



Midwest Astrochemistry Meeting 2011

Schedule of Events

Friday, 21 October 2011

4:00-5:00 PM Prof. Edwin A. Bergin of the University of Michigan will present a seminar in the NCSA auditorium (room 1122, NE corner of the first floor). See abstract on the next page. Refreshments will be available at 3:30 PM.

6:00-9:00 PM As in previous years, the poster session will be held in the lobby of the NCSA building. Posters may be hung after 5 PM. Pizza and beverages will be available starting around 6:30 PM.

Saturday, 22 October 2010

The oral sessions will be held in room 116 of Roger Adams Laboratory on the east side of the central part of the UIUC campus. The building's northeast door will be unlocked by 8 AM. The first session will begin at **8:30 AM**, with a Keynote Talk by Prof. Joseph Francisco of Purdue University. There will be a mid-morning break with coffee and snacks, and lunch will be provided in the form of box lunches. The meeting is scheduled to adjourn at about **1:45 PM**.

Parking

Parking is free in lots B22, D1, and the Krannert Center garage (D5) after 5 PM on Friday and all day on Saturday. If you arrive before 5 PM on Friday for the 4 PM seminar in the NCSA building, park (and pay) at a meter in the parking structure north of the building or on the streets nearby and move your vehicle after 5 PM to lot B22. There will be time between the seminar at 4 PM and the poster session for people who arrive early to go check in at their hotels.

See maps for building and parking lot locations.

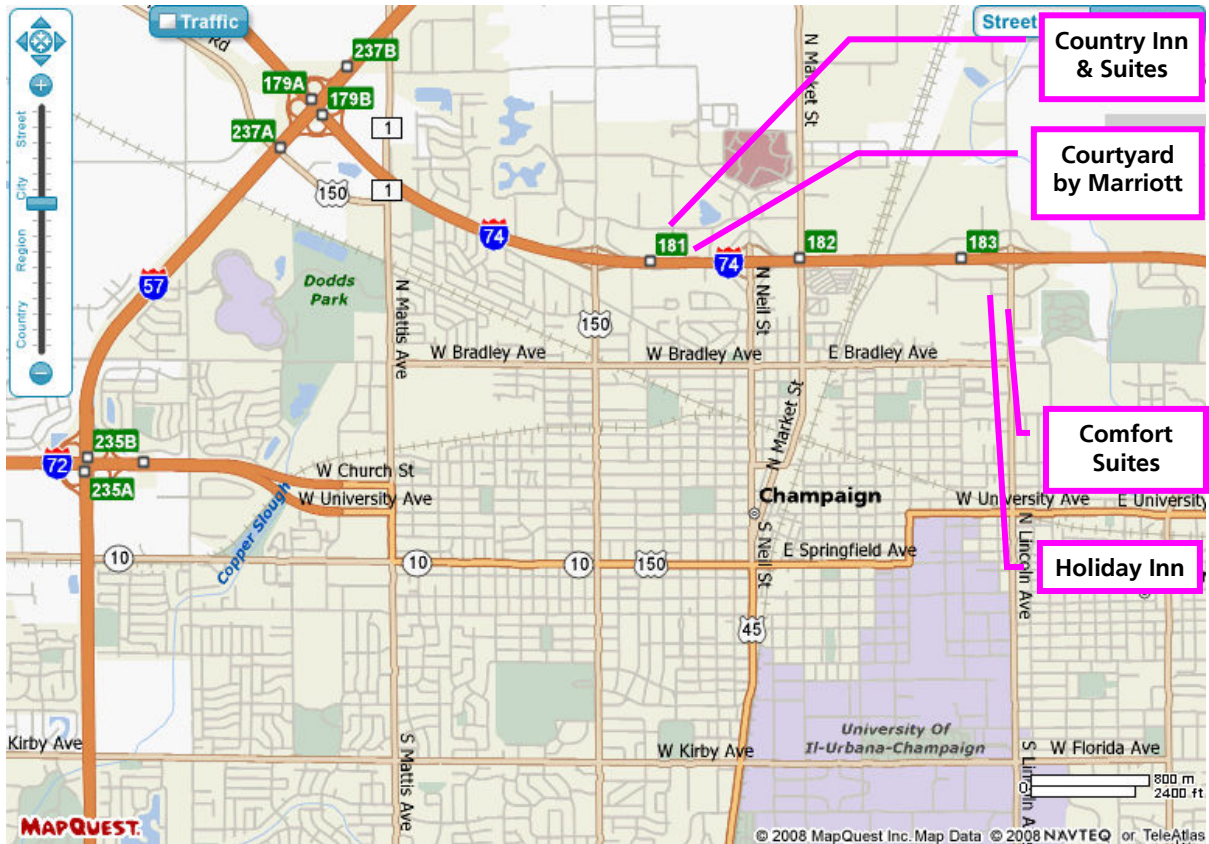
Friday Keynote Talk

Exploring New Spectral Windows with the Herschel Space Observatory

Edwin A. Bergin
Department of Astronomy
University of Michigan

The Herschel Space Observatory, an ESA cornerstone mission with NASA participation, has been in operation for over a year. I will briefly outline the overall capabilities of Herschel which has both photometric and spectroscopic coverage from 63 to 610 microns. Herschel offers unprecedented sensitivity as well as continuous spectral coverage across the gaps imposed by the atmosphere, opening up a largely unexplored wavelength regime to high resolution spectroscopy. In particular, I will present and discuss the most complete molecular spectrum of star-forming gas ever obtained in the spectrum of Orion KL and the galactic center molecular cloud Sagittarius B2. These spectra have over 1.4 THz of bandwidth and a resolution of 1 MHz. We estimate that there are over 100,000 spectral lines alone in the Orion KL spectrum with numerous lines of water vapor, ammonia, sulfur-bearing molecules, and numerous organics. I will demonstrate the power of molecular spectroscopy in characterizing the physical state of dense gas near massive stars through the perspective offered by observations of hundreds of lines of a single molecule and our new ability to peer through the Milky Way to reveal a hidden molecular phase. I will show how the spectra provide a near complete chemical assay and cooling census of star-forming gas. Ultimately the gains from Herschel have tremendous potential to extend our understanding of the physics of star birth and feedback while informing on the origin of water and organics in space.

MWAM10 – Area Map



The quickest access to campus is to use exit 183 from I74 to Lincoln Ave.

To reach the NCSA building, drive south on Lincoln to University Ave. Turn right (west) on University, then left (south) onto Goodwin.

To reach Roger Adams Laboratory, take Lincoln south to Illinois St. Turn right (west) onto Illinois St.

MWAM10 – Campus Maps

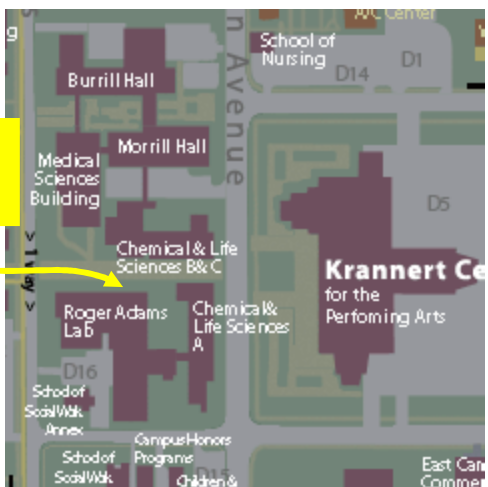


NCSA building

Roger Adams Lab



enter here



download full UIUC campus maps from <http://illinois.edu/ricker/CampusMap>

Poster Session – 21 October 2011

- P01 **Matrix-Isolation Spectroscopy and Computational Studies of Reactive Organic Molecules of Relevance to Interstellar Space**
L. A. Kopff, T. A. Kreifels, C. J. Schaffer, B. C. Haenni, B. J. Esselman, & R. J. McMahon
- P02 **Spectro-Astrometry of H₂O and OH in DR Tauri**
L. R. Brown, E. L. Gibb, M. R. Troutman, & A. T. Baluyut
- P03 **Rotationally-Resolved Infrared Spectroscopy of the Polycyclic Aromatic Hydrocarbon Pyrene (C₁₆H₁₀)**
J. T. Stewart, B. E. Brumfield, & B. J. McCall
- P04 **Circumstellar Disk of HL Tau Revealed by CARMA**
W. Kwon, L. W. Looney, & L. G. Mundy
- P05 **Indirect THz Spectroscopy of Molecular Ions**
J. N. Hodges, K. N. Crabtree, B. M. Siller, M. W. Porambo, A. A. Mills, & B. J. McCall
- P06 **Investigation of the Direct Charge Transfer in Low Energy D₂⁺ + H Collisions using Merged-Beams Technique**
S. L. Romano, C. I. Guillen, V. M. Andrianarijaona, & C. C Havener
- P07 **Structure and Composition of Molecular Clouds with CN Zeeman Detections: DR21(OH)**
N. S. Hakobian & R. M. Crutcher
- P08 **Nuclear Spin Dependence of Hydrogen Plasmas in the Laboratory and the Diffuse Interstellar Medium**
K. N. Crabtree, N. Indriolo, H. Kreckel, C. A. Kauffman, B. A. Tom, E. Beçka, B A. McGuire, & B. J. McCall
- P09 **Pairwise Correlations of Eight Strong DIBs and N(H), N(H₂), and E_{B-V}**
S. D. Friedman, D. G. York, B. J. McCall, J. Dahlstrom, P. Sonnentrucker, D. E. Welty, M. M. Drosback, L. M. Hobbs, B. L. Rachford, & T. P. Snow
- P10 **A High-Resolution Study of the Near-Infrared Diffuse Interstellar Bands**
M. G. Rawlings, A. J. Adamson, B. J. McCall, & T. H. Kerr
- P11 **Cation and Anion Chemistry in Interstellar Ices**
D. E. Woon & L. Chen

- P12 **Giant Molecular Clouds and Star formation in the Non-Grand Design Spiral Galaxy NGC 6946**
D. Rebolledo & T. Wong
- P13 **Atomic-to-Molecular Gas Transition in Nearby Galaxies: What Can We Learn from the CARMA Survey Toward IR-Bright Nearby Galaxies (STING)?**
R. Xue & T. Wong
- P14 **Complex Molecules in Protostellar Outflows**
H. G. Arce

Schedule for Oral Sessions – 22 October 2011

- 8:30-9:30 K02 **SATURDAY KEYNOTE TALK**
From Inconsequential to Reaction Significance: A Lesson from the Chemistry of Mars
J. S. Francisco
Chair: Benjamin McCall
- 9:30-10:00 **BREAK**
- SESSION TWO – Chair: Benjamin McCall**
- 10:00-10:20 T01 **Structural and Spectroscopic Study of the Van der Waals Complex of CO with HCO⁺ and Isoelectronic Van der Waals Complex of CS with HCS⁺**
C. E. Cotton, J. S. Francisco, R. Linguerrì, & A. P. Mitrushchenkov
- 10:20-10:40 T02 **The Wonderful World of Water: New Insights into Star Formation from the Herschel Space Observatory**
R. Visser
- 10:40-11:00 T03 **Chemical Signatures of Gaps in Transition Disks**
L. I. Cleeves & E. A. Bergin
- 11:00-11:20 T04 **Experimental and Computational Studies of Carbonyl Diazide (CON₆) as a Precursor to Diazirone (CON₂)**
B. J. Esselman, B. K. Amberger, A. M. Nolan, R. C. Woods, & R. J. McMahon
- 11:20-11:40 T05 **A Rotating Circumstellar Disk Around a High-Mass Protostar in IRAS 18162-2048**
M. Fernández-López, J. M. Girart, S. Curiel, N. Patel, Y. Gómez, & P. T. P. Ho
- 11:40-1:00 **LUNCH & MWAC EXECUTIVE SESSION**

SESSION THREE – Chair: David Woon

- 1:00-1:20 To6 **High Precision, Sensitive, Near-IR Spectroscopy in a Fast Ion Beam**
M. Porambo, H. Kreckel, A. Mills, M. Perera, B. Siller, & B. J. McCall
- 1:20-1:40 To7 **Evidence for Spectral Linewidth Change with Telescope Beamwidth: Support for the Identification of Interstellar Urea**
H.-L. Kuo, A. J. Remijan, L. E. Snyder, L. W. Looney, D. N. Friedel, F. J. Lovas, B. J. McCall, & J. M. Hollis
- 1:40 **WRAP-UP – Benjamin McCall**

Saturday Keynote Talk

From Inconsequential to Reaction Significance: A Lesson from the Chemistry of Mars

Joseph S. Francisco

*William E. Moore Distinguished Professor of Chemistry and Earth and Atmospheric Sciences
Purdue University, West Lafayette, IN 47907*

This presentation provides an overview of research developments in atmospheric chemistry and how the interplay between experiment and theory are providing unprecedented detail of the underpinning chemistry in different planetary environments. The lessons learned from chemistry in Earth's atmosphere provide valuable insight into chemistry of other planets in our universe, such as Mars. The connection between Earth and Mars chemistry will be discussed. Specifically, the chemistry of HO₂ on Earth versus Mars will be contrasted.