41st National Organic Chemistry Symposium

University of Colorado

Boulder, Colorado

June 7 – 11, 2009

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(Front cover photo courtesy of Casey A. Cass/University of Colorado)

Welcome to the University of Colorado

On behalf of the Executive Committee of the ***Division*** **of** ***Organic Chemistry*** of the ***American Chemical Society*** and the ***Department*** **of** ***Chemistry*** **at** ***The University of Colorado,*** we welcome you to the *40th National Organic Chemistry Symposium.* The goal of this biannual event is to present a distinguished roster of speakers that represents the current status of the field of organic chemistry, in terms of breadth and creative advances.

The first symposium was held in Rochester NY, in December 1925, under the auspices of the Rochester Section of the Division of Organic Chemistry. The early meetings were held in December but this was later changed to June. There was an interruption during WWII but the symposium was resumed in Boston in 1947 and has been held biannually ever since. In 1959 the Roger Adams Award was established and the Award Address become a key focus of the symposium. The *National Organic Chemistry Symposium* is the premier event sponsored by the Division of Organic Chemistry of the American Chemical Society to highlight recent advances in organic chemistry. The 41st Symposium consists of 13 invited speakers, plus the 2009 Roger Adams Awardee, Professor Andrew Streitwieser. The lectures will be presented during morning and evening sessions at the elegant Macky Auditorium on the campus of the University of Colorado.

The poster sessions have greatly increased in popularity and impact in recent years, and will take place in the evenings (Sunday to Wednesday) from approximately 9:00 pm - midnight in Glenn Miller Ballroom of the University Memorial Center. The conference barbeque on Wednesday evening is open to all registered attendees and guests. The Denver/Boulder area offers many recreational opportunities for everyone's taste. The University of Colorado Conference Services have arranged extracurricular activities so you may visit and enjoy many of these attractions.

We thank the sponsors, organizing committee, conference services, and all the student volunteers for assisting with the organization of this event. Finally, thank you for attending, and being a part of the 41st National Organic Chemistry Symposium.

Mukund Sibi
41st NOS Executive officer
North Dakota State University

Tarek Sammakia
41st NOS Local Co-Chair
University of Colorado

Andrew Phillips
41st NOS Local Co-Chair
University of Colorado

41st National Organic Chemistry Symposium

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The following organizations will have booths at the evening poster sessions

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ACS Division of Organic Chemistry

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41st National Organic Chemistry Symposium

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Dr. Todd Eary – *Array BioPharma*

Professor Eric Ferreira – *Colorado State University*

Dr. John Josey – *Array BioPharma*

Professor Alan Kenan – *Colorado State University*

Professor Andrei Kutateladze – *University of Denver*

Professor Tom Rovis – *Colorado State University*

Professor Xiang Wang – *University of Colorado at Boulder*

Professor Robert Williams – *Colorado State University*

Professor John Wood – *Colorado State University*

Professor Hubert Yin – *University of Colorado at Boulder*

Professor Wei Zhang – *University of Colorado at Boulder*

SUNDAY, JUNE 7		
1:00 PM -9:00 PM	**Registration**	University Memorial Center - Aspen Room
Afternoon – free time	Celestial Seasonings Tour, Leanin' Tree Museum of Western Art	
8:00 PM - Midnight	**Reception and Poster Session, Exhibitor Booths** *Sponsored by Array BioPharma*	University Memorial Center - Glen Miller Ballroom & Room 235
MONDAY, JUNE 8		
7:30 AM - Noon	**Registration**	Macky Auditorium
8:30 AM - 9:00 AM	**Opening Remarks:** Professor Mukund Sibi, North Dakota State University - Conference Chair Virginia Schultz, University of Colorado Conference Services	Macky Auditorium
	Session Chair: Professor Doug Gin, University of Colorado at Boulder	
9:00 AM - 10:15 AM	**Professor Robert Grubbs**, California Institute of Technology: "The Synthesis of Large and Small Molecules using Olefin Metathesis Catalysts"	Macky Auditorium
10:15 AM-10:45 AM	**Break** - *Sponsored by Gelest*	
	Session Chair: Dr. John Josey, Array BioPharma	
10:45 AM - Noon	**Professor Magid Abou-Gharbia**, Temple University: "Strategies for the Discovery of Innovative Small Molecule Therapeutics"	Macky Auditorium
Afternoon – free time	Coors Brewery Tour, Golf Outing, Chautauqua Park Hike	
5:00 PM - 6:30 PM	**Undergraduate and Graduate student Workshop:** Professor Marvin Caruthers - Pizza and soda to be provided – *sponsored by AMRI*	Cristol Chemistry Room 142
	Session Chair: Professor Wei Zhang, University of Colorado at Boulder	
7:00 PM - 8:15 PM	**Professor Joseph DeSimone**, University of North Carolina at Chapel Hill: "Merging Advances in Soft Lithography with Advances in Synthetic Organic Chemistry to Address the Unmet Needs in Drug Delivery"	Macky Auditorium
8:15 PM - 9:30 PM	**Professor Chad Mirkin**, Northwestern University: "Programming Materials Synthesis with DNA: Applications in Biology and Medicine"	Macky Auditorium

9:30 PM - Midnight	**Mixer and Poster Session, Exhibitor Booths** *Sponsored by Array BioPharma*	University Memorial Center - Glen Miller Ballroom & Room 235
TUESDAY, JUNE 9		
6:30 AM - 7:30 AM	5K Fun Run	See booklet for pick up locations
8:20 AM - 8:30 AM	**Introductory Remarks**: Professor Xiang Wang, University of Colorado at Boulder	Macky Auditorium
8:30 AM - 9:45 AM	**Professor Melanie Sanford**, University of Michigan at Ann Arbor: “Pd(II/IV) Catalyzed Reactions in Organic Synthesis”	Macky Auditorium
9:45 AM - 10:30 AM	**Break** - *Sponsored by Celgene*	
	Session Chair: Professor Andrei Kutateladze, University of Denver	
10:30 AM - 11:45 AM	**Professor Tamio Hayashi**, Kyoto University: "Recent Advances in Rhodium-Catalyzed Asymmetric Addition Reactions"	Macky Auditorium
11:45 AM - 1:00 PM	**Professor Eric Jacobsen**, Harvard University: “Asymmetric Catalysis by Chiral Hydrogen-Bond Donors”	Macky Auditorium
Afternoon – free time	Banjo Billy’s Tour of Boulder; Golf Outing; Chautauqua Park Hike	
5:00 PM - 6:30 PM	**Undergraduate Context Session**: Professor Ron Brisbois. Pizza and soda to be provided - *Sponsored by Wyeth Laboratories*	Cristol Chemistry Room 142
	Session Chair: Professor Lisa McElwee-White, University of Florida, Chair, ACS Division of Organic Chemistry	
7:00 PM - 8:30 PM	**2009 Roger Adams Award Lecture:** **Professor Andrew Streitwieser**, University of California, Berkeley: “Ab Initio Modeling of Organolithium Chemistry”	Macky Auditorium
8:30 PM - Midnight	**Mixer and Poster Session, Exhibitor Booths** *Sponsored by ACS Publications*	University Memorial Center - Glen Miller Ballroom & Room 235
WEDNESDAY, JUNE 10		
8:20 AM - 8:30 AM	**Introductory Remarks:** Professor Eric Ferreira, Colorado State University	Macky Auditorium
8:30 AM - 9:45 AM	**Professor Manfred Reetz**, Max Planck Institute: "Directed Evolution of Enantioselective Enzymes as Catalysts in Organic Chemistry"	Macky Auditorium
9:45 AM - 10:30 AM	**Break** - *Sponsored by Sanofi-Aventis*	

	Session Chair: Professor Alan Kenan, Colorado State University	
10:30 AM -11:45 AM	**Professor Linda Hsieh-Wilson**, California Institute of Technology: "Chemical Approaches to the Neurobiology of Carbohydrates"	Macky Auditorium
11:45 AM - 1.00 PM	**Professor Kevan Shokat**, University of California at San Francisco: "Chemical Genetic Analysis of PI3K-Akt-mTOR Signaling"	Macky Auditorium
Afternoon – free time	Banjo Billy's Tour of Boulder, Fiske Planetarium and Science Center Show and Tour, Chautauqua Park Hike	
5:00 PM - 7:00 PM	**Conference Banquet**	University Memorial Center
	Session Chair: Professor Andrew Phillips, University of Colorado at Boulder	
7:00 PM - 7:25 PM	**Organic Reactions Award Presentation:** Professor Jeffrey Seeman, University of Richmond, and Professor Scott Denmark, University of Illinois	Macky Auditorium
7:30 PM - 8:45 PM	**Professor Paul Wender**, Stanford University: "Some Global Problems in Chemistry, Biology, and Medicine"	Macky Auditorium
8:45 PM - Midnight	**Mixer and Poster Session, Exhibitor Booths** *Sponsored by Array BioPharma*	University Memorial Center - Glen Miller Ballroom & Room 235
Thursday, JUNE 11		
8:50 AM - 9:00 AM	Introductory Remarks: Professor Robert Williams, Colorado State University	Macky Auditorium
9:00 AM - 10:15 AM	**Professor Dale Boger**, Scripps Research Institute: "Vinblastine: Synthetic and Mechanistic Studies"	Macky Auditorium
10:15 AM-10:45 AM	**Break** - *Sponsored by Schering-Plough*	
	Session Chair: Dr. Bill Greenlee, Schering-Plough, Chair NOS 2011	
10:45 AM - Noon	**Professor Phil Baran**, Scripps Research Institute: "Case Studies in Chemoselective Synthesis"	Macky Auditorium
	Closing Remarks	

The Roger Adams Award in Organic Chemistry

The Roger Adams Award in Organic Chemistry is sponsored jointly by the American Chemical Society, Organic Reactions, Inc., and Organic Synthesis, Inc. The award recognizes the distinguished career of Roger Adams, who played a vital role in each of these three organizations. He was Chairman of the Board of Directors as well as President of the American Chemical Society, and he co-founded Organic Syntheses and Organic Reactions.

The award is made biannually to an individual, without regard to nationality, for outstanding contributions to research in organic chemistry. The award consists of a gold medal, a sterling silver replica of the medal, and an honorarium of twenty-five thousands dollars. It is presented at the biannual National Organic Chemistry Symposium of the Division of Organic Chemistry of the American Chemical Society. The awardee is a featured lecturer in the program of the symposium.

The recipient of this year's Roger Adams Award is Professor Andrew Streitwieser of the University of California, Berkeley in recognition of outstanding contributions to research in organic chemistry. Professor Streitwieser's Award Address, titled *Ab Initio Modeling of Organolithium Chemistry*, will be delivered on Tuesday evening.

Roger Adams Awardee

Professor Andrew Streitwieser

University of California, Berkeley
Department of Chemistry
Berkeley, CA 94720-1460

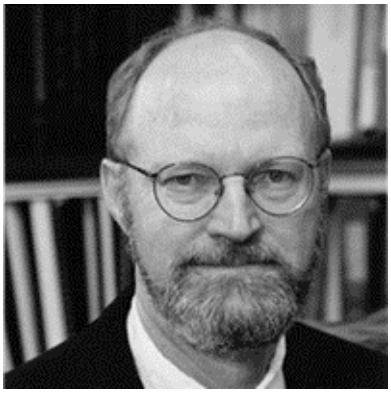
Presenting: Tuesday, June 9, 7:00 *PM*

Professor Magid Abou-Gharbia
Temple University
Presenting Monday, June 8, 10:45 AM

Professor Phil Baran
Scripps Research Institute
Presenting Thursday, June 11, 10:45 AM

Professor Dale Boger
Scripps Research Institute
Presenting Thursday, June 11, 9:00 AM

Professor Joseph DeSimone
University of North Carolina
Presenting Monday, June 8, 7:00 PM



(Photo courtesy of Cal Tech)

Professor Robert Grubbs
California Institute of Technology
Presenting Monday, June 8, 9:00 AM

Professor Tamio Hayashi
Kyoto University
Presenting Tuesday, June 9, 10:30 AM

Professor Linda Hsieh-Wilson
California Institute of Technology
Presenting Wednesday, June 10, 10:30 AM

Professor Eric Jacobsen
Harvard University
Presenting Tuesday, June 9, 11:45 AM

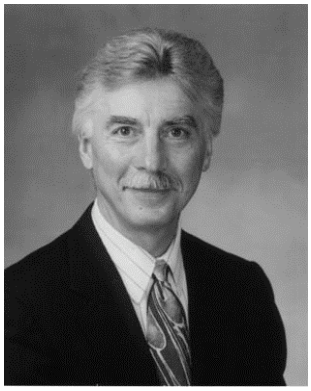
Professor Chad Mirkin
Northwestern University
Presenting Monday, June 8, 8:15 PM

Professor Manfred Reetz
Max-Planck Institute
Presenting Wednesday, June 10, 8:30 AM

Professor Melanie Sanford
University of Michigan
Presenting Tuesday, June 9, 8:30 AM

Professor Kevan Shokat
University of California, San Francisco
Presenting Wednesday, June 10, 11:45 AM

Professor Andrew Streitwieser
University of California, Berkeley
Presenting Tuesday, June 9, 7:00 PM



Professor Paul Wender
Stanford University
Presenting Wednesday, June 10, 7:30 PM

The Synthesis of Large and Small Molecules Using Olefin Metathesis Catalysts

Robert H. Grubbs

California Institute of Technology
Pasadena, CA

Ruthenium based olefin metathesis catalysts have provided new routes to olefins that appear in a variety of structures. Their functional group tolerance and ease of use allow their application in the synthesis of multifunctional bioactive molecules. The same systems are also useful for the synthesis of an array of new materials from multifunctional polymers to supramolecular systems. Underlying these developments has been new catalysts with controlled selectivity through the synthesis of new ligands.

NOTES

STRATEGIES FOR THE DISCOVERY OF INNOVATIVE SMALL MOLECULE THERAPEUTICS

Magid Abou-Gharbia

Center For Drug Discovery Research (CDDR)
School of Pharmacy, Temple University, Philadelphia, USA
aboumag@temple.edu

Drug Discovery and Development is a challenging and complex process that involves the dedicated efforts of many multi-disciplinary R&D functions. Compared to the past, today's innovative drug discovery is more costly and time-consuming with fewer novel therapeutics making it to the market place. Traditional Medicinal Chemistry approaches adopted during the 1970s and 1980s were focused primarily on analoging of endogenous ligands and industry leads. Chemistry was low throughput and done iteratively, driven primarily by biochemical observations derived from animal testing. In contrast, the last decade has witnessed an evolution in Medicinal Chemistry approaches wherein automation was utilized effectively in the synthesis of large numbers of analogs Combinatorial Chemistry and rapid screening of large numbers of compounds (HTS).

At the turn of the century, deciphering of the human genome led to an explosion in the "-omics" technologies and, subsequently, the identification and characterization of large numbers of targets. The assimilation of the resulting information and correlation of potential therapeutic targets with human diseases presents tremendous challenges for drug research. Nonetheless, advances in technology have enabled Pharma to explore multiple medicinal chemistry approaches in support of chemical biology efforts and to identify leads and optimize to drug candidates. These advances include improvements in structure-based design, integrating techniques of x-ray crystallography, computational chemistry and nuclear magnetic resonance spectroscopy, multivariate analysis, parallel synthesis and early pharmaceutical profiling. Additionally, application of these techniques, coupled with the growing field of biosynthetic engineering, precise synthetic methods and the use of high-resolution analytical tools has spurred renewed interest in natural product-based drug research.

The lecture will give a brief overview of the evolution of drug discovery and the various medicinal chemistry approaches from the past and present and with an outlook to the future.

NOTES

Merging Advances in Soft Lithography with Advances in Synthetic Organic Chemistry to Address the Unmet Needs in Drug Delivery

Joseph M. DeSimone

Departments of Chemistry & Pharmacology
University of North Carolina at Chapel Hill

Dept. of Chemical & Biomolecular Engineering
North Carolina State University

We are at an interesting point in time where the fruits of the investments in nanotechnology over the last decade have resulted in the ability to fabricate objects that are just beginning to approach the sizes and dimensionality of individual macromolecules. Herein I will discuss the translation of promising molecular discoveries to the design of next generation of drug delivery systems with programmable multi-functional capability. Our laboratory has pioneered the development of a technique called **PRINT** (**P**article **R**eplication **i**n **N**on-wetting **T**emplates). PRINT is a top-down particle fabrication technique that has its roots in the fabrication techniques used in the microelectronics industry that allows for the precise control over particle size (20 nm to >100 micron), particle shape, particle composition, particle cargo (hydrophilic or hydrophobic therapeutics, biologicals), particle modulus and particle surface properties (targeting peptides, antibodies). PRINT is in essence a dry molding technology that allows the use of certain organic reagents and transformations that would be difficult to use in other particle forming processes common to traditional drug delivery technologies (double emulsion techniques, self-assembly, milling). This capability allows us to probe the role of particle size, shape, flexibility and chemical functionality on intracellular particle uptake, intracellular targeting and *in vivo* biodistribution.

1. The Effect of Particle Design on Cellular Internalization Pathways Gratton; Ropp; Pohlhaus; Luft; Madden; Napier; DeSimone; *Proceedings of the National Academy of Sciences* **2008**, *105*, 11613.
2. Electrically Driven Alignment and Crystallization of Unique Anisotropic Polymer Particles; Herlihy; Nunes; DeSimone; *Langmuir* **2008**, *24*, 8421.
3. The Pursuit of a Scalable Nanofabrication Platform for Use in Material and Life Science Applications Gratton; Williams; Napier; Pohlhaus; Zhou; Wiles; Maynor; Shen; Olafsen; Samulski; DeSimone; *Accounts Chem Res* **2008**, in press.
4. Nanostructured Titania-Polymer Photovoltaic Devices Made Using PFPE-based Nanomolding Techniques Williams; Hampton; Gowrishanker; Ding; Templeton; Samulski; DeSimone; McGehee; *Chem Mater*, **2008**, *20(16)*, 5229.
5. Shape-specific, Mono-disperse Nano-molding of Protein Particles Kelly; DeSimone; *J. Am. Chem. Soc.* **2008**, *130*, 5438.
6. The Patterning of Sub-500 nm, Inorganic Oxide Structures Using Cross-linked Perfluoropolyethers Hampton; Williams; Zhou; Nunes; Ko; Templeton; Samulski; DeSimone; *Adv Mater* **2008**, *20*, 2667.
7. Reductively Labile PRINT Particles for the Delivery of Doxorubicin to HeLa Cells Petros; Ropp; DeSimone; *J. Am. Chem. Soc.* **2008**, *130*, 5008.

NOTES

Programming Materials Synthesis with DNA -- Applications in Biology and Medicine

Chad Mirkin

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chadnano@northwestern.edu

Over the past decade, we have developed methods for synthesizing polyvalent oligonucleotide-nanoparticle conjugates and explored how they can be used as designer constructs for preparing highly ordered, highly functional materials. Over the course of these studies, we have discovered many unusual fundamental properties that make these materials particularly useful in biodiagnostics and intracellular gene regulation. This seminar will focus on the rules that govern the use of these conjugates and sequence specific crystallization, high selectivity and sensitivitynucleic acid and protein detection, and “antisense” therapy. Specifically, we will introduce the concept of the “antisense particle”, as well as similarly functionalized siRNA particles, which exhibit a range of unique properties that make them very well-suited for gene regulation. In particular, the particles are highly resistant to nuclease digestion, have high and tailorable binding constants for target mRNA, and exhibit high entry efficiency into multiple cell types. Further, we can tailor the chemistry on the nanoparticle surface, and thus control the particles’ binding strength to complementary target sequences, ultimately demonstrating that changing the binding strength or surface chemistries offers a means to control the degree of protein expression.

NOTES

Palladium(II/IV)-Catalyzed Reactions in Organic Synthesis

Melanie S. Sanford

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The development of regio- and chemoselective methods for the functionalization of carbon–hydrogen bonds remains a tremendous challenge in synthetic organic chemistry, and this presentation will describe my group's recent advances in the area. Our mechanistic approach towards the development of transition metal-catalyzed reactions has allowed the discovery and optimization of catalytic methods for the selective transformation of C–H bonds into C–O, C–Cl, C–Br, C–I, C–F, and C–C bonds under mild conditions. The scope, selectivity, and functional group tolerance of these new reactions in the context of the synthesis of biologically active molecules will be discussed.

The mechanism of these reactions is proposed to involve a Pd(II/IV) catalytic cycle. Mechanistic evidence supporting this proposal will be discussed in detail. This type of mechanistic manifold offers a number of advantages that make it highly complementary to related Pd(II/0)-catalyzed methods in organic synthesis. These include the ability access sp3 C–N, C–O, and C–X halogen bonds, the ability to generate Ar–F bonds, and the ability to circumvent competing β-hydride elimination pathways. These unique characteristics of the Pd(II/IV) catalytic cycle have led us to pursue novel Pd(II/IV)-catalyzed methods for organic synthesis. Some of these new methods, including the arylhalogenation and aminooxygenation of alkenes, the oxidative cyclization of enynes, and the fluorination of aryl metal reagents, will be discussed in detail.

NOTES

Recent Advances in Rhodium-Catalyzed Asymmetric Addition Reactions

Tamio Hayashi

Kyoto University
Kyoto 606-8502, Japan

As one of the most important topics in the research of rhodium-catalyzed asymmetric addition, recent development of chiral diene ligands will be presented. Chiral dienes based on bicyclo[2.2.1]heptadiene or bicyclo[2.2.2]octadiene backbone have been found to be excellent ligands for rhodium-catalyzed asymmetric 1,4-addition to electron deficient olefins and 1,2-addition to arylimines giving diarylmethylamines. The catalytic activity and enantioselectivity of the diene/rhodium complexes is much higher than phosphine complexes in catalytic asymmetric addition reactions.

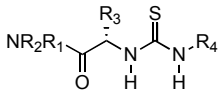
NOTES

Asymmetric Catalysis by Chiral Hydrogen-Bond Donors

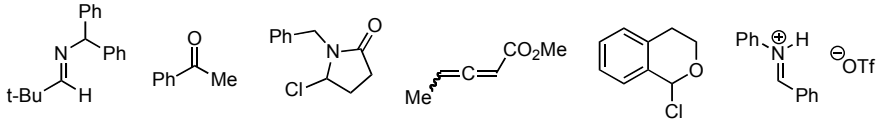
Eric N. Jacobsen

Harvard University
Cambridge, MA

In addition to its crucial role as a structural determinant, hydrogen bonding plays an important functional role in catalysis. H-bonding is utilized by enzymes promote a wide range of chemical processes, and organic chemists have begun to appreciate the tremendous potential offered by hydrogen bonding as a mechanism for electrophile activation in small-molecule, synthetic catalyst systems. In particular, chiral hydrogen bond donors have emerged recently as a broadly applicable class of catalysts for enantioselective synthesis. This lecture will provide an analysis of the structural and mechanistic features that contribute to high enantioselectivity in hydrogen bond-mediated catalytic processes, with examples provided from our own work with thiourea-based general acid catalysts.

General catalyst structure: 

Representative substrates:



NOTES

Ab Initio Modeling of Organolithium Chemistry

Professor Andrew Streitwieser

University of California, Berkeley
Department of Chemistry
Berkeley, CA 94720-1460

The author reviews how his early love for theoretical organic chemistry led to experimental research and the extended search for quantitative correlations between experiment and quantum calculations. The experimental work led to ion pair acidities of alkali-organic compounds and most recently to equilibria and reactions of lithium and cesium enolates in THF. Two methods will be described for the determination of the enolate aggregation equilibria, the variation of UV spectra with concentration and coupled equilibria with proton transfer. The relative roles of alkylation reactions with enolate monomers and aggregates will be discussed. This chemistry is now being modeled by ab initio calculations. An important consideration is the treatment of solvation in which coordination of the alkali cation with the ether solvent plays a major role.

NOTES

Directed Evolution of Enantioselective Enzymes as Catalysts in Organic Chemistry

Manfred T. Reetz

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Some time ago we proposed and implemented experimentally a new approach to asymmetric catalysis, namely the directed evolution of enantioselective enzymes as catalysts in synthetic organic chemistry and in biotechnology. It is based on repeating cycles of gene mutagenesis, expression and high-throughput screening for enantioselectivity. The most often used mutagenesis methods in the emerging field of directed evolution are error-prone PCR (epPCR), saturation mutagenesis and DNA shuffling, methods that we used in our original proof-ofprinciple study using a lipase back in 1996-1997. Subsequently we applied our approach to other enzymes, and a number of industrial and academic groups have likewise contributed to this new area of asymmetric catalysis. However, as in traditional synthetic organic chemistry, methodology development is crucial for further progress. *The challenge is to devise methods and strategies for probing protein space more efficiently than in the past, thereby enabling fast directed evolution.* To this end we have developed Iterative Saturation Mutagenesis (ISM) in its two embodiments: CASTing for controlling enantioselectivity and B-FIT for improving the thermostability of enzymes. In order to assess the efficacy of these methodological developments, we have devised a deconvolution strategy which allows the construction of fitness landscapes. Applications in enantioselective transformations using lipases, epoxide hydrolases, enone-reductases and monooxygenases such as Baeyer-Villigerases will be highlighted in the talk.

NOTES

Chemical Approaches to the Neurobiology of Carbohydrates

Linda Hsieh-Wilson

Division of Chemistry and Chemical Engineering
California Institute of Technology and
The Howard Hughes Medical Institute, Pasadena, CA 91125

The field of chemical neurobiology is rapidly evolving and providing insights into the molecules and interactions involved in brain development, neuronal communication and memory storage. We will describe the synergistic application of organic chemistry and neurobiology to explore the structure and function of chondroitin sulfate glycosaminoglycans in the nervous system and their impact on neuronal growth and spinal cord regeneration.

NOTES

Chemical Genetic Analysis of PI3K-Akt-mTOR Signaling

Kevan M. Shokat

HHMI and Department of Cellular and Molecular Pharmacology,
UCSF, N512D Genentech Hall, 600 16th St. San Francisco, CA 94158
shokat@cmp.ucsf.edu

The mammalian target of rapamycin (mTOR) regulates cell growth and survival by integrating nutrient and hormonal signals. These signaling functions are distributed between at least two distinct mTOR protein complexes, mTORC1 and mTORC2. mTORC1 is sensitive to the selective inhibitor rapamycin and activated by growth factor stimulation via the canonical PI3K→Akt→mTOR pathway. Activated mTORC1 kinase upregulates protein synthesis by phosphorylating key regulators of mRNA translation. By contrast, mTORC2 is resistant to rapamycin. Growth factor stimulation of PI3K causes activation of Akt by phosphorylation at two key sites: the activation loop (T308) and the C-terminal hydrophobic motif (S473). Of the two phosphorylation sites on Akt, activation loop phosphorylation at T308, mediated by PDK1, is indispensable for kinase activity, while hydrophobic motif phosphorylation at S473 enhances Akt kinase activity by approximately five-fold. Genetic studies have suggested that mTORC2 may phosphorylate Akt at S473, one of two phosphorylation sites required for Akt activation; this has been controversial, in part because RNAi and gene knockouts produce distinct Akt phospho-isoforms. Active Akt promotes cell survival in many ways including suppressing apoptosis, promoting glucose uptake, and modifying cellular metabolism; consequently, there is significant interest in identifying the kinase(s) responsible for each activating phosphorylation, the relationship between these phosphorylation sites, and the role of differential Akt phosphorylation on Akt substrate phosphorylation. The central role of mTOR in controlling key cellular growth and survival pathways has sparked interest in discovering mTOR inhibitors that bind to the ATP site and therefore target both mTORC2 and mTORC1. Here we investigate mTOR signaling in cells and animals with two novel and specific mTOR kinase domain inhibitors (TORKinibs). These TORKinibs (PP242 and PP30) are the first specific active-site inhibitors of mTOR and therefore the first specific inhibitors of mTORC2 and we use them to show that pharmacological inhibition of mTOR blocks the phosphorylation of Akt at S473 and prevents its full activation. Furthermore, we show that TORKinibs inhibit proliferation of primary cells more completely than rapamycin. Surprisingly, we find that mTORC2 is not the basis for this enhanced activity and show that the TORKinib PP242 is a more effective mTORC1 inhibitor than rapamycin. Importantly, at the molecular level PP242 inhibits cap-dependent translation under conditions in which rapamycin has no effect. Our findings identify new functional features of mTORC1 that are resistant to rapamycin but are effectively targeted by TORKinibs. These potent new pharmacological agents complement rapamycin in the study of mTOR and isoform specific PI3K inhibitors its role in normal physiology and human disease.

NOTES

Some Global Problems in Chemistry, Biology, and Medicine

Paul A. Wender

Department of Chemistry, School of Humanities and Sciences, Stanford University, Stanford, CA 94305, USA
Department of Chemical and Systems Biology, Stanford Medical School, Stanford University, Stanford, CA 94305

My group is interested in addressing unexplored or unsolved molecular problems in chemistry, biology, and medicine. These studies range from designing and developing new reactions and catalysts to complex molecule synthesis with an emphasis on the design, synthesis and biological evaluation of molecules of structural, biological, and medicinal significance. An emphasis is placed on new synthetic reactions, molecules that exhibit unique modes of action, new tools for real time cellular and animal imaging, novel drug delivery strategies and molecular transporters. This lecture will provide a brief overview of some of these programs including studies on a remarkably efficient catalyst for achieving [5+2] cycloadditions,[1] a homolog of the Diels-Alder reaction, that can be used to produce "instant libraries" from abundant alkyne feedstocks; synthetic and biological studies on prostratin,[2] now in pre-clinical development for targeting the HIV/AIDS latent virus; synthetic and biological studies on bryostatin,[3,4] currently in phase I and II trials for cancer and a pre-clinical lead for treating cognitive dysfunction including Alzheimer's disease;[5] and synthetic and biological studies on molecular transporters[6] and their use in drug delivery[7,8] and overcoming resistant cancer.[9] Background references are given below.

1 Zhi-Xiang Yu, Paul Ha-Yeon Cheong, Peng Liu, Claude Y. Legault, Paul A. Wender, K. N. Houk "Origins of Differences in Reactivities of Alkenes, Alkynes, and Allenes in [Rh(CO)2Cl]2-Catalyzed (5+2) Cycloaddition Reactions with Vinylcyclopropanes" *J. Am. Chem. Soc*. **2008**, 130(8), 2378-2379.

2 Paul A. Wender, Jung-Min Kee, and Jeffrey M. Warrington "Practical Synthesis of Prostratin, DPP, and Their Analogs, Adjuvant Leads Against Latent HIV" *Science* **2008**, 649-652.

3 Wender, Paul; DeChristopher, Brian; Schrier, Adam "Efficient Synthetic Access to a New Family of Highly Potent Bryostatin Analogues via a Prins-Driven Macrocyclization Strategy" *J. Am. Chem. Soc*. **2008**, 6658-6659.

4 Stang, Stacey; Lopez-Campistrous, Ana; Song, Xiaohua; Dower, Nancy A.; Blumberg, Peter M.; Wender, Paul A.; Stone, Jim " A Pro-apoptotic Signaling Pathway involving RasGRP, Erk and Bim in B Cells" *Experimental Hematology* **2009, *37,*** 122-134.

5 Tapan Kumar Khan; Thomas J Nelson; Vishal A Verma; Paul A Wender; Daniel L Alkon; "A Cellular Model of Alzheimer's Disease Therapeutic Efficacy: PKC Activation Reverses A-beta induced biomarker Abnormality on Cultured Fibroblasts" *Neurobiology of Disease* **2009**, *34(2),* 332-339.

6 Paul A. Wender, Dennis J. Mitchell, Kanaka Pattabiraman, Erin Pelkey, Lawrence Steinman, Jonathan B. Rothbard "Molecular Transporters: The Design, Synthesis, and Evaluation of Molecules that Enable or Enhance Cellular Uptake" *Proc. Natl. Acad. Sci. USA* , **2000**, *97*, 13003-13008.

7 Jonathan B. Rothbard, Sarah Garlington, Qun Lin, Thorsten Kirschberg, Erik Kreider, P. Leo McGrane, Paul A. Wender and Paul A. Khavari, Conjugation of Arginine Oligomers to Cyclosporin A Facilitates Topical Delivery and Inhibition of Inflammation, *Nature Medicine* **2000**, *6*, 1253-1257.

8 Wender, Paul A.; Galliher, Wesley C.; Goun, Elena A.; Jones, Lisa R.: Pillow, Thomas H. "The design of guanidinium-rich transporters and their internalization mechanisms" *Advanced Drug Delivery Reviews,* **2008**, 452.

9 Dubikovskaya, Elena A.; Thorne, Steve H.; Pillow, Thomas H.; Contag, Christopher H.; Wender, Paul A. “Overcoming Multidrug Resistance of Small Molecule Therapeutics through Conjugation with Releasable Octaarginine Transporters” *Proc. Natl. Acad. Sci. USA* **2008**, 12128-12133.

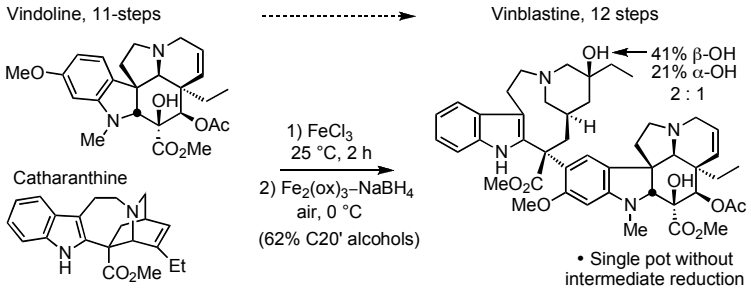
NOTES

Vinblastine: Synthetic and Mechanistic Studies

Dale L. Boger

Department of Chemistry, The Scripps Research Institute
10550 N. Torrey Pines Road, La Jolla, CA 92037
BOGER@SCRIPPS.EDU

Abstract. The total synthesis of vindoline enlisting a tandem Diels-Alder/1,3-dipolar cycloaddition cascade of 1,3,4-oxadiazoles will be presented including progress on a second generation asymmetric total synthesis and fundamental studies defining the scope of the cycloaddition cascade. The extension of the work to the total synthesis of vinblastine with the development of a single step, biomimetic coupling of vindoline with catharanthine will be discussed along with key mechanistic studies of the reaction. Its use in the synthesis of analogs containing previously inaccessible structural changes throughout the molecule will be presented.



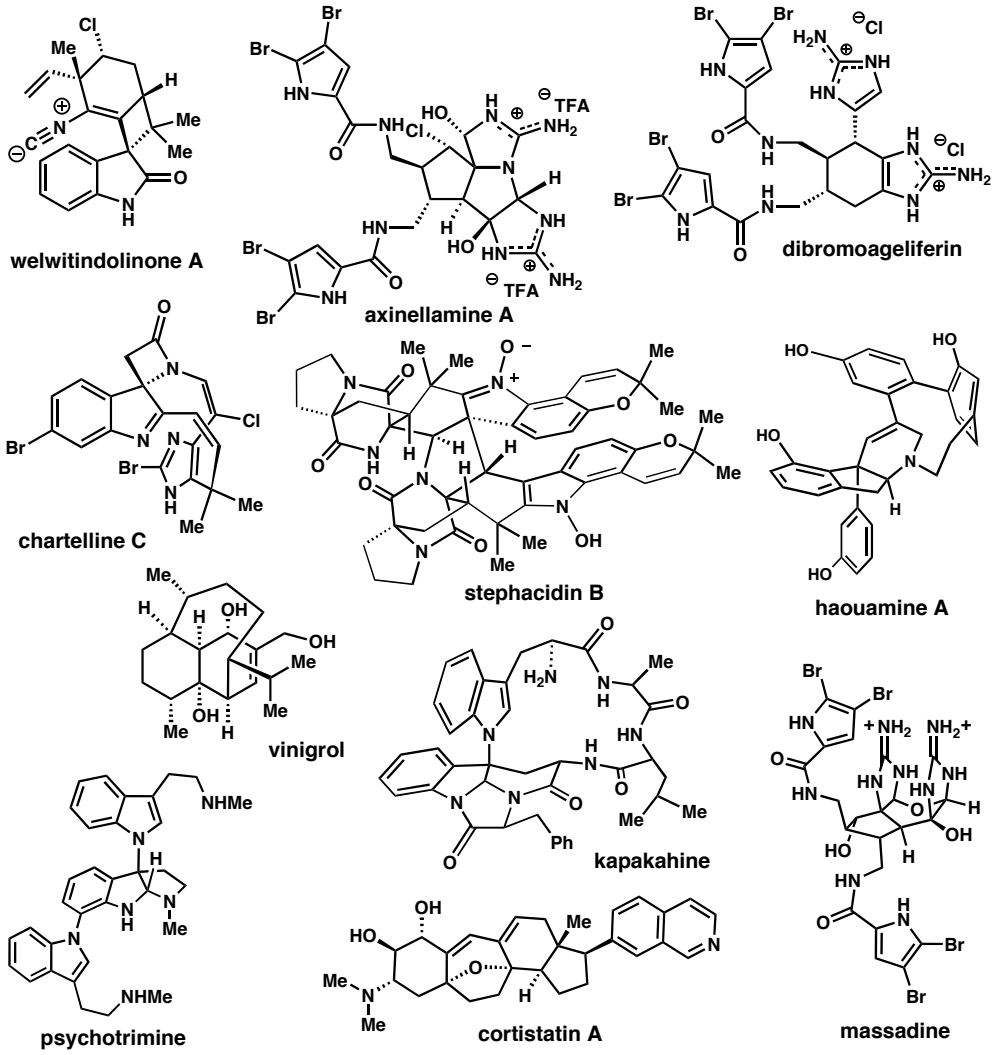
NOTES

Case Studies in Chemoselective Synthesis

Phil S. Baran

Contribution from the Department of Chemistry, The Scripps Research Institute, 10550 North Torrey Pines Road, La Jolla, California 92037
pbaran@scripps.edu

Many would argue that the field of organic synthesis has made such phenomenal advances over the past five decades that given unlimited resources, the synthesis of almost any molecule is now possible. As such, total synthesis is becoming increasingly focused on preparing natural products in the most innovative and efficient manner possible. Selected studies from our lab will be presented on the total synthesis of complex natural products (see Figure below for selected targets).



For references and further info, see: http://www.scripps.edu/chem/baran

NOTES

Listed below are the advanced graduate students who were awarded a Division of Organic Chemistry Graduate Fellowships in the past two years. All of these students are presenting a poster at the symposium. Also listed are the names of their institution, faculty research advisor, and the company that sponsored the specific award. The Division of Organic Chemistry is pleased to honor these extraordinary students and to gratefully acknowledge the substantial financial support provided by their generous sponsors.

2008 – 2009 Fellowship Recipients

Katrien Brak
Sponsor: Wyeth
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Advisor: Jonathan Ellman

Erin M. Daly
Sponsor: Merck
University of Notre Dame
Advisor: Richard E. Taylor

Brian A. DeChristopher
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Stanford University
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University of Illnois, Urbanan-Champaign
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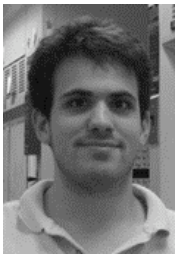
Northwestern University
Advisor: Karl A. Scheidt



Brad M. Rosen
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University of Pennsylvania
Advisor: Virgil Percec

Matthew R. Siebert
Sponsor: Org Syn
University of California, Davis
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Sarah A. Slavoff
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Massachusetts Institute of Technology
Advisor: Alice Y. Ting

Craig R. Smith
Sponsor: Schering-Plough
Ohio State University
Advisor: T. V. RajanBabu

Tameka M. Walker
Sponsor: Org Syn-NJL Fellow
University of Alabama, Huntsville
Advisor: W. Setzer

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Aaron Edward Albers
Sponsor: Troyansky Fellowship
University of California, Berkeley
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Department of Chemistry
Advisor: Marisa C. Kozlowski

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Advisor: Daniel Romo

Jaclyn M. Murphy
Sponsor: Organic Syntheses, Nelson J. Leonard Fellowship
University of Illinois at Urbana-Champaign
Advisor: John F. Hartwig

Andrea Lindsay Nold
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The Scripps Research Institute
Advisor: K. C. Nicolaou, Ph.D.

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University of California, Santa Barbara
Advisor: Bruce H. Lipshutz

Nicole S. White
Sponsor: Organic Reactions
University of California, Irvine
Advisor: Larry E. Overman

Stephan J. Zuend
Sponsor: Roche
Harvard University
Advisor: Eric N. Jacobsen

SCHEDULE OF PRESENTERS

POSTER SESSION A - SUNDAY JUNE 7

A1 A CARBOXYLESTERASE-ACTIVATED DOXAZOLIDINE PRODRUG FOR CANCER THERAPY

Ben Barthel, Zhiyong Zhang, Dan Chan, and Tad Koch
Department of Chemistry and Biochemistry, University of Colorado, Boulder, CO 80309 and Department of Medical Oncology, University of Colorado Denver Health Sciences Center, Aurora, CO 80045

A2 NATURAL PRODUCT SYNTHESIS BY INTRAMOLECULAR CONJUGATE ADDITION

Roderick W. Bates, Ping Song, and Kalpana Palani
Nanyang Technological University, Division of Chemistry & Biological Chemistry, School of Physical & Mathematical Sciences, Singapore 637371

A3 THE INTRAMOLECULAR PROPARGYLIC BARBIER REACTION IN NATURAL PRODUCT SYNTHESIS

S. Sridhar and Roderick W. Bates
Nanyang Technological University, Division of Chemistry & Biological Chemistry, School of Physical & Mathematical Sciences, Singapore 637371

A4 THE TOTAL SYNTHESIS OF (-)-PORANTHERIDINE AND *EPI*-PORANTHERIDINE

Lu Yongna and Roderick W. Bates
Nanyang Technological University, Division of Chemistry & Biological Chemistry, School of Physical & Mathematical Sciences, Singapore 637371

A5 ENANTIOSELECTIVE SYNTHESES OF THE ABYSSINONES LEADING TO THE DISCOVERY OF NEW INHIBITORS OF PROSTATE CANCER GROWTH AND MMP-2 EXPRESSION

Antoinette E. Nibbs,[†] Margaret M. Biddle,[†] Rebecca L. Farmer,[†‡] Xiaoke Huang,[‡] Raymond C. Bergan,[‡] and Karl A. Scheidt[†]*
[†]Northwestern University, Department of Chemistry, 2145 Sheridan Road, Evanston, Illinois 60208,
[‡]The Robert H. Lurie Comprehensive Cancer Center, ‡Department of Medicine, 303 East Superior Street, Chicago Illinois 60611

A6 MECHANISTIC INVESTIGATIONS OF STOICHIOMETRIC ALKENE INSERTION INTO Pd-N BONDS

Joshua Neukom and John P. Wolfe*
University of Michigan, Department of Chemistry, 930 N. University, Ann Arbor, MI 48109-1055

A7 REACTIONS OF NON-RESONANCE ACTIVATED SUBSTRATES WITH A GENERAL CATALYST: EXPANDING THE SCOPE OF THE HECK REACTION

Jared H. Delcamp, Alexandria Brucks, and M. Christina White
Department of Chemistry, University of Illinois Urbana-Champaign, 600 S. Mathews 278 RAL, Urbana, IL 61801

A8 PHOTONIC SHELL-CROSSLINKED NANOPARTICLE PROBES FOR OPTICAL IMAGING AND MONITORING

Nam S. Lee[1], Guorong Sun[1], William L. Neumann[2], John N. Freskos[3], Jeng J. Shieh[3], Richard B. Freskos[3], and Karen L. Wooley[1]*
[1]Departments of Chemistry and Radiology, Washington University in Saint Louis, Saint Louis, MO 63130
[2]Department of Pharmaceutical Sciences, School of Pharmacy, 220 University Park Drive, Southern Illinois University. [3]Covidien Imaging Solutions R&D, 675 McDonnell Blvd., Hazelwood, MO 63042

A9 EXPLOITING THE OXYALLYL CATION OF THE ALLENYL NAZAROV REACTION: SYNTHESIS OF CYCLOPENT-2-ENONE RING SYSTEMS

Vanessa Marx and D. J. Burnell*
Department of Chemistry, Dalhousie University, Halifax, Nova Scotia, Canada, B3H 4J3

A10 ASYMMETRIC REACTIONS: NEW METHODS FOR MECHANISTIC INQUIRY

Matthew P. Meyer
University of California, Merced, School of Natural Sciences, Merced, CA 95344

A11 SYNTHESIS AND CHARACTERIZATION OF SMALL MOLECULE INHIBITORS OF HUMAN HISTONE DEMETHYLASE LSD1

Julie A. Pollock, David M. Gooden, Dawn M. Z. Schmidt, and Dewey G. McCafferty*
Department of Chemistry, Duke University, Durham, NC 27708

A12 DESIGN AND SYNTHESIS OF NOVEL BIFUNCTIONAL ANALGESICS: COMBINATION OF OPIOID AGONISTS AND NK-1 ANTAGONISTS

Ruben Vardanyan, Peg Davis, Todd W. Vanderah, Josephine Lai, Frank Porreca, and Victor J. Hruby
Department of Chemistry and Pharmacology, University of Arizona, 1306 E. University Blvd., P.O. Box 210041, Tucson, Arizona 85721

A13 DISCOVERY OF NOVEL INDOLYLPHENYLPROPANOLAMINE INHIBITORS OF THE NOREPINEPHRINE TRANSPORTER: SYNTHESIS AND SAR

Callain Kim,*[1] Paige Mahaney,[1] Puwen Zhang,[1] Gene Terefenko,[1] An Vu,[1] Stephen Cohn,[1] Richard Coghlan,[1] Gavin Heffernan,[1] Jennifer Leiter,[2] Grace Johnston,[2] and Darlene Deecher,[2] and Eugene Trybulski[1]
[1]Chemical and Screening Sciences, Wyeth Research, 500 Arcola Road, Collegeville, PA 19426
[2]Women's Health and Musculoskeletal Biology, Wyeth Research, 500 Arcola Road, Collegeville, PA 19426

A14 DESIGN AND SYNTHESIS OF PEPTIDOMIMETIC INHIBITORS OF SORTASE A, A TRANSPEPTIDASE FROM STAPHYLOCOCCUS AUREUS

Kathleen W. Clancy, Matthew L. Bentley and Dewey G. McCafferty*
Department of Chemistry, Duke University, Durham, NC 27708

A15 *O*2-GLYCOSYLATED PROLI/NO PRODRUGS: TARGETING NITRIC OXIDE FOR THERAPEUTIC BENEFIT

Rahul S. Nandurdikar,[a]* Anna E. Maciag,[b] Harinath Chakrapani,[a] Michael L. Citro,[b] Larry K. Keefer,[a]* and Joseph E. Saavedrab
[a]Chemistry Section, Laboratory of Comparative Carcinogenesis, National Cancer Institute at Frederick, Frederick, Maryland 21702. [b]Basic Sciences Program, SAIC-Frederick, National Cancer Institute at Frederick, Frederick, Maryland 21702

A16 IODINE-CATALYZED PRINS AND AZA-PRINS CYCLIZATION

Luiz F. Silva, Jr. and Samir A. P. Quintiliano
Instituto de Quimica, Universidade de São Paulo, Av. Lineu Prestes, 748, CEP 05508-900 - São Paulo, SP

A17 THE INTRAMOLECULAR YAMAMOTO VINYLOGOUS ALDOL REACTION

Joseph Abramite and Tarek Sammakia
Department of Chemistry and Biochemistry, University of Colorado, Boulder, CO 80309

A18 DIASTEREOSELECTIVE DIELS-ALDER REACTIONS FOR THE TOTAL SYNTHESIS OF (+)-DIHYDRODRIMENIN AND RELATED DRIMANE NATURAL PRODUCTS

Jeff R. Henderson and Brian A. Keay
Department of Chemistry, University of Calgary, 2500 University Drive NW, Calgary, Alberta, Canada, T2N 1N4

A19 ACTIVATION OF OXAZIRIDINES WITH HALOCUPRATES: SYNTHETIC ADVANCEMENTS

Tamas Benkovics and Tehshik P. Yoon
University of Wisconsin, Madison, 1101 University Avenue, Madison, WI 53711

A20 MODIFICATIONS OF THE BINAP FRAMEWORK: 3,3'-DISUBSTITUTION AND THE 3,5-DIALKYL META EFFECT

Danica A. Rankic and Brian A. Keay*
University of Calgary, SA 109, 2500 University Drive NW, Calgary, Alberta, Canada, T2N 1N4

A21 A SIMPLE AND MODULAR ASSEMBLY OF STEREOISOMERICALLY PURE TRI- AND TETRASUBSTITUTED ALKENES FROM TRICHLOROETHYLENE

Laina M. Geary and Philip G. Hultin*
University of Manitoba, Winnipeg, Manitoba, Canada R3T2N2

A22 SYNTHETIC APPROACHES TO INDOLIZIDINE AND QUINOLIZIDINE COMPOUNDS

Amanda Cutter, Richard Brown, and John Keily
School of Chemistry, University of Southampton, Highfield, Southampton, SO17 1BJ, UK

A23 PROGRESS TOWARDS THE TOTAL SYNTHESIS OF PELORUSIDE
Jeffrey Gazaille, Joseph Abramite, and Tarek Sammakia
Department of Chemistry and Biochemistry, University of Colorado, Boulder, CO 80309

A24 TOTAL SYNTHESIS OF DICTYODENDRINS
Kentaro Okano, Hideto Fujiwara, Tohru Fukuyama, and Hidetoshi Tokuyama
Graduate School of Pharmaceutical Sciences, Tohoku University, Aramaki 6-3, Aoba-ku, Sendai 980-8578, Japan

A25 PALLADIUM-CATALYZED ASYMMETRIC DIFUNCTIONALIZATION OF SUBSTITUTED VINYL PHENOLS
Tejas P. Pathak, Katrina H. Jensen, Yang Zhang, and Matthew S. Sigman*
University of Utah, 315 South 1400 East, Salt Lake City, UT 84112-0850

A26 HIGHLY DIASTEREOSELECTIVE ALDOL REACTIONS USING SOFT ENOLIZATION
Nikki Theaker and Dale Ward
Department of Chemistry, University of Saskatchewan, 110 Science Place, Saskatoon, SK S7N 5C9 Canada

A27 SYNTHESIS OF NOVEL MIGRASTATIN AND DORRIGOCIN A ANALOGUES FROM D-XYLOSE
Ying Zhou,[a,b] and Paul V. Murphy*[a]
[a]School of Chemistry, National University of Ireland, Galway, University Rd., Galway, Ireland
[b]Centre for Synthesis and Chemical Biology, School of Chemistry and Chemical Biology, University College Dublin, Dublin 4, Ireland

A28 PALLADIUM CATALYZED SYNTHESIS OF ISOXAZOLIDINES
Georgia S. Lemen, Natatie C. Giampietro, Michael B. Hay, and John P. Wolfe
Department of Chemistry, University of Michigan, 930 N. University Avenue, Ann Arbor, Michigan, 48109-1055

A29 PROXIMITY ACCELERATED ORGANOCATALYTIC SOFT ENOLIZATION OF THIOESTERS: DEVELOPMENT OF A BIOMIMETIC ASYMMETRIC MANNICH REACTION
Mark C. Kohler, Julianne M. Yost, Michelle R. Garnsey, and Don M. Coltart*
Department of Chemistry, Duke University, Durham, NC 27708

A30 Pd-CATALYZED CARBOAMINATION REACTIONS OF N-ALLYLUREAS FOR THE SYNTHESIS OF IMIDAZOLIDIN-2-ONES
Jonathan A. Fritz, Josephine S. Nakhla, and John P. Wolfe
University of Michigan, Department of Chemistry, 930 N. University Ave., Ann Arbor, MI 48109

A31 MICROWAVE STUDIES ON THE ENANTIOSELECTIVITY OF A PALLADIUM-CATALYZED POLYENE CYCLIZATION
Daniela Lucciola and Brian A. Keay
University of Calgary, Department of Chemistry, 2500 University Dr. NW, Calgary, Alberta, Canada, T2N 1N4

A32 TOTAL SYNTHESIS AND BIOLOGICAL STUDIES OF GEPHYRONIC ACID
Lionel Nicolas, Timo Anderl, Sabine Laschat, and Richard E. Taylor
University of Notre Dame, Department of Chemistry and Biochemistry, 251 Nieuwland Science Hall, Notre Dame, IN 46556

A33 CHEMISTRY OF THE INDOLINE RADICAL
Kerri Stenning, D. C. Harrowven, and Rob Walton
University of Southampton, Highfield, Southampton, SO17 1BJ, UK

A34 SILYL GLYOXYLATES IN DOUBLE REFORMATSKY REACTIONS: DE NOVO SYNTHESIS OF PENTASUBSTITUTED γ-BUTYROLACTONES AND APPLICATION TOWARD THE SYNTHESIS OF LEUSTRODUCSIN B
Stephen N. Greszler and Jeffrey S. Johnson*
The University of North Carolina at Chapel Hill, Department of Chemistry, Chapel Hill, NC 27599

A35 THE TOTAL SYNTHESIS OF CAVICULARIN
Sarah L. Kostiuk, David C. Harrowven*, and Leo F. Dudin
School of Chemistry, University of Southampton, Highfield, Southampton, SO17 1BJ

A36 SYNTHESIS OF COMPLEX ANTIBIOTIC INTERMEDIATES FOR INTERROGATION OF THE ERYTHROMYCIN AND PIKROMYCIN MODULAR POLYKETIDE SYNTHASES

Jonathan D. Mortison, Jeffrey D. Kittendorf, and David H. Sherman
Department of Chemistry, Life Sciences Institute, University of Michigan, 210 Washtenaw Avenue, Ann Arbor, Michigan, 48109-2216

A37 SYNTHESIS AND STRUCTURE-ACTIVITY STUDIES OF POTENT A4B2 SELECTIVE PYRAZINECARBOXAMIDE-BASED NEURONAL NICOTINIC ACETYLCHOLINE RECEPTOR LIGANDS.

Marc J. C. Scanio, Lei Shi, William H. Bunnelle, David J. Anderson, Rosalind J. Helfrich, John Malysz, Kirsten K. Thorin, Chih-Hung Lee, and Murali M. Gopalakrishnan
Abbott Pharmaceuticals, 100 Abbott Park Rd, Dept. R47W, Bldg. AP9A, Abbott Park, IL 60046-6117

A38 INVESTIGATION OF N-ACYL NITRONES TOWARDS ISOXAZOLIDINES

Mark V. Wilcox, Christopher C. Williams, and Stephen R. Sieck
Department of Chemistry, Grinnell College, Grinnell, IA 50112

A39 OSELTAMIVIR

Stephen R. Sieck
Department of Chemistry, Grinnell College, Grinnell, IA 50112

A40 DISCOVERY OF A POTENT, HIGHLY SELECTIVE, AND ORALLY BIOAVAILABLE PHTHALAZINE-BASED AURORA KINASE INHIBITOR

Philip Olivieri, Annette Bak, Steve Bellon, Matthew Bio, Victor Cee, Grace Chung, Steve Coats, Melanie Cooke, Holly Deak, Patrick Eden, Jenne Fretland, Paul Gallant, Yan Gu, Brian Hodous, Richard Kendall, Jasmine Lin, Michael Morrison, Hanh Nguyen, Vikram Patel, Vinod Patel, David Powers, Robert Radinsky, Karina Romero, Paul Rose, Sandy Ross, Laurie Schenkel, Ji-Rong Sun, Jin Tang, Daniel Waldon, Huilin Zhao, Marc Payton, and Stephanie Geuns-Meyer
Amgen Inc., One Kendall Square, Building 1000, Cambridge, MA 02139

A41 IMPROVED SYNTHESIS OF V-PROLI/NO AND RELATED NITRIC OXIDE PRODRUGS: POSSIBLE ENHANCERS OF ARSENITE AS A CANCER CHEMOTHERAPEUTIC

Sam Y. Hong, Harinath Chakrapani, Joseph E. Saavedra, Rahul S. Nandurdikar, Anna E. Maciag, Larry K. Keefer, Wei Qu, Jie Liu, and Michael P. Waalkes
NCI-Frederick, Bldg 538/232, Frederick, MD 21702

A42 CHEMOSELECTIVE OXIDATION OF HETEROAROMATIC SULFIDES BEARING A PYRIDYL MOIETY

Tingjian Li, Yuelie Lu, Jean Baum, Xin Wang, and Ben Zhi
Chemical Process Research & Development, Amgen Inc., One Amgen Center Dr., Thousand Oaks, CA 91320

A43 TRIORGANOTIN REAGENTS SUPPORTED ON IONIC LIQUID: DESIGN AND APPLICATIONS

Phuoc Dien Pham and Stéphanie Legoupy
Laboratoire de Synthèse Organique, UCO2M, UMR CNRS 6011, Université du Maine, Avenue Olivier Messiaen, 72085 Le Mans Cedex 9, France

A44 QUANTUM CHEMICAL INVESTIGATION OF SYNTHETICALLY USEFUL Rh-CATALYZED REACTIONS

Matthew R. Siebert and Dean J. Tantillo*
Department of Chemistry, University of California - Davis, One Shields Avenue, Davis, CA 95616

A45 DIRECT C-H BOND FUNCTIONALIZATION OF N-CONTAINING HETEROCYCLES USING TRANSITION METALS

Seung Hwan Cho and Sukbok Chang*
Department of Chemistry, Korea Advanced Institute of Science and Technology (KAIST), 373-1 Guseong-dong, Yuseong-gu, Daejeon, 305-701, Republic of Korea

A46 RHODIUM-CATALYZED DIRECT ARYLATION VIA C-H BOND FUNCTIONALIZATION

Min Kim, Jinho Kim, and Sukbok Chang*
Department of Chemistry, Korea Advanced Institute of Science and Technology (KAIST), 373-1 Guseong-dong, Yuseong-gu, Daejeon, 305-701, Republic of Korea

A47 BUILDING CARBOHYDRATES ON DIOXANONE SCAFFOLD: THE BIS-ALDOL APPROACH
Nagarjuna Palyam, Izabella Niewczas, and Marek Majewski
Department of Chemistry, University of Saskatchewan, 110 Science Place, Saskatoon, SK, S7N 5C9, Canada

A48 STEREOSELECTIVE SYNTHESIS OF 3,5-DISUBSTITUTED PYRAZOLIDINES & 1,3-DIAMINES: USE OF ALLYLIC STRAIN TO CONTROL PRODUCT STEREOCHEMISTRY
Natalie C. Giampietro and John P. Wolfe
University of Michigan, Department of Chemistry, 930 N. University Ave., Ann Arbor, MI 48109-1055

A49 IDENTIFICATION OF A NEW CLASS OF NONPEPTIDIC IRREVERSIBLE INHIBITORS OF CRUZAIN
Katrien Brak[a], Patricia S. Doyle[b], James H. McKerrow[b], and Jonathan A. Ellman[a]
[a] Department of Chemistry, University of California, Berkeley, California 94720. [b] Department of Chemistry, University of California-San Francisco

A50 PROBING TUBULIN INTERACTIONS WITH 14-METHYL EPOTHILONE D ANALOGUES
Erin M. Daly, Jeffrey D. Frein, Yue Chen, and Richard E. Taylor*
University of Notre Dame, Department of Chemistry & Biochemistry, Notre Dame, IN 46545

A51 CATALYTIC ENANTIOSELECTIVE SYNTHESIS OF TETRAHYDROFURANS: A DYNAMIC KINETIC ASYMMETRIC [3 + 2] CYCLOADDITION OF RACEMIC CYCLOPROPANES AND ALDEHYDES
Andrew T. Parsons and Jeffrey S. Johnson
Department of Chemistry, CB#3290, University of North Carolina, Chapel Hill, NC 27599-3290

A52 A NEW STRATEGY FOR THE SYNTHESIS OF SUBSTITUTED MORPHOLINES
Matthew L. Leathen, Brandon Rosen, and John P. Wolfe
University of Michigan, Department of Chemistry, 930 N. University, Ann Arbor, MI 48109-1055

A53 REGIOSELECTIVE SYNTHESIS OF 12, 13-DIHYDROINDAZOLO [5, 4-a] PYRROLO [3, 4-c] CARBAZOLE-4-ONES
Ming Tao,* Chung Ho Park, Kurt Josef, and Robert L. Hudkins
Department of Medicinal Chemistry, Worldwide Discovery Research, Cephalon, Inc., 145 Brandywine Parkway, West Chester, PA 19380-4245

A54 A SIMPLE APPROACH TO COMPLEX HETEROCYCLES VIA Pd-CATALYZED CASCADE REACTIONS
Dani M. Schultz and John P. Wolfe
Department of Chemistry, University of Michigan, 930 N. University Avenue, Ann Arbor, MI 48109-1055

A55 THE SYNTHESIS OF SUBSTITUTED ARENES AND ALKANES BY METAL-CATALYZED C-H BORYLATION
Jaclyn M. Murphy and John F. Hartwig
University of Illinois, School of Chemical Sciences, A405 CLSL, Box 84-5, 600 S. Mathews Ave, Urbana, IL 61801

A56 SYNTHESIS AND ATROPISOMERIC PROPERTIES OF AN ENANTIOPURE AMINODIBENZAZEPINONE
Kevin P. Cole, David Mitchell, M. Austin Carr, James R. Stout, and Matthew D. Belvo
Chemical Product Research and Development, Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, Indiana, 46285

A57 A CONCISE, BIOMIMETIC SYNTHESIS OF (+)-DAVANONE
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A58 A SIMPLE UV DETECTOR FOR FLASH CHROMATOGRAPHY
Matt Hoss[1], Sam Ellis[2], Dr. MG Finn[3], Erik Sorenson[4], Sreeman Mamidyala[3], Doug Mcleod[4], Doug Otte[5], and James Nowick[1]
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A59 STUDIES TOWARD THE TOTAL SYNTHESIS OF LOMAIVITICINS A AND B
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A60 PROGRESS TOWARDS THE TOTAL SYNTHESIS OF VINIGROL

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A61 SEQUENTIAL REDUCTIVE-COUPLING AND ALLYLIC REDUCTION TO AFFORD INTERNAL OLEFINS, EXTERNAL OLEFINS, OR 1,3-DIENES

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A62 TEMPLATED REPLICATION OF PEPTIDE NUCLEIC ACIDS (PNAS) VIA SEQUENCE SELECTIVE BASE-FILLING REACTIONS

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A63 RAPID PREPARATION OF 2,4,5-TRISUBSTITUTED OXAZOLES USING SEQUENTIAL METALLATIONS

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A64 REACTIVITY OF A MONO-S-ARYL PALLADIUM(IV) FLUORIDE COMPLEX TOWARDS ARYL C–F BOND FORMATION

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A65 A SULFINAMIDE LYNCHPIN FOR THE ASYMMETRIC SYNTHESIS OF MULTISCAFFOLD LIBRARIES USING ENYNE AND DIYNE CYCLOADDITIONS AND CYCLOISOMERIZATIONS

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A66 ASYMMETRIC SYNTHESIS OF DI- AND TRI-SUBSTITUTED CYCLOPROPANES THROUGH AN INTRAMOLECULAR RING CLOSURE

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A67 PYRAZOLONE AS A PROMISING HIV-1 INTEGRASE INHIBITOR

Victor Hadi[1], Yung Koh[1], Danielle Barrios[2], Tino Sanchez[2], Nouri Neamati[2], and Kyung Woon Jung[1]*
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A68 ADVANCES IN NONLINEAR SPECTROSCOPY: APPLICATIONS IN IMAGING AND CONDENSED PHASE STUDIES

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A69 KINETIC, THERMODYNAMIC AND ELECTRONIC EFFECTS ON α-ARYL-EPOXYNITRILE ANIONIC CYCLIZATIONS

Jesús Armando Luján-Montelongo*, Adrián Vázquez-Sánchez, and José Gustavo Ávila-Zárraga*
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A70 DESIGN, SYNTHESIS AND EVALUATION OF IMPROVED ASYMMETRIC PALLADIUM (II) CATALYSTS FOR THE FORMATION OF BRANCHED ALLYLIC CARBONˆHETEROATOM BONDS

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A71 THE DEVELOPMENT OF NEW REACTIONS CATALYZED BY COBALT OXAZOLINE PALLADACYCLES

Angela C. Olson, Larry E. Overman*, Helen F. Sneddon, and Nicole S. White
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A72 METALLATED AZIRIDINES FOR CROSS-COUPLINGS WITH ARYL AND ALKENYL HALIDES VIA PALLADIUM CATALYSIS

***John M. Nelson* and Edwin Vedejs**
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A73 UTILITY OF SOLVATE CONTROL IN A K252A MANUFACTURING PROCESS AS A VEHICLE FOR MEETING QUALITY TARGETS

***Alan Christesen*, Eric Stoner, Kimberly Allen, and Jorge Gandarilla**
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A74 A TALE OF TWO TRACERS: SYNTHESIS OF METHOTREXATE FLUORESCEIN AND ACRIDINIUM CONJUGATES

***Jonathan Grote*, Gangamani Beligere, Zhen Lin, and Sushil Rege**
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A75 ORTHO-FORMYLATION OF OXYGENATED PHENOLS

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A76 DEVELOPMENT OF A NOVEL SYNTHESIS OF TETRACYCLIC STEROID DERIVATIVES UTILIZING TANDEM DIELS-ALDER/PAUSON-KHAND REACTIONS

***Rachel R. Dorset* and Kevin M. Shea**
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A77 SYNTHESIS AND CHARACTERIZATION OF TEMPERATURE RESPONSIVE ELASTIN-BASED POLYNORBORNENE MATERIALS

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California Institute of Technology, Division of Chemistry and Chemical Engineering MC 164-30, Pasadena, CA 91125

A78 RECYCLING THE WASTE: THE DEVELOPMENT OF A CATALYTIC WITTIG REACTION

Jennifer Tellez, Zachary S. Nixon, Lauren Kang, Katherine Przeworski, Gregory A. Chass, and Christopher J. O'Brien
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A79 AN ALLENOLATE VARIANT OF THE INTRAMOLECULAR VINYLOGOUS MORITA-BAYLIS-HILLMAN REACTION

***James. A. MacKay, M. A. Kench, and N. R. Wetzel**
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A80 LIPSHUTZ GROUP CHEMISTRY

***Benjamin R. Taft, Alex Abela, Benjamin Amorelli, Ben Baker, Zarko Boskovic, David Chung, Christophe Duplais, Brian Gallagher, Subir Ghorai, Ching-Tien Lee, Ralph Moser, Danielle Nihan, Takashi Nishikata, Tue Petersen, Brian Rich, and John Unger**
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A81 ZINC-MEDIATED COUPLINGS IN WATER AT ROOM TEMPERATURE

***Bruce H. Lipshutz, Christophe Duplais, and Arkady Krazovskiy**
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A82 NEW COUPLING REACTIONS OF GRIGNARD REAGENTS UNDER GREEN CATALYSIS

***Gérard Cahiez, Christophe Duplais, and Alban Moyeux**
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A83 REACTIONS OF 1,4-NAPHTHOQUINONES WITH A NUCLEOPHILE WITH TWO NUCLEOPHILIC CENTERS – INTERMOLECULAR *VS* INTRAMOLECULAR PROCESSES

Marci Kang, Elisabeth Rutledge, and Tetsuo Otsuki
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A84 EXAMINATION OF HALOGEN SUBSTITUENT EFFECTS ON HIV-1 INTEGRASE INHIBITORS DERIVED FROM 2,3-DIHYDRO-6,7-DIHYDROXY-1*H*-ISOINDOL-1-ONES AND 4,5-DIHYDROXY-1*H*-ISOINDOLE-1,3(2*H*)-DIONES

Xue Zhi Zhao, Kasthuraiah Maddali, B. Christie Vu, Christophe Marchand, Stephen H. Hughes, Yves Pommier, and Terrence R. Burke, Jr.

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A85 UTILIZING CONTROLLED SYNTHESES OF CONJUGATED POLYMERS TO GENERATE NEW MATERIALS

Jonas R. Locke and Anne J. McNeil*

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A86 DIRECT FORMATION OF FUNCTIONALIZED OXAZOL-2-YL ZINCATES: APPLICATION TO THE TOTAL SYNTHESIS OF MARINE NATURAL PRODUCTS

Colin K. Skepper[1], Tim Quach[1], and Tadeusz F. Molinski*[1,2]

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A87 SYNTHESIS OF *N*-ALKYL PYRIDONES VIA AN *O*- TO *N*-ALKYL MIGRATION: MECHANISTIC STUDIES

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A88 ISOLATION AND CHARACTERIZATION OF AN UNUSUAL *N*-ALKENYL PYRIDONE

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A89 STEREOSELECTIVE EPOXIDATION OF ACYCLIC HOMOALLYLIC ALCOHOLS USING $Vo(AcAc)_2$ UNDER MICROWAVE IRRADIATION: SYNTHETIC APPLICATIONS TO POLYPROPIONATE SYNTHESIS

Raúl R. Rodríguez Berrios, Torres, Gerardo, and José A. Prieto*

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A90 CONVERGENT EPOXIDE-BASED APPROACHES FOR THE SYNTHESIS OF THE C15–C25 BAFILOMYCIN A1 POLYPROPIONATE CHAIN

Elizabeth Valentín, Marlenne Mulero, Kellymar Rosa, and José A. Prieto*

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POSTER SESSION B - MONDAY JUNE 8

B1 DESIGN, SYNTHESIS, AND BIOLOGICAL EVALUATION OF NOVEL AND POTENT THIOSEMICARBAZONE BASED CATHEPSIN L INHIBITORS

Kishore Kumar Gaddale Devanna, Lindsay M. Jones, Jiangli Song, Matthew MacDonough, Elizabeth Cyril, Akash Desai, Grace Yoo, Elizabeth Conner, Wara M. Arispe, Gustavo Chararria, Amanda Charlton-Sevcik, Tracy E. Strecker, Shen-En Chen, Mary Lynn Trawick, and Kevin G. Pinney
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B2 DIVERSE ISOXAZOLE GLUTAMATE ANALOGS ARISE FROM A COMMON INTERMEDIATE

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B3 PROGRESS TOWARDS THE TOTAL SYNTHESIS OF THE ANGUCYCLINE ANTIBIOTIC GALTAMYCIN

Danielle R. LePar and Rongson Pongdee*
Otis A. and Margaret T. Barnes Science Center, Laboratory for Natural Products Chemistry, Department of Chemistry and Biochemistry, The Colorado College, 14 East Cache La Poudre, Colorado Springs, CO 80903

B4 MECHANISTIC STUDIES OF NICKEL-CATALYZED CROSS-COUPLINGS FOR CONTROLLED SYNTHESES OF π-CONJUGATED POLYMERS

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B5 AN EXPEDIENT SYNTHESIS OF NOVEL INHIBITORS OF THE HCV NS3 PROTEASE

SY SIT, Yan Chen, Alan X. Wang, Jie Chen, Li-Qiang Sun, Piyasena Hewawasam, Yong Tu, Min Ding, Stanley V. D'Andrea, Zhizhen Zheng, Ny Sin, Brian L. Venables, Keith Combrink, Fei Yu, Dennis Hernandez, Amy Sheaffer, Diana Barry, Heather Mulherin, Min Lee, Fiona McPhee, Jay O. Knipe, Kathy Mosure, Andrew Good, Herbert Klei, Nicholas A. Meanwell, and Paul Scola
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B6 SYNTHETIC EFFORTS TOWARD AN *AMANITA* VIROTOXIN

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B7 REGIO- AND STEREOSELECTIVE SYNTHESIS OF T-HISTIDINOALANINE

Samanthi de S. T. Handunnetti and Carol M. Taylor*
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B8 STUDIES TOWARD THE MILD AND GENERAL DECARBONYLATIVE SYNTHESIS OF AMINO ACID-DERIVED ENAMIDES

Pablo Garcia-Reynaga, and Michael S. VanNieuwenhze
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B9 β-*L*-ARABINOFURANOSIDES OF HYDROXYPROLINE VIA A THIOGLYCOSIDE DONOR

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B10 ASYMMETRIC SYNTHESIS OF HYDROXYLATED AMINO ACIDS OF THE THEONELLAMIDES

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B11 DESIGN AND SYNTHESIS OF NOVEL SUBSTITUTED ARYL- AND HETEROARYL-4-(PIPERIDIN-4-YL) PIPERAZINES AS SEROTONERGIC AGENTS

Asselin, Magda[1], Terry Andree[3], Wayne Childers[2], George Grosu[1], Boyd Harrison[2], Annmarie Sabb[2], Lee Schechter[3], Deborah Smith[3], and Warren Hirst[3]

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B12 TOWARD THE SYNTHESIS OF *C*-GLUCOSYL-α-THREONINE

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B13 BINAPHTHOL-CATALYZED ASYMMETRIC ALKENYLATION AND ARYLATION OF N-ACYLIMINES AND ENONES

Alice S. H. Chan, J. Michael Chong*, Bobby Guobadia, and Heather M. Turner

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B14 METALLORADICAL-CATALYZED ASYMMETRIC CARBENE AND NITRENE TRANSFERS: DEVELOPMENT OF Co(II) CHIRAL PORPHYRIN CATALYSTS

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B15 COBALT(II)-CATALYZED DIASTEREOSELECTIVE AND ENANTIOSELECTIVE CYCLOPROPANATION

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B16 COMPARING COMMON OXIDANTS EMPLOYED IN Pd-CATALYZED C-H ACTIVATION/FUNCTIONALIZATION REACTIONS

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B17 PROGRESS TOWARD A TRANSFORMABLE DIRECTING GROUP FOR C-H ACTIVATION/FUNCTIONALIZATION

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B18 COPPER(II)-CATALYZED AMINOHYDROXYLATION OF STYRENES AND 1,3-DIENES WITH OXAZIRIDINES

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B19 DEVELOPMENT OF AN ENANTIOSELECTIVE, NUCLEOPHILE CATALYZED ALDOL- LACTONIZATION OF KETO-ACIDS: APPLICATION TOWARDS A TOTAL SYNTHESIS OF CURCUMALACTONE

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B20 STUDIES ON ELECTROPHILIC AROMATIC BORYLATION AND RELATED REACTIONS

Aleksandrs Prokofjevs* and Edwin Vedejs

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B21 DISSECTING THE ROLES OF LMP-1'S TRANSMEMBRANE DOMAIN USING SYNTHETIC PEPTIDES

Catherine M. Joce, Deanne W. Sammond, Jennifer Martin, and Hubert Yin

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B22 AN ASYMMETRIC SYNTHESIS OF THE 22ND AMINO ACID, PYRROLYSINE

Margaret L. Wong and Laura L. Kiessling

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B23 SONOGASHIRA REACTIONS WITH PROPYNE: FACILE SYNTHESIS OF 4-HYDROXY-2-METHYLBENZOFURANS FROM IODORESORCINOLS

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B24 PYRYLOGENS: A NEW CLASS OF SENSITIZERS FOR PHOTOINDUCED ELECTRON TRANSFER REACTIONS

Ajaya Kumar Sankara Warrier, Chen Liao, Erambo Ayokosok, and Edward L. Clennan*

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B25 DESIGN AND SYNTHESIS OF FLUORESCENT SENSORS FOR MERCURY

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B26 SYNTHETIC CHALLENGES IN THE SYNTHESIS OF CALCIUM RECEPTOR ANTAGONISTS FOR THE TREATMENT OF OSTEOPOROSIS

Bruce Bechle*, Mary Didiuk, Scott Bagley, John Benbow, Hua Gao, Dave Griffith, Angel Guzman-Perez, Yu Hui, Amit Kalgutar, Ryan Kelley, Mei Li, Bryan Li, John Sagal, and Michael Zawistoski

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B27 PHOTOCHEMICAL REACTIVITY OF BIMETALLIC FISCHER CARBENE COMPLEXES

Marta Lopez de Rego Lage, Marta L. Lage, Israel Fernández, María J. Mancheño, and Miguel A. Sierra

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B28 TOWARD ULTRA-SENSITIVE PHOTOAMPLIFIED DETECTION OF MOLECULAR RECOGNITION EVENTS ON A MICROCAPILLARY ARRAY CHIP

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B29 PROGRESS TOWARD THE TOTAL SYNTHESIS OF AXINELLAMINES A-D AND MASSADINE

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B30 DEAROMATISATION OF 2-PHENYL OXAZOLINES, AN EXTENSION OF MEYERS' METHODOLOGY. APPLIED TO THE SYNTHESIS OF AMINO-CARBASUGAR ANALOGUES

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B31 DISSECTING THE FUNCTION OF GLUTAMATE TRANSPORTERS: A CHEMICAL GENETICS APPROACH

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B32 SYNTHESIS OF PLAKORTETHERS

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B33 C-H INSERTION ON SULFONYL SUBSTRATES AND ITS SYNTHETIC APPLICATION

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B34 NOVEL SYNTHESIS OF ISOXAZOLO[2,3-A]PYRIDINIUM SALTS FROM PYRIDINE *N*-OXIDES

Michael W. Justik and Samantha L. Kristufek

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B35 SYNTHESIS OF UNSYMMETRICAL AND SYMMETRICAL 3,4-DIARYL-3-PYRROLIN-2-ONES UTILIZING PYRROLE WEINREB AMIDES

Jessica G. Greger, Sarah J. P. Yoon-Miller, Jacob P. MacDonald, and Erin T. Pelkey*
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B36 STEREOSELECTIVE SYNTHESIS OF 3-ARYLIDENE ISOBENZOFURAN-1-ONES AND APPROACH TO THE ARISTOLACTAM ALKALOIDS

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B37 DIASTEREOSELECTIVE RHODIUM-CATALYZED [3+2+2] AND ENE-CYCLOISOMERIZATION REACTIONS OF ALKENYLIDENECYCLOPROPANES

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B38 SYNTHETIC STUDIES TOWARDS THE TOTAL SYNTHESIS OF LANCIFODILACTONE G.

Sanil Sreekumar
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B39 Pd-CATALYZED HYDROFUNCTIONALIZATIONS OF STYRENES AND DIENES

Susanne M. Podhajsky, Yasumasa Iwai, Keith M. Gligorich, Sarah A. Cummings, and Matthew S. Sigman*
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B40 TOTAL SYNTHESIS AND STRUCTURE REVISION OF NAKITERPIOSIN

Shuanhu Gao, Qiaoling Wang, and Chuo Chen
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B41 SYNTHETIC OPTIMIZATION OF PF-00868554, AN HCV POLYMERASE INHIBITOR IN CLINICAL EVALUATION

Sarah Johnson, Matthew Drowns, John Tatlock, Angelica Linton, Javier Gonzalez, Robert Hoffman, Tanya Jewell, Leena Patel, Julie Blazel, Mingnam, and Hui Li Tang
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B42 RECENT PROGRESS TOWARD THE SYNTHESIS OF CANANODINE

James R. Vyvyan*, Jennifer A. Dell, Toby J. Ligon, Kelsey K. Motanic, and Hayley S. Wall
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B43 A MULTIDISCIPLINARY APPROACH FOR THE IDENTIFICATION OF TWO UNEXPECTED SYNTHETIC BY-PRODUCTS

Yande Huang[1], Qingmei Ye[1], John DiMarco[1], Venkatapuram Palaniswamy[1], Truc Vu[2], Bin Zheng[2], Melissa Chau[2], Dau-Ming Hsieh[2], Jianji Wang[2], Ehrlic Lo[2], and Chien-Kuang Chen[2]
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B44 DEVELOPMENT OF DOUBLE DIASTEREO-SELECTIVE NUCLEOPHILE-CATALYZED ALDOL LACTONIZATIONS: APPLICATIONS TOWARDS BICYCLIC BETA-LACTONES

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B45 HIGHLY STEREOSELECTIVE AND GENERAL SYNTHESIS OF *TRANS*-STILBENES AND ALKENES BY MEANS OF AN AQUEOUS WITTIG REACTION

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B46 SYNTHESIS AND CHARACTERIZATION OF LIPOPHILIC COENZYME A, THIOESTER DERIVATIVES FROM NONSTANDARD MEDIUM CHAIN FATTY ACIDS

Hany F. Sobhi*, Paul E. Minkler, and Charles L. Hoppel
Department of Pharmacology and, Medicine Center for Mitochondrial Diseases, Case Western Reserve University, School Of Medicine Cleveland, Ohio

B47 AN EFFICIENT SYNTHESIS OF ENANTIOMERICALLY PURE 1,3-DIHYDROISOBENZOFURAN DERIVED CONFORMATIONALLY CONSTRAINED SERINE DERIVATIVE FROM A CHIRAL AZIRIDINE

Hae Kyung Song[1], Baeck Kyoung Lee[1], Sang Bin Lee[1], Won Koo Lee[1]*, and Hyun-Joon Ha[2]*

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B48 AN EFFICIENT SYNTHESIS OF OPTICALLY PURE (3,4-DIHYDRO-2H-BENZO[B][1,4]-OXAZINE-3-YL)METHANOL DERIVATIVES

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[1]Department of Chemistry and Interdisciplinary Program of Integrated Biotechnology, Sogang University, Seoul 121-742, Korea. [2]Department of Chemistry, Hankuk University of Foreign Studies, Yongin 449-791, Korea

B49 AN EFFICIENT ONE-POT SYNTHESIS OF ENANTIOMERICALLY PURE 2-HYDROXYMETHYL-1,2,3,4-TETRAHYDROQUINOLINE DERIVATIVES VIA INTRAMOLECULAR C-N BOND FORMATION

Ji Hye Kwon[1], Hwan Gun Choi[1], Baeck Kyoung Lee[1], Jong Chan Kim[1], Won Koo Lee[1*], and Hyun-Joon Ha[2*]

[1]Department of Chemistry and Interdisciplinary Program of Integrated Biotechnology, Sogang University, Seoul 121-742, Korea. [2]Department of Chemistry, Hankuk University of Foreign Studies, Yongin 449-791, Korea

B50 SYNTHESIS AND STRUCTURAL CHARACTERIZATION OF SIALIC ACID-GLUTAMIC ACID HYBRID FOLDAMERS AS CONFORMATIONAL SURROGATES OF ALPHA-2,8-LINKED POLYSIALIC ACID

Jonel P. Saludes, James B. Ames, and Jacquelyn Gervay-Hague

Department of Chemistry, University of California, Davis, One Shields Ave., Davis, CA 95616

B51 PHOTORELEASE OF CAMPTOTHECIN FROM POLYMERIC NANOCAPSULES PREPARED VIA RING-OPENING METATHESIS POLYMERIZATION AND CLICK CHEMISTRY

Jeremiah A. Johnson,[1] M.G. Finn,[2] David A. Tirrell,[1] Robert H. Grubbs,*[1] Jeffrey T. Koberstein,[3,4] and Nicholas J. Turro*[3,4]

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B52 MECHANISTIC INVESTIGATION OF A COPPER FREE AEROBIC WACKER OXIDATION

Brian J. Anderson and Matthew S. Sigman*

Department of Chemistry, University of Utah, 315 South 1400 East, Salt Lake City, UT 84112-0850

B53 Pd CATALYZED 1,1 DIARYLATION OF TERMINAL OLEFINS

Erik Werner, Kaveri Balan Urkalan, and Matthew S. Sigman*

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B54 NOVEL ORGANOCATALYST DEVELOPMENT AND APPLICATION IN ASYMMETRIC REACTIONS

Xiangbing Qi, Xiaotao Pu, and Joseph M. Ready

Department of Biochemistry (9038), University of Texas Southwestern Medical Center at Dallas, 5323 Harry Hines Blvd., Dallas, Texas 75390

B55 CONJUGATE ADDITION OF AMINE TO CHIRAL 3-AZIRIDIN-2-YL-ACRYLATES

Doo-Ha Yoon[1], Hyun-Joon Ha[1*], and Won Koo Lee[2]

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B56 1,3-DIPOLARCYCLOADDITION REACTIONS OF AZOMETHINE IMINES: A COMPARATIVE STUDY OF LEWIS ACID AND BRØNSTED ACID CATALYZED REACTIONS

Digamber Rane, Levi Stanley, and Mukund Sibi*

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B57 CHIRAL BRØNSTEAD ACID-CATALYZED ENANTIOSELECTIVE α-AMINOXYLATION OF KETONES *VIA* SET PROCESS

Norihiko Takeda* and Mukund P. Sibi
Department of Chemistry & Molecular Biology, North Dakota State University, Fargo, ND 58105

B58 DUAL ACTIVATION OF CARBONYL GROUPS WITH BRØNSTED AND LEWIS ACIDS: PROOF OF PRINCIPLE EXPERIMENTS

Seiji Hata* and Mukund P. Sibi
Department of Chemistry & Molecular Biology, North Dakota State University, Fargo, ND 58105

B59 PROCESS DEVELOPMENT OF *CIS*-3-[8-AMINO-1-(2-PHENYLQUINOLIN-7-YL)IMIDAZO[1,5-*A*]PYRAZIN-3-YL]-1-METHYLCYCLOBUTANOL (OSI-906)-A POTENT IGF-1R INHIBITOR

Arlindo Castelhano, Yunyu Mao, Kristen Mulvihill, and Josef Rechka*
OSI Pharmaceuticals, Inc., 1 Bioscience Park Drive, Farmingdale, NY11735

B60 CONTROLLING REGIOSELECTIVITY IN Pd-CATALYZED OXIDATIVE COUPLING REACTIONS

Thomas W. Lyons* and Melanie S. Sanford
University of Michigan, 930 N. University Ave., Ann Arbor MI 48109

B61 USE OF A BROOK REARRANGEMENT-MEDIATED [3 + 4] ANNULATION TOWARD THE TOTAL SYNTHESIS OF (+)-PRELAUREATIN

Michiko Sasaki, Kazuhisa Oyamada, and Kei Takeda*
Hiroshima University, Department of Synthetic Organic Chemistry, Graduate School of Biomedical Sciences, 1-2-3, Kasumi, Minami-Ku, Hiroshima 734-8553, Japan

B62 TRAPPING OF CHIRAL CARBANIONS BY [2,3]-WITTIG REARRANGEMENT: EFFECT OF HETEROATOMS AND CONJUGATING GROUPS

Hidaka Ikemoto, Michiko Sasaki, and Kei Takeda*
Department of Synthetic Organic Chemistry, Graduate School of Biomedical Sciences, Hiroshima University, 1-2-3, Kasumi, Minami-Ku, Hiroshima 734-8553, Japan

B63 ENANTIOSELECTIVE H-ATOM TRANSFER REACTIONS: DEVELOPMENT OF A NOVEL TIN-FREE PROCEDURE

Curtis A. Engelhart* and Mukund P. Sibi
Department of Chemistry, North Dakota State University, Fargo, North Dakota, 58105

B64 IRIDIUM-CATALYZED ENANTIOSELECTIVE *N*-ALLYLATION OF INDOLES

Levi M. Stanley* and John F. Hartwig*
University of Illinois, School of Chemical Sciences, A405 CLSL, Box 84-5, 600 S. Mathews Ave, Urbana, IL 61801

B65 *FROM HIGHLY CIS- TO HIGHLY TRANS- BY A SIMPLE CHANGE:* AN EFFICIENT *TRANS*- SELECTIVE CATALYTIC ASYMMETRIC AZIRIDINATION FROM IMINES AND DIAZOACETAMIDES BY CHIRAL BORATE CATALYSTS DERIVED FROM VAULTED BIARYL LIGANDS

Aman A. Desai* and William D. Wulff*
Department of Chemistry, Michigan State University, East Lansing, MI 48824, USA

B66 THE SYNTHESIS OF VELLOZIOLIDE VIA NICHOLAS REACTION CHEMISTRY

James R. Green** and Andy A. Tjeng
Dept. of Chemistry and Biochemistry, University of Windsor, Windsor, ON, Canada, N9B 3P4

B67 THE FUNCTION-ORIENTED, STEP-ECONOMICAL DESIGN AND SYNTHESIS OF HIGHLY POTENT BRYOSTATIN ANALOGUES

Paul A. Wender,* Brian A. DeChristopher, and Adam J. Schrier
Department of Chemistry and Chemical and Systems Biology, Stanford University, Stanford, CA 94305-5080

B68 DISCOVERY AND SAR OF 4,6-DIAZAINDOLES AS HIV-1 ATTACHMENT INHIBITORS

John A. Bender, Zhong Yang, Gregory Yamanaka, Pin-Fang Lin, Dawn DiGiugno Parker, Sandhya Rahematpura, Ming Zheng, Nicholas Meanwell, and John Kadow
Bristol-Myers Squibb Company, 5 Research Parkway, Wallingford, CT 06492

B69 Pd-CATALYZED AEROBIC OXIDATIVE CYCLIZATIONS AND Rh-CATALYZED ASYMMETRIC HYDROFORMYLATION OF N- AND O-FUNCTIONALIZED ALKENES AS PRACTICAL ROUTES TO HIGHLY FUNCTIONALIZED CHIRAL SYNTHONS

Richard I. McDonald, Clark R. Landis, and Shannon S. Stahl
Department of Chemistry, University of Wisconsin-Madison, Chemistry Rm. 5215, 1101 University Ave., Madison, WI 53706

B70 APPLICATIONS OF ETHYLENE IN FINE CHEMICAL SYNTHESIS. CONTROLLING SIDE-CHAIN STEREOCHEMISTRY VIA THE ASYMMETRIC HYDROVINYLATION

Craig R. Smith and T. V. RajanBabu
The Ohio State University, Department of Chemistry, 100 W. 18th Ave. Columbus, OH 43210

B71 STUDIES TOWARD THE TOTAL SYNTHESIS OF (+)-NODULISPORIC ACID A

Stephen S. Gonzales, Vladimir Simov[a], Michael C. Myers[b], and Amos B. Smith, III[c]*
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B72 DESIGN, SYNTHESIS AND APPLICATION OF HIGHLY ACTIVE ALLENIC CHIRAL LIGANDS IN ASYMMETRIC CATALYSIS

Xiaotao Pu, Xiangbing Qi, and Joseph M. Ready
Department of Biochemistry (9038), University of Texas Southwestern Medical Center at Dallas, 5323 Harry Hines Blvd., Dallas, Texas 75390

B73 Cu(II)-PROMOTED INTRA/INTERMOLECULAR DIAMINATION OF ALKENES

Fatima C. Sequeira and Sherry R. Chemler
Chemistry Department, State University of New York at Buffalo, Buffalo, NY, 14260

B74 REGIOSELECTIVE PROTECTION OF 1,3-DIOLS VIA SILYENE INTERMEDIATES

Patricia Bailey, Joseph Abramite, and Tarek Sammakia
Department of Chemistry and Biochemistry, University of Colorado, Boulder, CO 80309

B75 SYNTHESIS AND OPTOELECTRONIC PROPERTIES OF A SERIES OF REGIOISOMERIC BIS(PHENYLETHYNYL)BENZENES

Brittany M. Armstrong, Torben Ryhding, Aaron G. Fix, and Michael M. Haley*
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B76 DIASTEREOSELECTIVE TIN-FREE RADICAL FRAGMENTATION REACTIONS

Joshua Judkins, Andro Youssef, and Amanda Holloway
Department of Chemistry and Biochemistry, Ohio Northern University, Ada, OH

B77 DEVELOPING CATALYTIC REACTIONS USING AUTOMATION AND HIGH THROUGHPUT TECHNOLOGIES IN MERCK PROCESS RESEARCH

C. Scott Shultz*
Department of Process Research, Merck Research Laboratories, PO Box 2000, RY800-C262, Rahway, NJ 07065-0900

B78 DRUG DISCOVERY AT AN UNDERGRADUATE LIBERAL ARTS INSTITUTION

Jeffrey A. Turk* and Joe D. Beckmann
Department of Chemistry, Alma College, 614 West Superior Street, Alma, Michigan 48801

B79 ACCELERATION OF THE MORITA-BAYLIS-HILLMAN REACTION BY A SIMPLE MIXED CATALYST SYSTEM

Alejandro Bugarin and Brian T. Connell*
Texas A&M University, Department of Chemistry, PO Box 30012, College Station, TX 77842-3012

B80 PROPOSED SYNTHETIC ROUTE FOR (-)-α-KAINIC ACID

Lisa James, Courtney Rabun, and Nandeo Choony*
Department of Chemistry and Physics, University of South Carolina,

B81 MECHANISTIC INVESTIGATION OF RHODIUM-CATALYZED C-C BOND ACTIVATION
Jeffrey B. Johnson,* ***Jonathan D. Parrish, and Alexander C. Wotal***
Hope College Chemistry Department, 35 East 12th St, Holland, MI 49423

B82 INVESTIGATION OF Pd-CATALYZED C-C BOND ACTIVATION OF TERTIARY ALCOHOLS
Valerie J. Winton and Jeffrey B. Johnson*
Hope College Chemistry Department, 35 East 12th St, Holland, MI 49423

B83 MODULAR STEREOCONTROLLED ASSEMBLY OF R_2Zn, CYCLIC ENONES AND *N-TERT*-BUTANESULFINYL IMINES
José C. González-Gómez,* Francisco Foubelo,* and Miguel Yus
Departamento de Química Orgánica, Facultad de Ciencias and Instituto de Síntesis Orgánica (ISO), Universidad de Alicante, Apdo. 99, 03080 Alicante, Spain

B84 PROCESS DEVELOPMENT OF PD348292
Katheryn Harrison, Heather Frost, Kevin Girard, Robert Dugger*, and David Erdman
Department of Chemistry, Wake Forest University, Winston-Salem, NC 27016

B85 ON THE MECHANISM OF NICKEL-CATALYZED REDUCTIVE COUPLINGS
Ryan D. Baxter
The University of Michigan, Department of Chemistry, 930 North University Avenue, Ann Arbor, Michigan 48109-1055

B86 A SCALABLE ASYMMETRIC SYNTHESIS OF (2S,5S)- 5-SUBSTITUTED AZEPANE-2-CARBOXYLATE DERIVATIVES
Richard A. Buzon, Donn G. Wishka, Mark C. Noe, Goss S. Kauffman, and Michael W. Fichtner
Pfizer Global Research and Development, Eastern Point Road, Groton, Connecticut 06340

B87 SYNTHESIS OF α-AMINO AMIDES VIA N,O-ACETALS DERIVED FROM WEINREB AMIDES
Sebastian Hirner and Peter Somfai*
Organic Chemistry, KTH Chemical Science and Engineering, SE-100 44 Stockholm, Sweden

B88 DESIGN, SYNTHESIS, AND BIOLOGICAL EVALUATION OF NOVEL AND POTENT THIOSEMICARBAZONE BASED CATHEPSIN L INHIBITORS
Kishore Kumar Gaddale Devanna, Lindsay M. Jones, Jiangli Song, Matthew MacDonough, Elizabeth Cyril, Akash Desai, Grace Yoo, Elizabeth Conner, Wara M. Arispe, Gustavo Chararria, Amanda Charlton-Sevcik, Tracy E. Strecker, Shen-En Chen, Mary Lynn Trawick, and Kevin G. Pinney
Department of Chemistry and Biochemistry, Baylor University, One Bear Place #97348, Waco, TX 76798-7348

B89 A NEW APPROACH TO REVERSAL OF ENANTIOSELECTIVITY
Hun Young Kim, Hui-Ju Shih, William E. Knabe, and Kyungsoo Oh*
Department of Chemistry and Chemical Biology, Indiana University-Purdue University Indianapolis, 402 N. Blackford Street, Indianapolis, IN 46202

B90 PHYTOCHEMICAL INVESTIGATION OF *ZANTHOXYLUM SETULOSUM*
Tameka M. Walker and William N. Setzer
Department of Chemistry, University of Alabama in Huntsville, Huntsville, AL 35899

POSTER SESSION C - TUESDAY JUNE 9

C1 A BUILD/COUPLE/PAIR STRATEGY FOR THE GENERATION OF EIGHT- AND NINE-MEMBERED RINGS: SYNTHESIS AND BIOLOGICAL EVALUATION OF A 20,000-MEMBERED DOS LIBRARY
Haibo Liu, Joshua Bittker, Jeremy R. Duvall, Baudouin Gerard, Bhaumik A. Pandya, Byung C. Suh, Damian Young, and Lisa A. Marcaurelle
Broad Institute of MIT and Harvard, 7 Cambridge Center, Cambridge, MA 02142

C2 CURRENT ADVANCES IN *N*-HETEROCYCLIC CARBENE CATALYSIS
Eric M. Phillips and Karl A. Scheidt*
Department of Chemistry, Northwestern University, 2145 Sheridan Road, Evanston, IL 60202

C3 SILICON KEEPS IT TOGETHER: OXIDATIVE CARBON–CARBON BOND FORMING REACTIONS USING SILYL BIS-ENOL ETHERS
Michael D. Clift, Leah C. Konkol, Dr. Christopher T. Avetta, Brian T. Jones, and Regan J. Thomson*
Department of Chemistry, Northwestern University, Evanston, IL 60208

C4 SYNTHESIS OF 9-BROMO-2-FLUORO-8-[ETHYL, (E)-2-PROPENOATE-3-YL]-6,7-DIHYDRO-5H-BENZOCYCLOHEPTENE
Michael H. Silveira
Department of Chemistry, University of Louisiana at Lafayette, Lafayette, LA 70504

C5 EXTREME MAKEOVER: RE-VISITING VINYLOGY AND ITS APPLICATIONS IN SYNTHESIS
Bo Xu*, Weibo Wang, Le-ping Liu, Han Yang, Jose Aponte, and Gerald B. Hammond
Department of Chemistry, University of Louisville, Louisville, KY 40292

C6 STUDY TOWARDS TOTAL SYNTHESIS OF MARINOMYCINS
Anita Alni and Loh Teck Peng*
Division of Chemistry & Biological Chemistry, Nanyang Technological University, Singapore 639798

C7 SELECTIVE FUNCTIONALIZATION OF PEPTIDES & PROTEIN BY MUKAIYAMA ALDOL CONDENSATION IN AQUEOUS SOLUTION
Jenefer Alam, Thomas Hugo Keller, and Loh Teck Peng*
Division of Chemistry & Biological Chemistry, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore 637371

C8 APPLICATIONS OF CARBOHYDRATE-BASED REDUCING AGENTS IN TRANSITION METAL-CATALYSIS
Zachary A. Buchan, Scott J. Bader, and John Montgomery
University of Michigan, Department of Chemistry, 930 N. University, Ann Arbor, MI 48109-1055

C9 C-H ACTIVATION AND CYCLIZATIONS USING STANNYLENES
Ajdin Kavara and Mark Banaszak Holl
University of Michigan, Department of Chemistry, 930 N. University Ave Ann Arbor, MI 48109

C10 THE SELECTIVE REDUCTION OF AROMATIC NITRO COMPOUNDS USING CATALYST RESIDENCE TIME CONTROL AND A FULLY AUTOMATED CATALYST SCREENING PLATFORM
Paul Whittles, Richard Jones*, Ildiko Kovacs, Laszlo Urge, and Ferenc Darvas
ThalesNano Inc, Zahony u. 7, Budapest 1031, Hungary

C11 PERICYCLIC CASCADE REACTIONS OF 5-AMINO-2,4-PENTADIENALS: SELECTIVE SYNTHESIS OF *Z*-α,β,γ,δ-UNSATURATED AMIDES AND POLYCYCLIC LACTAMS
Sarah Steinhardt and Christopher Vanderwal
Department of Chemistry, University of California-Irvine, 1102 Natural Sciences II, Irvine, CA 92697-2025

C12 ENANTIOSELECTIVE SOMO CASCADE CATALYSIS: THE ASYMMETRIC RADICAL POLYCYCLIZATION OF UNSATURATED ALDEHYDES
Sebastian Render and David W. C. MacMillan
Department of Chemistry and Merck Center for Catalysis at Princeton University, Washington Road, Princeton, NJ 08544

C13 ENANTIOSELECTIVE ORGANO-SOMO CATALYSIS: THE ALKYLATION OF ALDEHYDES USING SIMPLE OLEFINS
Thomas H. Graham, Casey M. Jones, Nathan T. Jui, Esther C. Y. Lee, and David W. C. MacMillan
Princeton University, Washington Road, Princeton, NJ 08544

C14 REGIOSELECTIVE DEPROTONATION OF SUBSTITUTED THIOPHENES
Sylvie M. Asselin, Matthew M. Bio, Neil F. Langille, and Ka Yi Ngai
Chemical Process R&D, Amgen Inc., Thousand Oaks, CA

C15 CATALYTIC ASYMMETRIC HYDROBORATION: A ROUTE TO FELKIN OR ANTI-FELKIN ACETATE ALDOL PRODUCTS
Sean M. Smith and James M. Takacs
University of Nebraska-Lincoln, Department of Chemistry, Hamilton Hall, Lincoln, NE 68588

C16 IMPROVED SYNTHETIC ROUTE TO ((3S,4S)-4-AMINO-1-(5,6-DICHLOROPYRIDIN-3-YL)PYRROLIDIN-3-YL)METHANOL
Timothy Towne, Michael Rasmussen, Kirill Lukin, Wenke Li, Brian Kotecki, Vlad Zhukovytsky, Alexander Chu-Kung, David Willcox, Evelina Kim, and Thaddeus Franczyk
Abbott Laboratories, Dept. R450, Bldg. R8-125, 1401 Sheridan Road, North Chicago, IL 60064-4000

C17 LONG RANGE CHIRALITY TRANSFER DURING CONJUGATE ADDITION OF SULFONYL CARBANIONS. THE EFFECT OF LI CHELATION AND AROMATIC STRUCTURE
Alfred Hassner, Shlomo Levinger and Anatoly Belostotskii
Bar-Ilan University, Chemistry Department, Ramat-Gan 52900, Israel

C18 PROCESS CHEMISTRY AND DEVELOPMENT OF OSI-930
Paul Briner*, Andrew Crew, Chris Hidden, Kristen Mulvihill, Joe Rechka, and Mike Rogers
OSI Pharmaceuticals, Inc., 1 Bioscience Park Drive, Farmingdale, NY 11735

C19 SYNTHESIS OF PABA ESTERS: THE FISCHER ESTERIFICATION REACTION REVISITED – PART – III: EFFECT OF DIFFERENT CATALYSTS ON THE METHOD OF SYNTHESIS AND ANALYSIS BY IR AND HPLC
Nagarajan Vasumathi, Kristin Shirey, and Thai Huynh
Department of Chemistry, Jacksonville State University, Jacksonville, AL 36265

C20 SYNTHESIS OF A FULL STEREOCHEMICAL COMPLEMENT OF 14-MEMBERED MACROLACTAMS BY RING-CLOSING METATHESIS (RCM)
Byung-Chul Suh, Eamon Comer, Sivaraman Dandapani, Jeremy Duvall, Maurice duPont Lee IV, Jason Lowe, Haibo Liu, Carol Mulrooney, Bhaumik Pandya, Troy Ryba, Louise Walport, Damian Young, and Lisa Marcaurelle
Broad Institute of MIT and Harvard, 7 Cambridge Center, Cambridge, MA 02142, USA

C21 SYNTHETIC MANIPULATIONS OF HYDRAZONES: ALPHA-CHLOROAZOALKANES AND BICYCLIC DIAZENIUM SALT FORMING REACTIONS
Jodi Wyman, Muhammad Javed, and Matthias Brewer
University of Vermont, Department of Chemistry, Burlington, VT 05405

C22 STUDIES ON A METHANOL-INDUCED STEREO-SELECTIVE SPIROKETALIZATION USING ELECTRONICALLY TUNED ARYL GLYCAL EPOXIDES
Jacqueline M. Wurst, Guodong Liu, and Derek S. Tan
Memorial Sloan–Kettering Cancer Center, 1275 York Ave, Box 422, New York, NY 10065 USA

C23 [1,2]-ARYL MIGRATION IN THE SYNTHESIS OF SUBSTITUTED INDOLES: SCOPE, MECHANISM, AND HIGH THROUGHPUT EXPERIMENTATION
Cheng-yi Chen, Tao Pei, David M. Tellers, Eric C. Streckfuss, and Ian W. Davies
Department of Process Research, Merck Research Laboratories, P.O. Box 2000, Rahway, New Jersey 07065

C24 DE NOVO SYNTHESIS OF MODIFIED SAXITOXINS FOR SODIUM ION CHANNEL STUDY
Brian M. Andresen and J. Du Bois
Department of Chemistry, Stanford University, Stanford, CA 94305-5080

C25 A REMARKABLE EXAMPLE OF THE ROLE OF RIGIDITY IN SUPRA-MOLECULAR CATALYST PERFORMANCE
Nathan Thacker, Qing Zhang, Ramon E. Verduzco, and James M. Takacs*
University of Nebraska-Lincoln, Department of Chemistry, Hamilton Hall, Lincoln, NE 68588

C26 PROCESS ANALYTICAL TECHNOLOGY (PAT) – USING MID-IR FOR REAL-TIME REACTION MONITORING
Kelvin H Yong
Schering-Plough Research Institute

C27 NEW SYNTHETIC APPROACHES TOWARDS THE NATURAL HYDROXAMIC ACID COBACTIN CORE
Ranjan Banerjee and S. Bruce King*
Department of Chemistry, Wake Forest University, Winston-Salem, NC 27016

C28 ^{13}C KINETIC ISOTOPE EFFECTS AND THE MECHANISM FOR THE BAYLIS-HILLMAN REACTION IN PROTIC AND APROTIC SOLVENTS: EVIDENCE FOR TWO DIFFERENT RATE DETERMINING STEPS
Erik Plata and Daniel A. Singleton
Department of Chemistry, Texas A&M University, P. O. Box 30012, College Station, Texas 77842

C29 SYNTHESIS AND BIOLOGICAL CHARACTERIZATION OF CYCLODEPSIPEPTIDE INHIBITORS OF COTRANSLATIONAL TRANSLOCATION
Sarah V. Maifeld, Jennifer L. Garrison, Andrew L. MacKinnon, Erik J. Kunkel, and Jack Taunton
Department of Cellular and Molecular Pharmacology, University of California-San Francisco

C30 SYNTHETIC EFFICIENCY: USING ATOM-ECONOMICAL AND CHEMOSELECTIVE APPROACHES TOWARDS TOTAL SYNTHESES OF AGELAS ALKALOIDS, TERPESTACIN AND BRYOSTATINS
Barry M. Trost* and Guangbin Dong
Chemistry Department, Stanford University, Stanford, CA 94305-5080

C31 NON-COVALENT ATTRACTIVE INTERACTIONS IN ASSYMMETRIC CATALYSIS: APPLICATION IN METHODS FOR ENANTIOSELECTIVE ADDITIONS TO IMINES
Stephan J. Zuend, Ye Tao, and Eric N. Jacobsen
Department of Chemistry and Chemical Biology, Harvard University, 12 Oxford Street, Cambridge, MA 02138

C32 SYNTHETIC ROUTES TO FUNCTIONALIZED TETRACENES AND RUBRENES VIA CROSS-COUPLING
Elisey Yagodkin, Christopher J. Douglas, and C. Daniel Frisbie
Department of Chemistry, University of Minnesota, Twin Cities, Minneapolis, MN 55455

C33 USING BORON, NITROGEN AND HYDROGEN SUBSTITUTION TO DETERMINE STABILIZING FEATURES OF A MACROCYCLIC SESQUITERPENE CATION
Trevor A. Hamlin[1], Dean J. Tantillo[2], and Christian S. Hamann*[1]
[1]Department of Chemistry & Biochemistry, Albright College, Reading, PA 196122. [2]University of California, Davis, CA.

C34 ENANTIOSELECTIVE SYNTHESES OF FUNCTIONALIZED PIPERIDINONES AND BISPIDINES VIA HIGHLY SELECTIVE CASCADE COUPLINGS
Feng Xu, Edward Corley, Jerry A. Murry, and David M. Tschaen
Department of Process Research, Merck Research Laboratories, Rahway, NJ 07065

C35 INVESTIGATION OF A NOVEL RIGID DIPEPTIDE
Rentsenmyadag Dashzeveg, and Derek Strasser
Department of Chemistry and Biochemistry, University of Denver, 2190 East Iliff Avenue, Denver, Colorado 80208-2436

C36 A 2ND GENERATION FORMAL TOTAL SYNTHESIS OF DISORAZOLE C1 AND THE TOTAL SYNTHESIS OF A BIS-LACTAM ANALOG, *AZA*-DISORAZOLE C1
Chad D. Hopkins and Peter Wipf
University of Pittsburgh, Department of Chemistry, Chevron Science Center Room 1314, 219 Parkman Avenue, Pittsburgh, PA 15260

C37 AN EXERCISE IN DRUG DISCOVERY: PARALLEL SYNTHESIS OF LIDOCAINE DERIVATIVES AND ANALYSIS OF THEIR METABOLIC STABILITY USING LC-MS-MS

Brandon Parks and Timothy J. Peelen
Lebanon Valley College, Gerber Science Center, 101 N. College Ave., Annville, PA 17003

C38 PYRAZOLE: NEW SYNTHESIS METHODOLOGY AND THEIR DIVERSE APPLICATIONS

Rachid Touzani,[a,b] Sghir El Kadiri,[b] and Sylvain Nlate[c]
[a] Université Mohamed 1er, Faculté Pluridisciplinaire Nador-Maroc, [b] Laboratoire de Chimie Appliquée et Environnement, Université, Faculté des Sciences, Oujda- Morocco, [c] Institut des Sciences Moléculaires, Université Bordeaux1- (UMR 5255 CNRS)- France

C39 DEPROTECTION OF ALCOHOLS CATALYZED BY In(III) AND Bi(III)

Miho Kaneko, Gregory R. Cook, and Jina Park
Department of Chemistry and Molecular Biology, North Dakota State University, Fargo, ND 58105

C40 FRAGMENTATION REACTIONS IN THE CONSTRUCTION OF COMPLEX MOLECULES

Gregory B. Dudley
Department of Chemistry and Biochemistry, 102 Varsity Way, 5007 CSL, Florida State University, Tallahassee, FL 32306-4390

C41 HIGHLY STEREOSELECTIVE, CATALYTIC In-MEDIATED ALLYLATION OF HYDRAZONES

Yoko Takahashi, Robert Kargbo, Ryuji Hayashi, and Gregory R. Cook
Department of Chemistry, North Dakota State University, Fargo, ND-58102

C42 HYDROXAMATE BASED HDAC INHIBITORS WITH ENHANCED POTENCY AND REDUCED AFFINITY FOR THE HERG ION CHANNEL

M. D. Shultz*, J. Fan, D. Majumdar, N. Davis, C. Meta, M. Hsu, P. Wang, Y. Yan-Neal, J. Growney, Y. Yao, P. Atadja, J. Flynn, F. Lombardo, and V. Uttamsingh
Novartis Institute for Biomedical Research, 250 Massachusetts Avenue, Cambridge, MA02139

C43 DIASTEREOSELECTIVE SYNTHESIS OF A NOVEL SPIRO TETRACYCLIC RING SYSTEM VIA TANDEM INTRAMOLECULAR DIELS-ALDER REACTION

Jessada Mahatthananchai, Julia A. Giguere, Evan F. Shalen, Olivia Duong, and Raymond J. Giguere*
Chemistry Department, Skidmore College, 815 North Broadway, Saratoga Springs, NY 12866

C44 A NOVEL TANDEM INTRAMOLECULAR DIELS-ALDER (TIMDA) REACTION

Julia A. Giguere, Evan F. Shalen, Jessada Mahatthananchai, and Raymond J. Giguere*
Chemistry Department, Skidmore College, 815 North Broadway, Saratoga Springs, NY 12866

C45 HYDROGENATIVE AND TRANSFER HYDROGENATIVE C-C BOND FOMAITON: ASYMMETRIC VINYLATION AND ALLYLATION REACTIONS

Ming-Yu Ngai and Michael J. Krische
Department of Chemistry and Biochemistry, 1 University Station A5300, Austin, TX 78712

C46 ROTAXANE SYNTHESIS UNDER THERMODYNAMIC CONTROL VIA CARBONYL ADDITION CHEMISTRY

Amy M. Cagulada and Darren G. Hamilton*
Department of Chemistry, Mount Holyoke College, South Hadley, MA 01075

C47 ORGANIC REACTIONS AT POLYMER-COATING INTERFACES: DECONTAMINATING COATINGS FOR CHEMICAL WARFARE AGENTS

Dave Jenkins and H. Neil Gray
Department of Chemistry, University of Texas at Tyler, TX 75703

C48 PYRROLIDINE, PYRROLIZIDINE, AND INDOLIZIDINE ALKALOIDS VIA A MICROWAVE-ASSISTED AZA-COPE--MANNICH REACTION

Michelle Altenburg, Srujana Katukuri, Louis Lello, Tiffiny Micyus, Ian Pendleton, and Harriet A. Lindsay*
Department of Chemistry, Eastern Michigan University, *225 Mark Jefferson, Ypsilanti, MI 48197*

C49 A CHEMOSELECTIVE NITRO REDUCTION
William P. Gallagher, Mark Marlatt, Robert Livingston, Susanne Kiau, and Sergei Kolotuchin
Bristol-Myers Squibb, 1 Squibb Drive, New Brunswick, NJ 08901

C50 INDIUM(I) IODIDE-MEDIATED/PALLADIUM(0)-CATALYZED HIGHLY DIASTEREOSELECTIVE ALLYLATION OF CHIRAL HYDRAZONE
Gregory R. Cook*, Tanmay Mandal, and Narayanaganesh Balasubramanian
Department of Chemistry and Molecular Biology, North Dakota State University, Fargo, ND 58102

C51 INDIUM MEDIATED HIGHLY DIASTEREOSELECTIVE REFORMATSKY REACTION OF CHIRAL HYDRAZONE UNDER SONICATION
Gregory R. Cook*, Tanmay Mandal, and Narayanaganesh Balasubramanian
Department of Chemistry and Molecular Biology, North Dakota State University, Fargo, ND 58102

C52 ENANTIOSELECTIVE BISMUTH MEDIATED ALLYLATION
Gregory R. Cook*, Narayanaganesh Balasubramanian, Vesela Ugrinova, and Xixi Song
Department of Chemistry, North Dakota State University, Fargo, ND-58102

C53 EFFORTS TOWARD THE TOTAL SYNTHESIS OF ACOSMINE USING A RHODIUM CATALYZED [2+2+2] CYCLOADDITION
Derek M. Dalton and Tomislav Rovis
Department of Chemistry, Colorado State University, Fort Collins, CO 80523

C54 SECONDARY AMINE/N-HETEROCYCLIC CARBENE CASCADE CATALYSIS FOR THE FORMATION OF POLY-SUBSTITUTED CYCLOPENTANONES
Stephen Lathrop and Tomislav Rovis
Department of Chemistry, Colorado State University, Fort Collins, CO 80523

C55 DEVELOPMENT AND APPLICATION OF NOVEL N-HETEROCYCLIC CARBENES TO THE INTERMOLECULAR STETTER REACTION
Daniel DiRocco and Tomislav Rovis*
Department of Chemistry, Colorado State University, Fort Collins, CO 80523

C56 TOWARDS THE FIRST CATALYTIC ENANTIOSELECTIVE TOTAL SYNTHESIS OF FR901483
Stephane Perreault and Tomislav Rovis*
Department of Chemistry, Colorado State University, Fort Collins, CO 80523

C57 PREPARATION OF SPIRO-CYCLOPROPANE-INDOLINONE: DEVELOPMENT OF A PRACTICAL SYNTHESIS OF A KEY INTERMEDIATE OF PROGESTERONE RECEPTOR ANTAGONIST
Alexander V. Gontcharov*, Karen Sutherland, Yanzhong Wu, John Considine, and Michael MacEwan
Chemical Development, Wyeth Research, 401 N. Middletown Road, Pearl River, NY 10965

C58 PROGRESS TOWARDS THE TOTAL SYNTHESIS OF *N*-METHYLWELWITINDOLINONE C ISOTHIOCYANATE
David B. Freeman, Joshua J. Day, Rishi G. Vaswani, and John L. Wood*
Department of Chemistry, Colorado State University, Fort Collins, CO 80523

C59 STUDIES TOWARDS THE TOTAL SYNTHESIS OF CITRINADIN B
Genessa M. Smith, Ke Kong, and John L. Wood*
Department of Chemistry, Colorado State University, Fort Collins, CO 80523

C60 SYNTHESIS OF METHYL-1-(*TERT*-BUTOXYCARBONYLAMINO)-2-VINYLCYCLOPROPANECARBOXYLATE VIA A HOFMANN REARRANGEMENT UTILIZING TRICHLOROISOCYANURIC ACID (TCCA) AS AN OXIDANT
Zackary D. Crane*, Paul J. Nichols, Tarek Sammakia, and Peter J. Stengel
Department of Process Chemistry, Array BioPharma Inc., 3200 Walnut Street, Boulder CO, 80301

C61 ALKYLATION OF CYCLOPENTA[D,E,F]PHENANTHRENE: A SYNTHETIC APPROACH TO FULLERENE SUBSTRUCTURES
Donald J. Marquardt
Department of Chemistry, Northern Michigan University, 1401 Presque Isle Avenue, Marquette, MI 49855

C62 GOLD AND PALLADIUM CATALYZED TRANSANNULAR [4+3] CYCLOADDITION REACTIONS: SYNTHESIS OF THE ABCD RING STRUCTURE OF THE CORTISTATINS
Benjamin W. Gung and Derek T. Craft
Department of Chemistry, Miami University, Oxford, OH 45056

C63 A TEST OF SOLVATION MODELS FOR ETHEREAL SOLVENTS
Julius Reyes and Andrew Streitwieser
Department of Chemistry, University of California, Berkeley, California 94720

C64 REGIOSPECIFIC DECARBOXYLATIVE BENZYLATION OF KETONES
Robert R. P. Torregrosa and Jon A. Tunge
Department of Chemistry, University of Kansas, 1251 Wescoe Drive, Malott Hall, Lawrence, KS 66045

C65 CATALYTIC HOMOALDOL EQUIVALENT REACTIONS EMPLOYING A VINYL ACETATE NUCLEOPHILE
Jun Yong Kang and Brian T. Connell
Department of Chemistry, Texas A&M University, P O Box 30012, College Station, TX 77842-3012

C66 HIGHLY Z-SELECTIVE OLEFINATION FROM ALDEHYDE ADDUCTS OF SILYLACETATES, CATALYZED BY DBU
Satoshi Kojima,[1,2] Yutaka Murai,[1] and Akira Nakagawa[1]
[1]Department of Chemistry, Graduate School of Science, Hiroshima University, 1-3-1 Kagamiyama, Higashi-Hiroshima 739-8526, Japan, [2]Center for Quantum Life Sciences, Hiroshima University, 1-3-1 Kagamiyama, Higashi-Hiroshima 739-8526, Japan

C67 INTRAMOLECULAR FRIEDEL-CRAFTS REACTIONS IN TOTAL SYNTHESES OF ICETEXANE-TYPE TERPENES
Ge Zou and George Majetich*
Department of Chemistry, University of Georgia, Athens, GA 30605

C68 RESORCINARENE NANOSTRUCTURES: SYNTHESIS AND FUNCTIONALIZATION
Bala Ramjee* and Zaharoula M. Kalaitzis
Old Dominion University, Alfriend Chemistry Building, # 302, 4541 Hampton Boulevard, Norfolk, VA 23529-0126

C69 ORIGIN OF THE STABILITY CONFERRED UPON COLLAGEN BY FLUORINATION
Kimberli J. Kamer, Matthew D. Shoulders, and Ronald T. Raines
University of Wisconsin–Madison, 1101 University Avenue, Madison, WI 53706-1322

C70 LEWIS-ACID CATALYZED ALKYLATION OF PYRROLES: A POSSIBLE ROUTE TO 2-SUBSTITUTED INDOLES
C. Eric Ballard, Jack C. McGeachy, and Robab G. Dehkharghani
University of Tampa, 401 W. Kennedy Blvd., Tampa, FL 33606-1490

C71 SUPRAMOLECULAR OLIGOTHIOPHENE-FULLERENE MONOLAYERS STUDIED BY STM
Chaoying Fu[1], Jennifer M. MacLeod[2#], Oleksandr Ivasenko[1], Tyler Taerum[1], Federico Rosei[2] and Dmitrii F.Perepichka[1]
[1] Department of Chemistry, McGill University, 801 Sherbrooke Street West, Montréal, QC, Canada H3A 2K6
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C72 REDUCTIVE ALKYLATIONS OF MALONONITRILE AND FURTHER MANIPULATION TO EFFICIENTLY PREPARE SUBSTITUED CYANOACETATES
Chad Keyes and Robert E. Sammelson*
Department of Chemistry, Ball State University, Muncie, IN 47306

C73 STEREOSELECTIVE ADDITIONS OF SILYLOXYALLENES
Troy E. Reynolds and Karl A. Scheidt*
Department of Chemistry, Northwestern University, 2145 Sheridan Road, Evanston, Illinois 60208

C74 SYNTHESIS OF C2 CHIRAL PHOSPHININES AND THEIR APPLICATION TO ASYMMETRIC CATALYSIS
Jason R. Bell and Charles M. Garner*
Department of Chemistry and Biochemistry, Baylor University, One Bear Place #97348, Waco, TX 76798

C75 REGIOSPECIFIC DECARBOXYLATIVE ALLYLATIONS OF α–CYANOACETATES
Antonio Recio, III and Jon A. Tunge
Department of Chemistry, University of Kansas, 1251 Wescoe Drive, Malott Hall, Lawrence, KS 66045

C76 DYNAMIC EFFECTS IN THE ETHANOLYSIS OF SYMMETRIC ARYL CARBONATES
Xavier Bogle and Daniel A. Singleton
Department of Chemistry, Texas A&M University, P O Box 30012, College Station, TX 77842-3012

C77 DYNAMIC EFFECTS ON PRODUCT SELECTIVITY IN ALKENE OZONOLYSIS REACTIONS
Larisa Mae Quijano and Daniel A. Singleton
Department of Chemistry, Texas A&M University, P O Box 30012, College Station, TX 77842-3012

C78 CHROMIUM-CATALYZED ENANTIOSELECTIVE ADDITION OF ALLYLIC BROMIDES TO ARYL KETONES
Katharine E. Gohmann, Jeremie J. Miller, and Matthew S. Sigman*
Department of Chemistry, University of Utah, 315 South 1400 East, Salt Lake City, UT 84112-0850

C79 STEREOCONTROLLED SYNTHESES OF TRISUBSTITUTED CYCLOPENTANES
Debra K. Dillner, J. Blaine Moore, and Amanda Brenner
United States Naval Academy, Chemistry Department, Annapolis, MD 21402

C80 APPLICATION OF N-HETEROCYCLIC CARBENES IN ALPHA-REDOX PROCESSES
Harit U. Vora and Tomislav Rovis*
Department of Chemistry, Colorado State University, Fort Collins, CO 80523

C81 SYNTHESIS OF HOMOALLYLIC AMINES VIA PALLADIUM-CATALYZED DECARBOXYLATIVE COUPLING OF ALLYL 2-NITROACETATES
Alexander J. Grenning and Jon A. Tunge
University of Kansas, 1251 Wescoe Drive, Malott Hall, Lawrence, KS 66045

C82 HYPERVALENT IODINE-MEDIATED CARBON--CARBON BOND FORMING REACTIONS OF WACKER INTERMEDIATES
Ian McBee, Paul Fink, and Corey R.J. Stephenson*
Department of Chemistry, Boston University, 590 Commonwealth Ave., Boston, MA 02215

C83 STUDIES TOWARDS THE SYNTHESIS OF ACTINOPHYLLIC ACID
Laura Furst and Corey R. J. Stephenson*
Boston University Department of Chemistry 590 Commonwealth Ave., Boston, MA 02215

C84 ELECTRON-TRANSFER PHOTO-REDOX CATALYSIS: RADICAL CYCLIZATIONS ONTO SUBSTITUTED INDOLES AND PYRROLES
Jagan M. R. Narayanam, Joseph W. Tucker, Stefan Diethelm, Michael A. Shinall, and Corey R. J. Stephenson*
Boston University Department of Chemistry 590 Commonwealth Ave., Boston, MA 02215

C85 ELECTRON-TRANSFER PHOTO-REDOX CATALYSIS: DEVELOPMENT OF A TIN-FREE, REDUCTIVE DEHALOGENATION REACTION
Jagan M. R. Narayanam, Joseph W. Tucker, and Corey R. J. Stephenson*
Boston University Department of Chemistry 590 Commonwealth Ave., Boston, MA 02215

C86 DENAGLIPTIN TOSYLATE: DEVELOPMENT OF A MANUFACTURING PROCESS
Emily Boehler*, Bob Cooley¥, Darryl Ertl¥, Charlie Goss¥, Bill Hinkley‡, Erwin Irdam*, Martin Osterhout‡, Daniel Patterson‡, Jeremiah Powers‡, and Tyler Sharkey*
Synthetic Chemistry‡, Particle Sciences & Process Engineering*, Process Analytical Technologies¥, Chemical Development, GlaxoSmithKline, Nth-M2551A.2A, Research Triangle Park, NC 27709

C87 SYNTHESIS OF JAMAICAMIDE C CARBOXYLIC ACID
Kristin Graf, Milton L. Brown, and Mikell Paige*
Georgetown University, Lombardi Comprehensive Cancer Center, 3800 Reservoir Road NW, Washington D.C. 20057

C88 TRIAZETIDINE-O: A NEW NEURONAL NACHR SILENT DESENSITIZER FOR DRUG ABUSE

Antoinette Cordova, Erikah Englund, Brian McDowell, Kristin Graf, Yingxian Xiao, Milton Brown, and Mikell Paige*
Georgetown University, Lombardi Comprehensive Cancer Center, 3800 Reservoir Road NW, Washington D.C. 20057

C89 TISSUE-SPECIFIC PEPTIDES FOR BREAST CANCER THERANOSTICS

Antoinette Cordova, Kan Wang, Scott Grindrod, Dionna Green, and Mikell Paige*
Georgetown University, Lombardi Comprehensive Cancer Center, 3800 Reservoir Road NW, Washington D.C. 20057

C90 RECENT ADVANCES IN CARBON BASED LIGAND DESIGN

Vincent Lavallo, Kevin Kuhn, Jean Li, Keith Keitz, and Robert H Grubbs
Division of Chemistry and Chemical Engineering, M/C 164-30, P: 626-395-6885, California Institute of Technology 1200 E. California Blvd. Pasadena, CA 91125

POSTER SESSION D - WEDNESDAY JUNE 10

D1 THE REACTION OF CHIRAL NUCLEOPHILES WITH γ-HYDROXYBUTENOLIDES
William H. Miles, Pui-In Tang, Jason S. George, Steven T. Jones, and Mark A. Brown
Department of Chemistry, Lafayette College, Easton, PA 18042-1782

D2 ANALYSIS OF THE ELECTRON WITHDRAWING CAPABILITY OF ACETYLENE GROUPS FOR NUCLEOPHILIC AROMATIC SUBSTITUTION; FORMATION OF ACETYLENE-SUBSTITUTED OXACALIXARENES
Eric Braunstein, and Jeffrey Katz*
Colby College, 5750 Mayflower Hill, Waterville, Maine 04901-8857

D3 DESIGN AND SYNTHESIS OF NOVEL BIFUNCTIONAL ANALGESICS: COMBINATION OF OPIOID AGONISTS AND NK-1 ANTAGONIST
Ruben Vardanyan, Peg Davis, Todd W. Vanderah, Josephine Lai, Frank Porreca, and Victor J. Hruby
Department of Chemistry, 1306 E. University Blvd., P.O. Box 210041, University of Arizona Tucson, Arizona 85721

D4 TOWARD HOMOGENEOUS ERYTHROPOIETIN: CHEMICAL SYNTHESIS OF THE ALA1-GLY28 GLYCOPEPTIDE DOMAIN BY "ALANINE" LIGATION
Cindy Kan, John D. Trzupek, Bin Wu, Qian Wan, Gong Chen, Zhongping Tan, Yu Yuan, and Samuel J. Danishefsky
Memorial Sloan-Kettering Cancer Center, 1275 York Avenue, New York, New York 10065, USA

D5 DYNAMIC COMBINATORIAL LIBRARIES OF ZINC-SCHIFF BASE COMPLEXES TEMPLATED WITH TRANSITION STATE ANALOGS
Masaomi Matsumoto, Deven Estes, and Kenneth M. Nicholas
Department of Chemistry and Biochemistry, The University of Oklahoma, 620 Parrington Oval, Norman, OK 73069

D6 ON THE MECHANISM OF NICKEL-CATALYZED REDUCTIVE COUPLINGS
Ryan D. Baxter
The University of Michigan, Department of Chemistry, 930 North University Avenue, Ann Arbor, Michigan 48109-1055

D7 Fe(II)-CATALYZED REACTIONS OF ARYL AZIDES
Carl Vogel, Minjie Pan, Meihua Shen, and Tom G. Driver
Department of Chemistry, University of Illinois at Chicago, MC 111, 845 West Taylor Street, Chicago, IL 60607

D8 IODINE CATALYZED AMIDATION OF HYDROCARBONS
Angus A. Lamar and Kenneth M. Nicholas
University of Oklahoma, Department of Chemistry and Biochemistry, 620 Parrington Oval, Norman, OK 73069

D9 ORGANOMETALLIC ADDITIONS TO ALPHA, BETA⊇- AZIRIDINE ALDEHYDES: SELECTIVITY WITH DIFFERENT PROTECTING GROUPS AND SUBSTITUTION PATTERNS
Aman Kulshrestha, Jennifer M. Schomaker, and Babak Borhan*
Department of Chemistry, Michigan State University, East Lansing, MI 48824

D10 PROGRESS TOWARD THE TOTAL SYNTHESIS OF STEMOCURTISINE UTILIZING AN ASYMMETRIC INTRAMOLECULAR STETTER REACTION
David Rubush and Tomislav Rovis
Department of Chemistry, Colorado State University, 1872 Campus Delivery, Fort Collins, Colorado 80523-1872

D11 RHODIUM-CATALYZED [2+2+2] CYCLOADDITIONS: PYRIDONES AND MECHANISTIC INSIGHTS
Kevin M. Oberg and Tomislav Rovis*
Department of Chemistry, Colorado State University, Fort Collins, CO 80523

D12 WITTIG REARRANGEMENTS OF CYCLIC α-SILYL ALLYLIC ETHERS. ACCESS TO α-SILYL PENTENOL STRUCTURES OR α-CYCLOPROPYL ACYLSILANES
Luis Mori-Quiroz and Robert E. Maleczka
Department of Chemistry, Michigan State University, East Lansing, MI 48824

D13 PROGRESS TOWARD THE TOTAL SYNTHESIS OF AUTOLYTIMYCIN
Luis Sanchez, A. Monica Norberg, Feng Shi, Milton R. Smith, III, and Robert E. Maleczka, Jr.*
Department of Chemistry, Michigan State University, East Lansing, MI 48824

D14 THE TOTAL SYNTHESIS OF ASPERGILLIN PZ
Larry E. Overman* and Paul S. Tanis
Department of Chemistry, University of California, Irvine, 1102 Natural Sciences II, Irvine, CA 92697-2025

D15 STUDIES TOWARDS THE TOTAL SYNTHESIS OF DEBROMOPHYCOLIDE
Brett J. Prigaro and John L. Wood*
Department of Chemistry, Colorado State University, Fort Collins, Colorado 80523-1872

D16 SYNTHETIC EFFORTS TOWARDS THE TOTAL SYNTHESIS OF THE PHOMOIDRIDES
Ping Dong, Graham K. Murphy, Barry M. Twenter, and John L. Wood*
Department of Chemistry, Colorado State University, 1872 Campus Delivery, Fort Collins, Colorado 80523-1872

D17 ENANTIOSELECTIVE SYNTHESIS OF ANGULARLY SUBSTITUTED 1-AZABICYCLIC RING SYSTEMS
Zachary D. Aron,[1] Tatsuya Ito,[2] Larry E. Overman*[3], and Jocelyn Wang[3]
[1]Indiana University. [2] Takeda Pharmaceutical Company. [3]Department of Chemistry, University of California, Irvine, 1102 Natural Sciences II, Irvine, CA 92697-2025

D18 PROGRESS TOWARDS THE TOTAL SYNTHESIS OF TETRAPETALONE A
Jennifer M. Howell and John L. Wood*
Department of Chemistry, Colorado State University, 1872 Campus Delivery, Fort Collins, Colorado 80523-1872

D19 PROGRESS TOWARDS THE TOTAL SYNTHESIS OF CUCURBITACIN B AND D
Michael E. Jung and Rebecca M. Lui
Department of Chemistry and Biochemistry, University of California-Los Angeles, 607 Charles E. Young Drive East, Los Angeles, CA 90095-1569

D20 STUDIES TOWARD THE EFFICIENT TOTAL SYNTHESIS OF AGELASTATIN A
Petar A. Duspara and Robert A. Batey
Davenport Research Laboratories, Department of Chemistry, University of Toronto, 80 St. George Street, Toronto, Ontario, Canada, M5S 3H6

D21 PROGRESS TOWARDS THE TOTAL SYNTHESIS OF DIAZONAMIDE A
Cheng-Kang Mai, Matthew Sammons, and Tarek Sammakia
Department of Chemistry and Biochemistry, University of Colorado, Boulder, CO 80309

D22 A DIRECT CONSTRUCTION OF ERGOT ALKALOIDS SCAFFOLD BY PALLADIUM CATALYZED DOMINO CYCLIZATION OF AMINO ALLENES: TOTAL SYNTHESIS OF (+/-)-LYSERGIC ACID, LYSERGOL AND ISOLYSERGOL
Shinsuke Inuki, Shinya Oishi, Nobutaka Fujii*, and Hiroaki Ohno*
Graduate School of Pharmaceutical Science, Kyoto University, 46-29 Yoshidashimoadachi-cho, Sakyo-ku, Kyoto 606-8501, Japan

D23 HIGH YIELDING PHOTO-PROTEOLYTIC OXAMETATHESIS IN STRAINED POLYCYCLIC SYSTEMS
Roman A. Valiulin and Andrei G. Kutateladze
University of Denver, Chemistry, MSC 9020, 2190 E. Iliff Ave., Denver, Colorado, 80208-9020

D24 SYNTHESIS OF PYRROLO[3,4-C]PYRAZOLES AS PKCβII INHIBITORS FOR THE TREATMENT OF DIABETIC COMPLICATIONS
Stephanie Scales, Sarah Johnson, Yufeng Hong, Eileen Tompkins, Iriny Botrous, Seiji Nukui, Chunfeng Yin, Min Teng, Michael Johnson, and Hui Li
Pfizer, 10770 Science Center Drive (CB2), San Diego, CA 92121

D25 TOWARDS NEW PEPTOID SECONDARY STRUCTURES THROUGH THE INCORPORATION OF N-HYDROXY AMIDE RESIDUES
J. Aaron Crapster, Joseph R. Stringer, and Helen E. Blackwell
Department of Chemistry, University of Wisconsin, Rm. 5215, 1101 University Ave., Madison, WI 53706

D26 NOVEL DESIGN STRATEGIES TOWARD THE CONSTRUCTION OF DISCRETELY FOLDED PEPTOIDS
Joseph R. Stringer, J. Aaron Crapster, Ilia A. Guzei, and Helen E. Blackwell*
Department of Chemistry, University of Wisconsin-Madison 1101 University Avenue, Madison, Wisconsin 53706-1322

D27 SYNTHESIZING FLUOROPHORE-CONJUGATED CARBOHYDRATES AS PROBES FOR A MALARIA ASSAY
Luke Cohen, Justin Peterson, and Bridget G. Trogden
Department of Chemistry, Mercer University, Macon, GA 31207

D28 PALLADIUM-CATALYZED AEROBIC HYDROARYLATION OF TERMINAL 1,3-DIENES
Longyan Liao and Matthew S. Sigman*
University of Utah, Department of Chemistry, 315 S. 1400 E Salt Lake City, UT 84112

D29 PALLADIUM-CATALYZED OXIDATIVE DIFUNCTIONALIZATION OF TERMINAL ALKENES USING ORGANOSTANNANES
Kaveri Balan Urkalan and Matthew S. Sigman*
University of Utah, 315 South 1400 East, Salt Lake City, UT 84112-0850

D30 A DIVERGENT APPROACH TO THE SYNTHESIS OF 3-SUBSTITUTED-2-PYRAZOLINES: SUZUKI CROSS-COUPLING OF 3-SULFONYLOXY-2-PYRAZOLINES
Jonathan B. Grimm, Kevin J. Wilson, and David J. Witter
Merck Research Laboratories, BMB-2-121, 33 Avenue Louis Pasteur, Boston, MA 02115

D31 MECHANISTIC STUDIES ON THE DYOTROPIC REARRANGEMENT OF A TRICYCLIC SPIROLACTONE
Rebecca L. Davis, and Dean J. Tantillo*
Department of Chemistry, University of California, Davis, One Shields Ave, Davis, CA 95616

D32 LARGE ^{13}C KIES AND HEAVY ATOM TUNNELING IN THE RING OPENING OF CYCLOPROPYLCARBINYL RADICAL
Ollie Gonzalez James and Daniel A. Singleton
Department of Chemistry, Texas A&M University, P. O. Box 30012, College Station, Texas 77842

D33 STUDIES TOWARD THE EFFICIENT TOTAL SYNTHESIS OF AGELASTATIN A
Petar A. Duspara and Robert A. Batey
University of Toronto, Davenport Research Labs, 80 St. George St., Toronto, ONM5S 3H6, CANADA

D34 DEVELOPMENT OF AN INDIUM-MEDIATED CHEMO AND DIASTEREOSELECTIVE ALLYLATION OF α,β-EPOXYKETONES WITH POTASSIUM ALLYLTRIFLUOROBORATE AND ITS SYNTHETIC APPLICATIONS
John Janetzko, Farhad Nowrouzi, and Robert A. Batey*
Department of Chemistry, University of Toronto, 80 St. George Street, Toronto, Ontario, Canada, M5S 3H6

D35 TOWARD CHEMICALLY ENCODED SOLUTION PHASE COMBINATORIAL LIBRARIES
Roman N. Ezhov, Roman A. Valiulin, Logan M. Halliburton, and Andrei G. Kutateladze*
Department of Chemistry and Biochemistry, University of Denver, 2190 East Iliff Avenue, Denver, Colorado 80208-2436

D36 PHOTOGENERATION OF HIGHLY STRAINED POLYCYCLIC OXETANES AND BIS-OXETANES AND THEIR ACID-CATALYZED TRANSFORMATIONS
Teresa M. Arisco, Roman A. Valiulin, and Andrei G. Kutateladze*
Department of Chemistry and Biochemistry, University of Denver, 2190 E Iliff Avenue, Olin Hall Rm. 202, Denver, CO 80222

D37 APPLICATION OF "CLICK CHEMISTRY" TO THE SYNTHESIS OF NOVEL LIGHT EMITTING COMPOUNDS
Ronald G. Brisbois and Xiaobo Ke
Department of Chemistry, Macalester College, 1600 Grand Avenue, Saint Paul, MN 55105

D38 CYCLOPROPANE-BASED CHIRAL PHOX LIGANDS FOR INTERMOLECULAR ASYMMETRIC HECK REACTION
Marina Rubina and Michael Rubin
Department of Chemistry, University of Kansas, Center for Environmentally Beneficial Catalysis, Malott Hall, Room 5088, 1251 Wescoe Hall Drive, Lawrence, KS 66045-7582

D39 STERIC AND DIRECTING CONTROL OF DIASTEREOSELECTIVITY IN FORMAL NUCLEOPHILIC SUBSTITUTION OF BROMOCYCLOPROPANES

Bassam K. Alnasleh and Michael Rubin
Department of Chemistry, University of Kansas, Center for Environmentally Beneficial Catalysis, Malott Hall, Room 5088, 1251 Wescoe Hall Drive, Lawrence, KS 66045-7582

D40 THERMODYNAMIC CONTROL OF DIASTEREOSELECTIVITY IN FORMAL NUCLEOPHILIC SUBSTITUTION OF BROMOCYCLOPROPANES

Joseph Banning and Michael Rubin
Department of Chemistry, University of Kansas, Center for Environmentally Beneficial Catalysis, Malott Hall, Room 5088, 1251 Wescoe Hall Drive, Lawrence, KS 66045-7582

D41 AN EXPLORATORY APPROACH TOWARD ANTICANCER BETA LACTAM DERIVED FROM POLYAROMATIC COMPOUNDS

Bimal K. Banik and Robert Rodriguez
The University of Texas Pan American, Department of Chemistry, 1201 West University Drive, Edinburg, TX 78539

D42 BISMUTH NITRATE-INDUCED STRAIGHTFORWARD SYNTHESIS OF QUINOXALINES

Bimal K. Banik, Erica Cuata and Debasish Bandyopadhyay
The University of Texas Pan American, Department of Chemistry, 1201 West University Drive, Edinburg, TX 78539

D43 INDIUM-INDUCED SYNTHESIS OF PYRROLE SUBSTITUTED INDOLINONES

Bimal K. Banik, Dina Abrego, and Debasish Bandyopadhyay
The University of Texas Pan American, Department of Chemistry, 1201 West University Drive, Edinburg, TX 78539

D44 SYNTHESIS OF NOVEL BIDENTATE LIGANDS FOR CHELATION OF METALS AND/OR METALLOIDS DERIVED FROM 1,2,3-TRIAZOLES

Sylvia Kunakom, Xiaobo Ke, Reed T. Larson, Hao Zou, and Ronald G. Brisbois*
Department of Chemistry, Macalester College, 1600 Grand Avenue, Saint Paul, MN 55105

D45 PHOSPHATE TETHERS IN SYNTHESIS: APPLICATIONS IN THE SYNTHESIS OF COMPLEX BIOACTIVE MOLECULES

Christopher D. Thomas, James P. McParland, Alan Whitehead, Joshua D. Waetzig, Rambabu Chegondi, Marc Anderson and Paul R. Hanson*
Department of Chemistry, University of Kansas, Lawrence, KS 66045

D46 3-ALKYL COUMARINS VIA DECARBOXYLATIVE SP2-SP3 COUPLING

Rushi Trivedi, Ranjan Jana, and Jon A Tunge
Department of Chemistry, University of Kansas, 1251 Wescoe Hall Drive, 2010 Malott Hall, Lawrence, KS 66045

D47 DEVELOPMENT OF A TANDEM DIELS-ALDER/PAUSON-KHAND STRATEGY FOR THE SYNTHESIS OF THE CYCLIC STEROID CORE

Rachel R. Dorset, Julie A. Olson, and Kevin M. Shea*
Smith College, Chemistry Department, Northampton, MA 01063

D48 DEVELOPMENT OF A NEW CLASS OF CATIONIC DIELS-ALDER DIENOPHILES STABILIZED BY ADJACENT COBALT-COMPLEXED ALKYNES

Keturah R. Edwards, Erena Farah Ousman, and Kevin M. Shea*
Department of Chemistry, Smith College, Northampton, MA 01063

D49 A SYNTHESIS OF THE C_3-C_{14} FRAGMENT OF ARCHAZOLID A

Matthew Black and Gregory W. O'Neil*
Western Washington University, 516 High Street, MS 9150, Bellingham, WA, 98225-9150

D50 A DIRECT AND EFFICIENT TOTAL SYNTHESIS OF THE TUBULIN-BINDING AGENTS CERATAMINE A AND B; USE OF IBX FOR A REMARKABLE HETEROCYCLE DEHYDROGENATION

Robert S. Coleman*, Erica L. Campbell, and Daniel J. Carper
Department of Chemistry, The Ohio State University, 100 West 18th Avenue, Columbus, OH 43210

D51 COOPERATIVE CARBENE CATALYSIS: A NEW AND HIGHLY ENANTIOSELECTIVE ROUTE TO HIGHLY SUBSTITUTED (GAMMA)-LACTAMS

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D52 ENANTIOSELECTIVE SYNTHESIS OF ENANTIOENRICHED α,β-DIAMINO ACIDS AND β-AMINO ACIDS

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D53 RHODIUM-CATALYZED CYLCOADDITIONS UTILIZING ALKYNES, ISOCYANATES AND OLEFINS

Rebecca Keller Friedman and Tomislav Rovis*
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D54 FULVENE CATALYSIS: A NEW PLATFORM FOR ASYMMETRIC ACTIVATION

Elnaz Menhaji-Klotz* and Tristan H. Lambert
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D55 NEW METHODS WITH MULTICATALYST SYSTEMS

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D56 INSIGHTS INTO THE STEREOSPECIFIC DECARBOXYLATIVE ALLYLATION OF ALPHA-SULFONYL ESTERS

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D57 BIOCATALYSIS APPLIED TO THE SYNTHESIS OF PHARMACEUTICAL INTERMEDIATES

Fred J Fleitz, Greg Hughes, Paul Devine, Jeff Moore, Jake Janey, Birgit Kosjek, Brendan Grau, Chris Roberge, Krista Morley, Dave Pollard, and Matt Truppo
Process Research, Merck and Co. Inc, RY 800-C364, P. O. Box 2000, Rahway, NJ 07065

D58 SYNTHESIS OF NITROGEN HETEROCYCLES THROUGH NI-CATALYZED [4+4] CYCLOADDITIONS

George E. Greco*, Jared E. Dropkin, Candace L. Crasto, Matthew J. Kier, and Anna Pagonakis
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D59 KITPHOS MONOPHOSPHINES: A MODULAR FAMILY OF TUNABLE LIGANDS FOR C-C AND C-N BOND FORMATION

Simon Doherty,[a,*] Julian G. Knight,[a] and Catherine H. Smyth[a]
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D60 NEW METHODS IN THE SYNTHESIS OF 2-AMINO-3-CYANO-4H-CHROMENES

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D61 A STUDY ON THE ENANTIOSEPARATIONS OF COMMERCIALLY AVAILABLE β-CYCLODEXTRIN CAPILLARY GC COLUMNS

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D62 SYNTHESIS AND CHARACTERIZATION OF NOVEL DONOR/ACCEPTOR MOLECULES LINKED BY 1,3-DIETHYNYLBICYCLO[1.1.1]PENTANE

Frankie Ann McCormick, David Viau, Ivy Vachon, Eric Schacht, and Daniel Schwartz
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D63 SYNTHESIS OF KINASE-TARGETING DIALKYNYLIMIDAZOLES

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D64 SYNTHETIC STUDIES OF SPIROKETAL ENOL ETHER NATURAL PRODUCTS

***Jennifer Koviach-Côté* and Christopher Theile**
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D65 SYNTHESIS OF UNSYMMETRICAL 2,3-BIS-QUINOLINES BY KUMADA COUPLING

***V. Serebryany**, B. Buckman, and L. Beigelman**
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D66 A MILD AND GENERAL METHOD FOR PREPARATION OF α-GLYCOSYL CHLORIDES

***Chih-Wei Chang*[a,b] Shih-Sheng Chang[a] Chin-Sheng Chao[a], and Kwok-Kong T. Mong[a*]**
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D67 A ONE-POT CONVERSION OF ALDEHYDES TO THEIR ONE-CARBON HOMOLGATED CARBOXYLIC ACID DERIVATIVES

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D68 MEASURING HYDROGEN BOND STRENGTH IN MODEL SYSTEMS AND BETA-SHEET PEPTIDOMIMETICS

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D69 UNPRECEDENTED TANDEM 6π-ELECTROCYCLIZATION/CYCLOADDITION OF NITRODIENES TO YIELD MULTICYCLIC NITROSOACETALS

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D70 PHOTOCHEMISTRY OF 1-METHYL-4-PHENYL-1H-TETRAZOLE-5(4H)-THIONE AND 1-(4-METHOXYPHENYL)-4-METHYL-1H-TETRAZOLE-5(4H)-THIONE

Olajide Alawode, Colette Robinson, and Sundeep Rayat*
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D71 SYNTHESIS AND UTILITY OF FLUOROGENIC ACETOXYMETHYL ETHERS

***Luke D. Lavis*, Tzu-Yuan Chao, and Ronald T. Raines**
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D72 SYNTHESIS OF AN AUXIN PROXY FOR USE IN CHEMICAL GENETICS ASSAYS

***Zach Wickens* and Rebecca Hoye**
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D73 LANTHANIDE(III)-CATALYZED SINGLE AND DOMINO ARYL-CLAISEN REARRANGEMENTS FOR THE SYNTHESIS OF CONTIGUOUS ARYL MOIETIES AND THE PRELIMINARY DESIGN OF AROMATIC HETEROCYCLES

Timothy R. Ramadhar*, Jun-ichi Kawakami, Alan J. Lough, and Robert A. Batey
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D74 NICKEL-CATALYZED REDUCTIVE CARBOXYLATION OF STYRENES USING CARBON DIOXIDE

***Catherine M. Williams*, Jeffrey B. Johnson, and Tomislav Rovis**
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D75 PALLADIUM AND NICKEL CATALYSED STEREOSELECTIVE GLYCOSYLATION WITH GLYCOSYL TRICHLOROACETIMIDATES

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D76 STEREOSELECTIVE REARRANGEMENT OF TRICHLOROACETIMIDATES: APPLICATION TO THE SYNTHESIS OF ALPHA-GLYCOSYL UREAS

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D77 DESIGN OF A TRANSMEMBRANE PEPTIDE AGAINST THE EPSTEIN-BARR VIRUS PROTEIN LMP-1

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D78 SYNTHESIS OF TRIAZOLE-BASED INHIBITORS TARGETING INFLUENZA VIRUS

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D79 DESIGN AND SYNTHESIS OF AN ORALLY ACTIVE AND HIGHLY SELECTIVE MATRIX METALLOPROTEINASE-13 INHIBITOR FOR THE TREATMENT OF OSTEOARTHRITIS

Cathleen Hanau*, Peter Ruminski, Mark Schnute, Jeffrey Scholten, Jeffrey Carroll, Michael Mao, Cynthia Snoddy, Todd Boehlow, Tizah Anjeh, Michael Rogers, Mark Massa, Margaret Grapperhaus, Michelle Schmidt, Joseph Strohbach, Kirby Sample, Theresa Fletcher, Bruce Hamper, Jeffrey Hitchcock, Joe Collins, Huey Shieh, Nicole Caspers, Joseph McDonald, Grace Munie, Dean Messing, Sylvia Portolan, Steve Settle, Olga Nemirovskiy, Lillian Vickery, Adam Johnson, and Teresa Sunyer
Pfizer Inc., Global Research and Development, 700 Chesterfield Parkway West, St. Louis, MO 63017

D80 DESIGN AND SYNTHESIS OF NOVEL ALKENE-BASED LIVER X RECEPTOR LIGANDS AS PROBES OF LXR PHARMACOLOGY

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D81 SYNTHESIS AND BIOLOGICAL EVALUATION OF DUAL HISTAMINE H3 RECEPTOR ANTAGONISTS/ SEROTONIN REUPTAKE TRANSPORTERS

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D82 Nucleophilic Carbene/Quinuclidine Cascade Catalysis in the Asymmetric Synthesis of Benzofuranones

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GENERAL INFORMATION

Campus Information Desk:
The University Memorial Center (UMC) Reception Desk, located on the second floor of the University Memorial Center is staffed by a university employee Monday – Thursday, 7:00 AM – 10:00 PM, Friday, 7:00 AM-11:00 PM, Saturday, 9:00 AM – 11:00 PM, and Sunday, noon – 10:00 PM.

The UMC Reception Desk offers campus information - maps, schedules, and promotional materials for different programs as well as the UMC lost and found, Bus (Regional Transportation District - RTD) information, and phones - free for on & off campus local calls.

NOS Information Desk:
NOS Registration and Information Desk will be available on Sunday, June 7, 2009, from 1:00 PM – 9:00 PM in the Aspen Room located at the University Memorial Building. On Monday – Wednesday from 7:30 AM – 1:30 PM and on Thursday from 7:30 AM – 1:00 PM there will be an NOS Information Desk in the Macky Auditorium Lobby.

Altitude:
Boulder's elevation is 5,430 feet (1,670 meters) above sea level. This higher altitude can cause discomfort. Please consider the following information and suggestions that you can do to make your stay in Boulder and Colorado more enjoyable! Also seek medical attention if you have nausea, headaches or fatigue.

1. Take an extra day or two to adjust and take it easy.
2. Drink more water than usual.
3. Reduce alcohol, caffeine, and salty food consumption.
4. Remember there is less atmosphere between us and the sun! Wear sun screen and sun glasses.

Campus Guest Cards:
A Campus Guest Card will be issued to those staying on campus and to those who have purchased a commuter meal plan. For those staying on campus lost cards can be replaced at the Residence Hall front desk. Commuter Campus Guest Cards can be replaced at the NOS Information Desk.

Restrooms:
Restrooms are located in Macky on the main level. Additional restrooms can be found in the Humanities Building to the southeast of Macky. Restrooms in the UMC are adjacent to the poster session and exhibit rooms.

ATM's:
Elevations Federal Credit Union ATMs are non-surcharging to members and are located in the UMC, the Darley Commons lobby, the Engineering Building, and outside Regent Hall. Elevations ATMs belong to the CO-OP, Visa and STAR networks. Other ATMs are available at the Northeast corner of the UMC. Consult with your bank for affiliated ATM locations in Boulder.

Parking:
On campus parking is very limited. One-week parking permits can be purchased at the Sewall Hall front desk for $20. Visitors to campus may park without prior arrangement in the Euclid AutoPark (cash or check only) and at parking meters (coins) or pay stations (coins or credit card) located throughout

campus. ADA Accessible parking is available on the CU-Boulder campus in visitor lots, at meters and pay stations and in permit-controlled parking lots.

Euclid AutoPark: The Euclid AutoPark (EAP), located between Broadway and 18th Street (east of the UMC) is open from 7:00 a.m. to midnight each day. The EAP parking rate is $1.75 per hour 7:00 a.m. to 5:00 p.m. M-F. The parking fee is $3 from 5:00 p.m. until midnight each weeknight and all day Saturday and Sunday. EAP accepts payment by check and cash.

Meters: The hourly rate at grey meters is $1.50 payable from 7:30 a.m. to 5:00 p.m., seven days a week. The maximum time available on a meter varies. A sticker on each meter lists the maximum time allowed. Meters accept coins only.

Parking Pay Stations: The parking pay station rate is $1.50 per hour. All pay stations accept credit cards (Visa, MasterCard, and American Express), meter debit cards, and coins. Some pay stations also accept bills. Please refer to signs on pay station or at lot entrance for hours of enforcement.

If you receive a parking citation, it must be paid or appealed within five business days of the issue date. Acceptable payment methods are credit card (by phone (303-492-7384) or at Customer Service Window (1050 Regent Drive), check (by mail, Customer Service Window or after-hours drop box), and cash (at the Customer Service Window only). Failure to pay the citation prior to the close of the fifth business day will result in a $5 penalty assessment. Additional $5 penalties will be assessed in each PTS billing thereafter, to a maximum of double the initial citation amount (unless otherwise stated on the citation).

Computer Access:

ITS Computing Labs – Labs are located throughout campus with Mac or Windows machines.
There is a lab available on the grill level of the UMC. Use the conference IdentiKey login and password when using computers in labs and for wireless access from your laptop.

Computing Kiosks (a.k.a., SCARPIES) – A number of kiosks are located in the UMC, the Rec Center and other building lobbies. These are meant to be used for quick email checks or Web surfing. No conference IdentiKey is needed.

Printing and Copying:

The Ink Spot, located on the first floor of the UMC across from the Connection, offers printing from their computers via memory stick and a complete line of copying services, including a wide selection of papers, oversized printing, transparencies, reduction, sorting, and fax service. The Ink Spot also offers FEDEX and UPS shipping. Hours are Monday – Friday: 8:30 AM - 4:30 PM.

Emergency Services/ Campus Safety:

In case of an emergency, call 911 to reach the fire and police departments or for ambulance or rescue services. You can call 911 from any telephone, including public pay telephones, without inserting a coin. For non-emergencies, you may also call 303-492-6666 to contact the University Police. The police dispatcher will send the appropriate emergency vehicles, together with University Police officers. Emergency (panic) telephones are located strategically throughout the campus and in parking structures; these are recognizable by their blue lights. These phones will automatically place an emergency help call at the reported located when the button is pushed. They are visible at night by the bright blue light on the

top of the poles above the phones. For non- emergency please call the University Police Department at 492-6666.

Boulder Community Hospital has two locations, one two miles north of campus on the corner of Broadway and Balsam, and the other located at the intersection of Arapaho Road and Foothills Parkway. For minor emergencies, the Wardenburg Student Health Center located on campus is available to NOS attendees. Please be advised that Wardenburg is NOT part of any insurance network, and payment is due at time of service. Summer hours (tentative) for Wardenburg are as follows: Monday-Friday, 8:00 AM-5:00 PM. Closed Saturday and Sunday.

Alcohol/Tobacco:

All conference attendees, their family or guests must adhere to all applicable state and local laws and university regulations related to the sale and use of alcoholic beverages.

- The sale of alcoholic beverages is prohibited except in designated areas at times and dates licensed by the Colorado State Department of Revenue.
- Persons under 21 years of age cannot legally possess or consume malt beverages, fermented malt liquor, or vinous or spirituous liquor. The furnishing of alcoholic beverages to under aged persons is prohibited.
- Neither person under legal drinking age nor any obviously intoxicated person shall be furnished, served, or given an alcoholic beverage.
- Alcohol cannot be consumed or carried in open containers on any street, sidewalk, alley, automobile, or public area including Residence Hall lounges.

The University of Colorado at Boulder prohibits smoking or the sale of tobacco products in any Boulder campus-owned or leased building. This includes Residence Hall sleeping rooms and lounges, hallways, classrooms, offices, restrooms, meeting rooms, lobbies, elevators, shops, cafeterias, snack bars, waiting rooms, indoor or open-air athletic facilities and performance halls, and all other spaces in university-owned or leased buildings.

Firearms:

Firearms, explosives, ammunition, and dangerous weapons or materials are not permitted within or upon the grounds, buildings, residence halls, or any other facilities of the university. Colorado law defines a dangerous weapon as an instrument designed to, or that is likely to, produce bodily harm. Weapons may include, but are not limited to, BB guns, paint-pellet guns, starter pistols, blow-dart guns, slingshots, martial arts devices, bowie knives, daggers or similar knives (blades over 3" in length), or switch blades. A harmless item that is used to cause fear in another person is included in the meaning of a firearm.

On-Campus Shopping:

The CU Book Store, owned and operated by the University of Colorado at Boulder is your official store for CU merchandise. The CU Book Store's new gift boutique is the perfect place to find that perfect gift! We have a wide selection of jewelry, handbags, hats, stuffed animals, candy, seasonal items, and much more. The CU Book Store is open Monday-Thursday, 8:30 AM-5:30 PM, Friday, 8:30 AM-4:30 PM, and Saturday, 11:00 AM-3:00 PM.

Gym Access/Recreation:

The Student Recreation Center at the University of Colorado at Boulder is a student fee-funded facility. The Recreation Center offers swimming pools, an ice rink, ten handball/racquetball courts, two squash

courts, a general gym for volleyball or badminton, a free-weight room, a Nautilus room, an indoor track, basketball courts, tennis courts, therapy room and saunas.

As a university guest, a membership to this facility may be purchased for the duration of your stay. Please take your conference proof-of-registration card or conference guest card to the recreation center front desk. This card confirms that you are a university conference guest and allows you to purchase a daily or weekly recreational pass: $5 per day or $20 per week. For admittance or to check out equipment such as swimsuits, lockers, racquets, towels, etc. a photo ID must be presented along with your pass. Court reservations for tennis, racquetball, and squash are also available.

Gym Hours:
Monday-Friday: 6:00 AM-10:00 PM
Saturday-Sunday: 11:00 AM-9:00 PM
Pool Hours:
Monday-Friday: 6:00 AM-9:00 PM
Saturday-Sunday: 11:00 AM-8:00 PM

Recycling:
Recycling containers are located in and around every campus building where you can recycle co-mingled containers (glass, aluminum, steel, #1 and #2 plastic bottles, milk cartons, juice boxes, and empty aerosol cans), office paper (computer and notebook paper, envelopes, junk mail, pastel paper), newspapers and their inserts, magazines, catalogs and phonebooks, and corrugated cardboard. CU encourages you to recycle.

Bicycles:
Rental bikes are available to ride around town. The following bicycle rental shops are within walking distance of campus:

Trek Bicycle Store	2626 Baseline Road	303-413-0228
Bicycle Village	2100 28th Street	303-440-8525
The Boulder Bikesmith	2432 Arapahoe Avenue	303-443-1132
Full Cycle	1211 13th Street	303-440-7771
University Bicycles	9th and Pearl Street	303-444-4196

Dining:
Conference meals included in room and board packages or commuter meal packages will be served in Sewall Dining Hall. Conference Guest Card must be presented at Dining Hall, individual cash meal tickets can also be purchased at the Sewall Hall front desk. Breakfast is served from 7:00 AM-8:30 AM, Lunch is served from 11:00 AM-1:30 PM, and Dinner is served 5:00 PM-6:30 PM. Additional on-campus dining is available in the University Memorial Center. The “Hill” located to the west of Broadway on the west side of campus has a variety of dining options.

Residence Hall Services:
Premium service includes sheets, towels, pillow and bedspread and housekeeping service. Housekeeping service is provided weekdays, excluding University holidays. Housekeepers will make beds, exchange towels, and clean bathrooms and public areas. Telephones are not provided in rooms. TV lounges are located in each building. All rooms are non-smoking. Bunking beds is prohibited. Furniture in the common rooms and study rooms must remain in those locations; they may not be placed in individual residence rooms. To avoid climate control problems with your air conditioned room, please

do not open your window, as this places strain on your unit and increases the temperature of all surrounding rooms. We suggest that windows in rooms without air conditioning remain closed during the day and opened in the evenings.

Keys:
Campus guest cards (and metal keys in some buildings) will be issued to each resident. This card opens outside doors and your room. If the card is lost please go to the residence hall front desk and report the key as missing.

Maintenance:
If a maintenance problem or repairs are needed in your room, call 5-5555 (303-492-5555), or contact the front desk of your Residence Hall.

Fire:
Please locate the fire extinguishers and exits on your floor and be aware of the evacuation procedures posted on the inside of your room door. Always leave the building when a fire alarm sounds.

Personal Property:
Our buildings are locked 24 hours a day for your security. Please carry your card and metal key, if applicable, with you at all times and lock your door when you leave the room. Keep all outside doors shut.

The University of Colorado assumes no responsibility and has no liability for the theft, destruction of, or loss of money, valuables, or other personal property, belonging to, or in the custody of, the residents, whether such losses occur in the resident's room, public area, elsewhere in the hall, or in baggage handling related to shipment or storage.

Phone Service:
Live phone jacks are available in Residence Hall rooms. Phones can be purchased at the front desk in each Residence Hall. House phones are available to use for local or on-campus calls near the front desk of each residential building. To dial room-to-room on campus, or to reach any campus office, please dial the last five digits of the appropriate phone number. You are required to dial a '7' or'8' to get an outside line. All local numbers (303 or 720) require an area code. The Denver metropolitan area is considered local. Pay phones are located on both the first and second floors of the UMC. Calling cards are required for long distance calls.

Laundry Facilities/Vending:
Coin-operated washers and dryers are provided in the laundry rooms of each building. Guests must furnish their own laundry detergent.

University of Colorado Attractions

Heritage Center Museum:
The CU Heritage Center is located on the third floor of the original campus building, Old Main. Seven galleries tell the story of the history of the University of Colorado from its beginning in 1876. Artifacts and photographs track CU's heritage, from a moon rock collected during the Apollo space program, to Professor Tom Cech's Nobel Prize in chemistry, to the "Wonderboy" bat used by alumnus Robert Redford in The Natural. Exhibits highlight CU's notable alumni, space exploration and research, early history and athletic accomplishments, and the unique architecture of our Tuscan-inspired campus. Currently "Americans in a Changing China: 1920-2008" is currently on display. The Heritage Center Museum is open from Monday through Friday, 10:00 AM - 4:30 PM.

Norlin Library:
The Norlin Library building houses the science, humanities, and social sciences collections. It is the flagship of the University Libraries housing its Administrative, Public and Technical Services Divisions and specialized units. The campus community can take advantage of the ITS Computer Labs housed in Norlin. All visitors can use Norlin Underground -- a coffee shop -- located on the southwest corner of the first floor. Norlin also houses a number of non-library, campus departments including the Writing Center, the Center for Asian Studies, Faculty Teaching Excellence Program and Honors Offices.

Museum of Natural History:
The University of Colorado Museum is one of the top university museums in the United States. The museum houses more than four million artifacts and specimens. Highlights from its collections range from the oldest documented Navajo textile in a public collection, to the second largest U.S. collection of *Ptiliidae*—the smallest beetle known to science—to the iconic triceratops skull in the Paleontology Hall. The University of Colorado Museum has three permanent exhibition halls and two changing galleries. Its exhibits expand our perspective on the natural world and inspire our imagination. Visit the gift shop for some unique and affordable gift items. The museum is open Monday through Friday, 9:00 AM-5:00 PM, Saturday, 9:00 AM-4:00 PM, and Sunday, 10:00 AM-4:00 PM.

Shopping

Pearl Street Mall:
Come visit the lively street activity in historic Downtown Boulder at the Pearl Street Mall, Boulder's award winning pedestrian district. Local restaurants from coffee and ice cream shops to award-winning upscale dining are interspersed with boutiques and national chain stores. The nationally known Boulder Bookstore offers three levels of books. Enjoy street entertainers, blooming flowers, artwork and people watching days or evenings on the Pearl Street Mall.

The "Hill":
University Hill, a historic shopping district with over 80 businesses, features an eclectic mix of restaurants, shops and entertainment venues and businesses. The "Hill" is located adjacent to (to the west of) the University of Colorado campus.

29th Street Mall:
The newly built 29th Street Mall features national and international brand clothing stores and restaurants. Located about 15 blocks east of the downtown Pearl Street Mall, 29th Street is anchored by big box stores Macy's, The Home Depot, and Staples. Outdoor gear can be found at The North Face, Eddie Bauer, and MontBell's flagship store, while style-minded shoppers will appreciate retail options such as Anthropologie, Ann Taylor Loft, Coldwater Creek, and White House | Black Market. 29th Street includes the Century Boulder Theatre with 16 stadium seating theaters and offers 17 restaurants from Pei Wei Asian Grill, Applebee's, California Pizza Kitchen, Rumbi Island Grill and Mad Greens to the locally-owned Chipolte for burritos or the upscale Laudisio Italian Restaurant.

Local Recreation

Arboretum:
A unique Boulder resource, Andrews Arboretum was established in 1948 by Maud Reed, a former botany teacher at Boulder High School. The most important function of the arboretum is to serve as a place where trees and plants are grown and exhibited for scientific and educational purposes. The Andrews Arboretum is located on the east side of Broadway between Grandview and Marine Streets in Boulder. It is open everyday free of charge

Boulder Creek Path:
The 5.5 mile long Boulder Creek Path stretches from the foothill canyons west of Boulder to the eastern end of town near Valmont Reservoir. The trail parallels Boulder Creek as it runs east through the heart of Boulder and out into the plains. It is a part of the city of Boulder Greenways System, a series of corridors along riparian areas including Boulder Creek and six of its tributaries: South Boulder Creek, Bear Canyon Creek, Skunk Creek, Goose Creek, Wonderland Creek, Fourmile Canyon Creek. Expect a beautiful walk or bike ride through the neighborhoods and parks of Boulder. Nearby access includes north of the Rec Center and near the Millennium Hotel.

Hiking Trails:
Hikers have a number of options including Mt Sanitas and Chautauqua Park in the city of Boulder. A short drive away is the Indian Peaks Wilderness Area and Brainard Lake Recreation Area with well-marked and maintained trails, including several "fourteener" peak trails to mountains over 14,000 feet in elevation. When hiking carry plenty of water and be prepared for sudden changes in weather.

Golf Club at the Omni Interlocken Resort:

The Golf Club at the Omni Interlocken Resort takes golfing in the Denver area to a whole new level. Get ready for exciting golf in a breathtaking setting at our 27-hole championship golf course. The course consists of three individual regulation 9-hole courses - Eldorado, Vista and Sunshine. Designed by Graham & Panks International, (a partnership between David Graham, 1981 U.S. Open Champion and PGA Senior Tour player and Gary Panks), the Omni Interlocken Golf Course was ranked third in the "Best Resort Courses of Colorado" survey. 500 Interlocken Blvd, Broomfield, Colorado Phone: (303) 438-6600.

Indian Peaks Golf:

Indian Peaks is a daily fee golf club; open to the public 7 days a week, year round, weather permitting. Indian Peaks, designed by Hale Irwin, is a championship 18-hole course, including a practice facility complete with driving range, putting and chipping greens, and practice bunkers. The course offers 87 bunkers, six lakes, and two winding creeks which make a challenge for all. Four separate tee boxes on each hole make a fair and enjoyable experience for any caliber of player. Since opening in 1993 Indian Peaks has consistently ranked as one of Colorado's finest public golf facilities. 2300 Indian Peaks Trail, Lafayette, CO Phone: (303) 666-4706.

Planned Activities (Tentative)

Tour of Celestial Seasonings & Leanin' Tree Museum of Western Art:
A tour of Celestial Seasoning is a Sensational Experience! The 45 minute tour includes a walk through the Art Gallery, samplings at the Tea Sampling Bar, a walk through the Factory where 8 million tea bags are produced daily and an experience in the famous Mint Room (sure to clear your sinuses). Conclude your visit with a stop in the Celestial Tea Shop & Emporium, where you will find all kinds of teas, apparel, gifts and collectibles.

Leanin' Tree Museum of Western Art has housed a magnificent private collection of American Western art - majestic landscapes, wildlife, American cowboys and Native American original paintings and bronze sculpture since 1950. Enjoy the walking tour and browsing through the gift shop. Many of these works of art are the inspiration for the Leanin' Tree line of greeting cards.

Tour Includes:
- Transportation
- Guided tour by trained storyteller

Tour Duration: 5 hours
Tour Cost: $15.00
Dates Offered: Sunday, June 7, 2009
Departure Time: 1:00 PM at the University Memorial Center
Tour Limit: 44

Coors Brewery in Golden, Colorado:
Come see and taste traditional brewing in the Rocky Mountains! Since 1873 Coors brewing has thrived on a legacy of quality, innovation and customer service. The tour includes a 30 minute walk through our malting, brewing and packaging processes, sampling of Coors fine products in our hospitality lounge and shopping in the Coors & Co. gift shop. Beer samples are limited in quantity and available only to those 21 years and older with proper ID. The visit takes about 90 minutes.

Tour Includes:
- Transportation
- Walk through of Brewery

Tour Duration: 5 hours
Tour Cost: $25.00
Dates Offered: Monday, June 8, 2009
Departure Time: 1:00 PM at the University Memorial Center
Tour Limit: 55

Flatirons Golf Course:
In 1933 architect Robert Bruce Harris was commissioned to design the original course. Five years later, with the help of President Roosevelt's WPA program, the club relocated to the current location. Known originally as the Boulder Municipal Sports Center, the golf course has had six name changes over the years. In 2008 the Flatirons Golf Course was chosen Best of Boulder by Boulder Weekly and Best Places to Play by Golf Digest.

Tour Includes:
- Transportation

- Nine hole game
- Cart
- Range Ball

Tour Duration: 3 hours
Tour Cost: $55.00 (Club Rental: $20 extra).
Dates Offered: Monday, June 8, 2009 & Tuesday, June 9, 2009
Departure Time: 1:00 PM or 2:00 PM at the University Memorial Center
Tour Limit: 20 per departure time (total of 40)

Chautauqua Park:
The city of Boulder began preserving wild lands over 100 years ago! In 1898 Boulder citizens approved a bond issue to purchase 80 acres of land to be used as a "Chautauqua." Over the next twenty-two years Flagstaff Mountain, Bear Mountain, Royal Arch, and Green Mountain were added to the early protected land system. Chautauqua Dining Hall and Auditorium was built in 1898. Chautauqua Ranger Cottage built in 1987. A variety of trails begin at the Ranger Cottage.

Tour Includes:

- Bottle of Water
- Granola Bar

Tour Duration: 3 hours
Tour Cost: $0
Dates Offered: Monday, June 9, 2009, Tuesday, June 10, 2009, & Wednesday, June 11, 2009
Departure Time: 1:00 PM at the University Memorial Center
Tour Limit: 40

5K Fun Run:
An enjoyable early morning run along the South Boulder Creek Trail, a well-maintained gravel path along the creek and through open meadows with views of the Rocky Mountains.

Tour Includes:

- Transportation

Tour Duration: 2.5 hours
Tour Cost: $7.50
Dates Offered: Tuesday, June 9, 2009
Departure Time: 5:45 at the St Julien Hotel, then to Millennium Hotel and the UMC
Tour Limit: 44

Banjo Billy's Bus Tour:
This 80 minute, PG-13 funky guided tour of downtown Boulder, "The Hill" and Chautauqua is filled with ghost, history and crime stories. Ride a saddle, sit in a lazy boy, this ain't no typical bus.

Tour Includes:

- Transportation
- Guided tour by trained storyteller

Tour Duration: 1-2 hours
Tour Cost: $15
Dates Offered: Tuesday, June 9, 2009 & Wednesday, June 10, 2009
Departure Time: 2:00 PM at the University Memorial Center
Tour Limit: 54

Fiske Planetarium at the University of Colorado:

With seating for 210 in its star theatre, Fiske Planetarium is the largest facility of its kind between Chicago and Los Angeles. The planetarium is equipped with a Zeiss Model VI star projector and an automated projection control system that operates hundreds of projectors. Fiske is also home to one of three "Science on a Sphere" (developed by NOAA) that shows Earth and other planetary bodies from the viewpoint of orbiting spacecraft. In addition the planetarium serves as a teaching facility for astronomy and other classes.

Tour Includes:

- Guided tour of Lobby
- Laser show

Tour Duration: 3 hours
Tour Cost: $7.50
Dates Offered: Wednesday, June 10, 2009
Tour Starts at 2:00 PM at Fiske Planetarium on the corner of Regent Dr and Kittredge Loop
Tour Limit: 210