minnesota

*Fluorescent Iron Oxide Nanoparticles for Use as Contrast Agents for Magnetic Resonance Imaging*  
Home Institution: University of Minnesota

11. **Erik Davis**, Christopher Cramer  
*Understanding the Mechanism of Nucleophilic Addition to Cyclic Oxocarbonium Ions*  
Home Institution: St. Olaf College/UMN
12. Jon Athmann, Mary Hammer, Dr. Boyd
*In Pursuit of Luminescent Ruthenium Compounds*
Home Institution: University of St. Thomas

*Effect of Substitution on the Molecular Conformations and Crystal Structures of Some Centrosymmetric Benzylideneanilines*
Home Institution: University of St. Thomas

14. Logan Bodnia, Tony Borgerding
*Analysis of Atrazine in Shallow Lakes Using GC–MS and LC–MS*
Home Institution: University of St. Thomas

15. Nathaniel Brandt, Dr. Joseph Brom
*Transient Absorption Spectroscopic Studies of Photoinduced Electron Transfer Reactions of Pyrromethene Laser Dyes*
Home Institution: University of Saint Thomas

16. Amanda Hixon, Dr. Joseph M. Brom
*Fluorescence Quenching of Pyrromethene 546*
Home Institution: University of St. Thomas

17. Matthew Humbert, Anthony Borgerding
*Gas Phase Microdialysis Extraction in Diverse Environments*
Home Institution: University of St. Thomas

18. Andrew Korte, Dr. Kristine H. Wammer
*Environmentally–Relevant Photodegradation of Two Fluoroquinolone Antibiotics*
Home Institution: University of St. Thomas

19. Marika Kuspa, William H. Ojala, Ph.D. (advisor)
*Crystal Structure of a Centrosymmetric Benzylideneaniline: N, N-bis(3-chlorobenzylidene)- p-phenylenediamine*
Home Institution: University of St. Thomas

20. Katherine Motz
*Using alkyl ammonium cations to facilitate G–DNA self–assembly and stabilization*
Home Institution: University of St. Thomas

21. Andrew Rischall, Dr. Tony Borgerding
*Increasing Sensitivity of Gas Phase Microdialysis Probes using Carbon Nanotubes*
Home Institution: University of Saint Thomas

22. Jenna Schroeder, Dr. Kristine H. Wammer, Rachel A. Lundeen
*Analysis of Enrofloxacin Degradation & Photoproduct Antibacterial Activity*
Home Institution: University of St. Thomas

23. Louis Sigtermans, Kris Wammer
*Triclosan resistance levels in environmental bacteria*
Home Institution: University of St. Thomas

24. Matthew Turner, Dr. T.C. Marsh
*In situ self–assembly of G–DNA molecular scaffolds nucleated by a polymeric template*
Home Institution: University of Saint Thomas
Three-Dimensionally Ordered (3DOM) Carbon as Solid Contacts for Ion Selective Electrodes: Low Detection Limit Applications
Summer Advisor: Philippe Bühlmann, Andreas Stein
Sponsor: Chemistry
Home Institution: Truman State University

26. Nicholas Petkovich, Melissa Fierke, Chun-Ze Lai
Effects of Surface Composition and Morphology of Porous Carbon Electrodes on Ion-Selective Sensing
Summer Advisor: Andreas Stein
Sponsor: Chemistry
Home Institution: Duquesne University

27. Chris Leonard, Kari McGee, Dr. Michael Burand
Synthesis and Characterization of Crystalline Ruthenium Complexes for Use as Semiconductors
Summer Advisor: Prof. Kent R. Mann
Sponsor: MRSEC REU
Home Institution: Gustavus Adolphus College

28. Carrie Stephani
Precursors in Gas-Phased Silicon Nanoparticle Production
Summer Advisor: Jeff Roberts
Sponsor: MRSEC REU
Home Institution: University of Minnesota

29. Lisa Wang
Polymerization of γ-butyrolactone Using Zn(II) Alkoxide Catalyst
Summer Advisor: Marc A. Hillmyer and William B. Tolman
Sponsor: MRSEC REU
Home Institution: Carleton College

30. Morgan Wells
Controlled Release Polymer/Drug Conjugates
Summer Advisor: Tom Hoye and Chris Macosko
Sponsor: MRSEC REU
Home Institution: Gustavus Adolphus College

31. Annmarie Argiros, Dr. Marian Navratil, Dr. Edgar A. Arriaga
Detection of Mismatched Mitochondrial DNA by MutS Using Capillary Electrophoresis
Sponsor: LANDO
Home Institution: University of Minnesota

32. Evgeny Beletskiy, Christopher J. Douglas
New approach to linear polyacenes
Sponsor: LANDO
Home Institution: University of Minnesota

33. Nick Calandra, Zhixin Tian, Lev Lis, Steven R. Kass
Synthesis and H/D Exchange Studies of Selected Dipeptides
Sponsor: LANDO
Home Institution: University of Minnesota
34. Darren Ceckanowicz, Kyle Schwartz, Kent Mann
*Luminescent cyclometalated iridium complexes for use as sensors of CO2*
Sponsor: LANDO
Home Institution: University of Minnesota

35. Paul Erickson, Dr. Kris McNeill, Dr. Jim Cotner, Dr. Rose Cory
*Detection of photochemically produced peroxides from Dissolved organic matter*
Sponsor: LANDO
Home Institution: University of Minnesota– Twin Cities

36. Jason Garness, David Blank, Adam Huss, Evan Estrine
*Can Poly-3–hexylthiophene fluoresce in a solid film as it does in solution?*
Sponsor: LANDO
Home Institution: University of Minnesota

37. Jonathan Hennek, Dr. Wayne Gladfelter
*Combinatorial Low–Pressure Chemical Vapor Deposition of High–k Strontium–doped Hafnium Dioxides*
Sponsor: LANDO
Home Institution: University of Minnesota

38. John Kromer, Dwight R. Stoll, Yu Zhang, Peter W. Carr
*Chromatographic Characterization of a Carbon–Clad Zirconia Stationary Phase for HPLC*
Sponsor: LANDO
Home Institution: University of Minnesota

39. Lucas Monkkonen, Emily Skowronek, Renee Mosing
*In Vitro Selections for Catalytic Mesoporphyrin IX Metallation Aptamers Using Capillary Electrophoresis*
Summer Advisor: Professor Michael T. Bowser
Sponsor: LANDO/NSF Program
Home Institution: Grinnell College

40. Dave Pearson, William Tolman, Aalo Gupta
*Synthesis and dioxygen reactivity of bio–inspired copper(I) complexes*
Sponsor: LANDO
Home Institution: University of Minnesota

41. Daniel Tiegs, Lawrence Que Jr.
*Olefin cis–dihydroxylation catalyzed by bioinspired non–heme Iron compounds*
Sponsor: LANDO
Home Institution: University of Minnesota

42. Sarah Weinreis, Audrey Eigner, Dr. Aaron Massari
*Infrared Pump–Probe Investigation of Melanin Vibrational Relaxations*
Sponsor: LANDO
Home Institution: University of Minnesota

43. Patrick Willoughby, Aaron E May, and Thomas R Hoye
*Heterocycles Made Via Decarboxylation of Cyclic Carbamates. Scope and Limitations*
Sponsor: LANDO
Home Institution: University of Minnesota
44. Alyce Anfang, Paul Boswell, Phil Buhlmann  
*Anion Coordination to Electron-Deficient Phosphonium Compounds*  
Summer Advisor: Phil Buhlmann  
Sponsor: Heisig/Gleysteen Summer Research Program  
Home Institution: University of Minnesota

45. Martin Donakowski  
*Organic Ligand Synthesis for Bound Nanoparticle Ruthenium Complexes*  
Summer Advisor: Wayne Gladfelter  
Sponsor: Glaystein/Heisig  
Home Institution: University of Minnesota

46. Daniel Johnson, Dr. Jason England  
*The Wide World of Cyclam Derivatives: More Options for Iron Complexes*  
Summer Advisor: Dr. Larry Que  
Sponsor: Heisig/Gleysteen Summer Research Program  
Home Institution: University of Minnesota
47. **Amarpreet Bains, Zeeshan Syedain**  
*Effect of Calcium Concentration Variations on Fibrin Gel Mechanics*  
Summer Advisor: Dr. Robert Tranquillo  
Sponsor: MRSEC REU  
Home Institution: University of Pennsylvania

48. **David Bunck, Zach Thompson**  
*Influence of Nanometer Sized Silica Particles on Epoxies with Tunable Crosslink Density*  
Summer Advisor: Frank Bates  
Sponsor: MRSEC REU  
Home Institution: University of Wisconsin–Madison

49. **Melissa Burford**  
*The improvement of Synthetic Vectors for the Delivery of Plasmid DNA*  
Summer Advisor: Chun Wang  
Sponsor: MRSEC REU  
Home Institution: Howard University

50. **Christina Cowman, William B Gleason**  
*Sulfated Carbohydrate Polymers: Theory and Practice*  
Summer Advisor: William B Gleason  
Sponsor: Lab Medicine and Pathology  
Home Institution: University of Minnesota

51. **Kathleen Crawford, Vladimir Makarov**  
*Fabrication on Bit Patterned Media Using Anodic Aluminum Oxide*  
Summer Advisor: Prof. Beth Stadler  
Sponsor: MRSEC REU  
Home Institution: University of Florida

*Hall Effect and Transport Measurements of La_{1-x} Sr_{x} CoO_{3} Single Crystals*  
Summer Advisor: Chris Leighton  
Sponsor: MRSEC REU  
Home Institution: Harvey Mudd College

53. **Dan Hawk**  
*Minimizing the Staebler–Wronski Effect in Amorphous Silicon (a–Si) film*  
Summer Advisor: James Kakalios  
Sponsor: MRSEC REU / Physics Department  
Home Institution: College of Menominee Nation

54. **Patrick Hawk, Dr. Thomas C. Marsh**  
*Alignment of Surface–Anchored Supramolecular Nucleic Acids via a Static Alternating Current (AC) Field*  
Summer Advisor: Dr. Daniel Frisbie  
Sponsor: MRSEC REU  
Home Institution: University of St. Thomas
55. Alison Heussler  
*Low Voltage Electrowetting on a novel dielectric*  
Summer Advisor: Xiaoyang Zhu  
Sponsor: MRSEC REU  
Home Institution: Augsburg College

56. Kyle Holmberg, Betul Bilgin  
*Molecular Engineering of Thermal–Responsive Bioactive Surfaces*  
Summer Advisor: Wei Shen  
Sponsor: MRSEC REU  
Home Institution: Northwestern University

57. Carrington L. Howard, Noelle Palumbo  
*The Improvement of Synthetic Vectors for the Delivery of Plasmid DNA*  
Summer Advisor: Dr. Chun Wang  
Sponsor: MRSEC REU  
Home Institution: Howard University

58. Amy LeVee  
*The Inspection of Gadolinium around the Curie Temperature*  
Summer Advisor: Dr. E. Dan Dahlberg  
Sponsor: MRSEC REU  
Home Institution: Yeshiva University

59. Jeremy Lois  
*pH-sensitive Liposomes and their Leakages within Ranging pH Environments*  
Summer Advisor: Efie Kokkoli  
Sponsor: MRSEC REU  
Home Institution: Macalester College

60. Robert Mohr  
*AC Detection of Spin Polarization in a Lateral Fe/GaAs Device*  
Summer Advisor: Paul Crowell  
Sponsor: MRSEC REU  
Home Institution: Swarthmore College

61. Tosin Odufuye, Wei Shen, Betul Bilgin, Kyle Holmberg  
*Molecular Engineering of Thermally–Sensitive Bioactive Surfaces*  
Summer Advisor: Wei Shen  
Sponsor: MRSEC REU  
Home Institution: University of Minnesota

62. Christopher Sarra  
*Controlling the Architecture of Polythiophene Thin Films for Use in Ordered Bulk Heterojunction Photovoltaic Devices*  
Summer Advisor: Professor C. Daniel Frisbie  
Sponsor: MRSEC REU  
Home Institution: Cornell University

63. Kari Tanaka  
*Compatibility of Immiscible Polymers by Random Copolymer*  
Summer Advisor: Chris Macosko  
Sponsor: MRSEC REU  
Home Institution: Macalester College
64. John Tritsch, Ryan Gresbak  
*Sintering of Germanium Nanoparticles*  
Summer Advisor: Uwe Kortshagen  
Sponsor: MRSEC REU  
Home Institution: University of Wisconsin – Eau Claire

65. Matthew Wang, Carlos R. Lopez Barron  
*Coarsening of Immiscible Cocontinuous Blend*  
Summer Advisor: Chris Macosko  
Sponsor: MRSEC REU  
Home Institution: the University of Tennessee

66. Lynn Wolf, Christopher Ellison  
*Block Copolymer Bicontinuous Microemulsions*  
Summer Advisor: Frank Bates  
Sponsor: MRSEC REU  
Home Institution: Iowa State University

67. Nicholas Young, Yiyong He  
*Temperature-Dependent Transport of Block Copolymer Micelles between Immiscible Liquids*  
Summer Advisor: Tim Lodge  
Sponsor: MRSEC REU  
Home Institution: Bucknell University
Graduate Students

68. Steven Calder
_Semiclassical Wavefunctions for Single-Electron Diatomic Molecules_
Home Institution: University of Minnesota

69. Yan Jia, Carston R. Wagner
_Toward the Design of Cell-permeable Cap-dependent Translation Inhibitors_
Home Institution: University of Minnesota

70. Adam Chamberlin, Christopher J. Cramer; Donald G. Truhlar
_SM8T: Accounting for the Temperature Dependence of Free Energies of Solvation_
Home Institution: University of Minnesota

71. Leila Datoo, Mike De Meuse, Carston Wagner
_DESIGN AND SYNTHESIS OF 3’-AZIDO-3’-DEOXYTHYMIDINE NUCLEOSIDE ANALOGUES AS POTENTIAL ANTI-MICROBIAL AGENTS_
Home Institution: University of Minnesota

72. Nicholas Denny, Sang Eon Han, David J. Norris, Andreas Stein
_A Study of the Effects of Thermal Emission and Heating of Macroporous Tungsten Photonic Crystals_
Home Institution: University of Minnesota

73. Elizabeth Lugert, Chun-Ze Lai, Paul G. Boswell, Philippe Buhlmann
_Perfluoropolymers: Plasticization and Application in Ion-Selective Electrodes_
Home Institution: University of Minnesota

74. Renee Mosing, Michael T. Bowser
_Using Capillary Electrophoresis–SELEX for the Selection of Aptamers that Bind to HIV Reverse Transcriptase_
Home Institution: University of Minnesota