Rochester Academy of Science
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For applications and/or more information contact membership chairman Stephen Busschaert, 54 Keswick Rd., Rochester, NY 14609; by telephone 288-5683; or by e-mail <sbusschaert@msn.com>.

The ***Academy*** Internet web page is **http://www.rasny.org**

The ***Astronomy Section*** Information phone number is (585) 987-5330. The ***Astronomy Section*** Internet web page is **http://rochesterastronomy.org**

This "**BULLETIN"** is produced monthly, *except July and September*, by the ***Astronomy Section, Rochester Academy of Science***. The editor is Frank Bov, 16 Gladbrook Rd., Pittsford, NY 14534 Phone (585) 422-9910 (days) and (585) 385-1518 (evenings), e-mail <editor@rasny.org>

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Rochester Academy of Science

BULLETIN

"An organization of people in the Natural Sciences" *March, 2009 - Vol. 63, #3*

APRIL DATES TO SAVE

RAS 2009 SPRING LECTURE SERIES

The Constant Fire: Beyond the Religion vs. Science Debate

Adam Frank

Professor of Astrophysics
and Astronomy
University of Rochester

Wednesday, April 15
7:00 PM Lecture (FREE)

Brighton Town Hall
Main Auditorium

All are welcome to join us for dinner afterward.

AND

36th ROCHESTER MINERALOGICAL SYMPOSIUM

Thursday, April 23rd through
Sunday April 26th

Radisson Hotel,
175 Jefferson Rd.
Henrietta, NY

The Thursday evening program is FREE to all RAS members. The lecture begins at 8:00 PM. The talk is titled: *"Recent Mineral Collecting in Brazil."*

Tickets are $65 for the weekend, or $30 per day. $5/day for students with ID. Under 16 free. Call (315)682-0387 for more information.

RMSC DISTINGUISHED SCHOLAR LECTURE

Biotechnology in the Information Age

Gary R. Skuse, PhD

Director of Bioinformatics
Rochester Institute of Technology.

Wednesday, March 18h , 7:30PM

Eisenhart Auditorium
Rochester Museum and
Science Center

Just as progress in biotechnology is advancing basic research, drug discovery, and health care, new information technologies are expanding our ability to access and share information. Explore the potential benefits (rapid drug discovery, personalized medicine, and improved food sources) and challenges (the threat to privacy) of these converging technologies.

Dr. Skuse is Director of Bioinformatics and Professor of Biological Sciences at Rochester Institute of Technology.

Tickets are $15 for non-RMSC members, $8 for students through grade 12 or college students with ID. Call (585)697-1942 for more information and reservations.

ABSTRACTS OF PAPERS GIVEN AT THE 2008 PAPER SESSION.

PRESETTLEMENT VEGETATION OF THE CONNECTICUT TRACT IN WESTERN NEW YORK.

Evelyn Brister, Elizabeth Hane, Karl Korfmacher, Rochester Institute of Technology

Analysis of the vegetation data in settlement-era property surveys can aid our understanding of historical landscape change. By demonstrating how past vegetation differs from current patterns, historical studies can identify the impacts of human land use, results of long-term ecological processes, and degree of change in forest composition and wetland distribution. The 100,000-acre Connecticut Tract in western New York was first surveyed in 1811. Surveyors recorded two types of data: information about the trees which marked lot corners and rank-ordered lists of timber along the survey lines. We transcribed and analyzed both types of data, and using ArcGIS software we mapped species composition and community type. The line descriptions correlate well with current community distributions, with beech-maple-basswood covering much of the study area both then and today. Comparisons

to the National Wetlands Inventory Database revealed that many of the wetlands that were present in 1811 still exist today, particularly in the Byron-Bergen Swamp and in the wetlands along the Lake Ontario shoreline. However, survey results indicate that many wetlands between Ridge Road and the Erie Canal have been lost, possibly during the construction of the canal in the 1820s. We found that an analysis of both bearing tree and line description data helps to overcome gaps due to incomplete records.

CHIRAL IONIC LIQUIDS AS STATIONARY PHASES IN GAS CHROMATOGRAPHY.

Brendan Clifford, Irene Kimaru, St. John Fisher College

Chiral ionic liquids are closely related to ionic salts. Like salts, ionic liquids are composed of a cation and an anion. The major difference between the two is the phase of material. Ionic liquids are asymmetrically substituted with different length groups to prevent the packing of cations/anions into a uniform lattice. We present the synthesis and characterization of L- and D-alanine and L- and D-leucine *t*-butyl ester bis(perfluoroethyl)sulfonylimide ($BETA^+$) using a simple anion metathesis reaction. The same reaction was carried out to synthesize (S)-(3-chloro-2-hydroxypropyl)-trimethylammonium ($CHTA^+$) $BETA^-$. It is anticipated that these chiral ionic liquids will be used as stationary phases for the separation of enantiomeric species.

THE SPATIAL EXPRESSION OF *DELTA* IN *E. TRIBULOIDES* USING WHOLE-MOUNT IN SITU HYBRIDIZATION

Rae Ann Covington and Dr. Hyla Sweet, Rochester Institute of Technology

Sea urchins such as *Lytechinus variegatus* and *Strongylocentrotus purpuratus* have been studied for decades and are known for their extensive use as models for development. They are derived urchins belonging to the subclass Euechinoidea of the Echinoderm phylum. *Eucidaris tribuloides* belongs to the small subclass of sea urchins known as Cidaroidea and displays many differences in development to that of the derived urchins (Schroeder, 1981). The *Delta* gene in derived urchins has been found to play a role in mesoderm specification in the sea urchin embryo. Previous studies in *L. variegatus* have shown that *Delta* is expressed in the micromere derivatives during the blastula stage and macromere-derived mesoderm at the late blastula and early gastrula stage (Sweet et. al. 2002). The current project aims to characterize the spatial expression of *Delta* in the primitive sea urchin *Eucidaris tribuloides* by the use of whole-mount *in situ* hybridization (WMISH) using *L. variegatus* as a positive control. Fixed embryos of varying stages were incubated in antisense RNA probes made to bind *Delta* mRNA expressed in the embryo, and results were visualized by immunochemistry. The results thus far have shown the *Delta* gene to be expressed in the vegetal plate of the blastula-stage embryo (~12 hours post-fertilization) and the pigment cells of the mid-gastrula stage embryo.

SOLVENT SUPPRESSION IN NMR RELAXATION MEASUREMENTS.

M. M. Hoffmann, H. S. Sobstyl, S. J. Seedhouse, V. A. Badali, SUNY Brockport,

Solvent signal suppression in NMR spectroscopy continues to be a topic of intense research. Solvent suppression is necessitated for research on NMR samples which contain no or only small amounts of deuterated solvents and thus suffer under intense solvent signals. Incentives for solvent suppression are generally two-fold: improved dynamic range and recovery of solute signals masked by the large solvent signal. While very effective NMR solvent suppression schemes have been developed for many NMR experiments, surprisingly, virtually no reports are available for solvent suppression in T_1 and T_2 relaxation measurements. Since we intended to study T_1 and T_2 relaxation for industrial surfactants, which are often pre-mixed with water, we embarked in incorporating various solvent suppression schemes in the standard inversion recovery pulse program for T_1 and the Carr-Purrcell, Meiboom-Gill (CPMG) pulse program for T_2 measurements. The effect on spectral quality and accuracy of the modified pulse programs was assessed using three samples: one with only traces of H_2O, one with moderate H_2O and one with dominantly H_2O present. The results will be provided along with general recommendations how best to incorporate solvent suppression in relaxation measurements.

EVENTS for MARCH 2009

(For updates to events, check the Academy web site, http://www.rasny.org, or appropriate Section web site.)

Tue 03 FOSSIL MEETING

7:30 PM Community Meeting Room, Brighton Town Hall, 2300 Elmwood Ave. Dr. George McIntosh, Director or Collections at RMSC will speak about Melocrinitis, a crinoid found in the Upper Devonian of NY State. Visitors are welcome. Refreshments are served. For additional information and the latest updates, check the RAS web site or contact John Handley at (jhandley@rochester.rr.com) or by phone: (585 802-8567).

Tue 03 LIFE SCIENCES DISCUSSION SERIES

Time and Location TBD. A CRUDE AWAKENING offers the rock-solid argument that the era of cheap oil is past. This intensively-researched film drills deep into the uncomfortable realities of a world that is both addicted to fossil fuels and blissfully unaware of the looming "peak oil" crisis. Hints at a humbler way of life built around sustainability and alternative energy; provokes thought and proposes action. If you are interested, please contact Elizabeth Pixley at 334-0977 or Karen Wolf at 670-9709 for the location and more information about the series.

Fri 06 ASTRONOMY GENERAL MEETING

7:30 PM at RIT, Gosnell Hall, room A300. ASRAS member Marty Pepe will present "Kepler - The Man, The Machine, The Mission" Who was this dude and what did he do that was so great they would actually name a spacecraft after him? Furthermore, what's special about THIS spacecraft that carries his name? Find out at the next meeting! Also, member Chris Carosa will fill us in on his "Astronomy Top 100" web site, which will involve member participation. Visitors welcome. Come early for snacks and conversation. For more information, contact Carol Latta at 230-9548 or <cosmos@rochester.rr.com>.

Wed 11 LIFE SCIENCES HERBARIUM WORKSHOP

10:00 AM to 2:00 PM: at the RAS Herbarium, located in the basement of the Rochester Museum and Science Center (RMSC). No experience needed! Plan to come and help with this valuable historic plant collection. If you plan to attend, please send an RSVP to Elizabeth Pixley. Then, at RMSC, go to the front desk and ask staff person there to call ext. 368, the phone in the Herbarium. You can either bring a lunch or purchase food at the RMSC café. For more information, contact Elizabeth Pixley, herbarium curator (334-0977 or epixley@rochester.rr.com).

Tue 17 MINERAL MEETING

7:30 PM Brighton Town Hall 2300 Elmwood Ave. upstairs auditorium. Dan Robertson will give a talk titled: "Wearing and Talking Green - Minerals on St. Patrick's Day." The color of a mineral may be diagnostic, or of no help at all in identification. In keeping with St. Patrick's Day, we'll discuss the color green in minerals, along with the different reasons why a mineral could appear in that color. Members are encouraged to bring some of their favorite green specimens, to show. Refreshments. Visitors welcome. For information, call Chuck Hiler at 924-7496 or check the Academy web site http://www.rasny.org for possible updates.

Wed 18 DISTINGUISHED SCHOLAR LECTURE

7:30 PM in Eisenhart Auditorium. Tickets are $15 for non-RMSC members, $8 for students. Call (585)697-1942 for more information and reservations.

Fri 20 ASTRONOMY EDUCATIONAL MEETING

7:30 PM at RIT, Gosnell Hall, room A300. Here's the 2nd of a 3 part series on "Measuring Distance in the Universe". Dr. Michael Richmond of RIT will present talks for the beginner to explain astronomy in terms the layman can understand. Mike is a popular speaker at our meetings and will undoubtedly entertain while educating! It's informal and open to the public. And free! Why not stop in and listen? For more information, contact Carol Latta at 230-9548 or <cosmos@rochester.rr.com>.