

# Minnesota Microscopy Society

Local affiliate of the *Microscopy Society of America*  
and the *Microbeam Analysis Society*



## Newsletter

January 2008

## Tour of the Science Museum of Minnesota

Thursday, February 21, 2008

The Minnesota Microscopy Society's February meeting will be a behind-the-scenes tour of the Science Museum of Minnesota. The last time the MMS was given a tour of the Science Museum, it was at the museum's old location. This will give us a chance to see the inner workings of the new facilities. After the tour, those interested will be getting together for dinner at The Liffey.

### Location

Science Museum of Minnesota  
120 W. Kellogg Blvd., St. Paul  
([www.sci.mus.mn.us](http://www.sci.mus.mn.us))

### Schedule

|                 |        |
|-----------------|--------|
| 3:00 to 5:00 PM | Tour   |
| 5:30 to 7:00 PM | Dinner |

### Cost of the Meeting and Registration

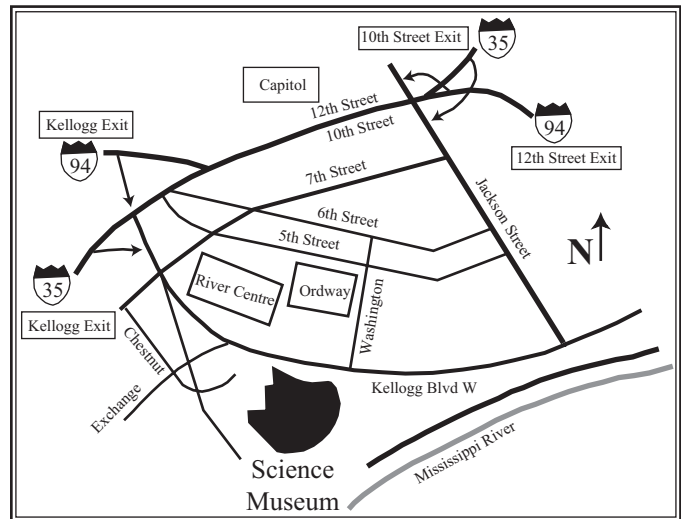
There will be no MMS registration fee. However, for those who are not also members of the Science Museum, there will be a \$9 exhibit pass fee. In either case, registration is required. The Microscopy Society must prepay for the exhibit passes. There will also be a limit of only 30 people allowed on the tour. So make your reservations early. E-mailing Bede Willenbring at [reservations@mnmicroscopy.org](mailto:reservations@mnmicroscopy.org). Include whether you are a Science Museum member, and whether you will be coming to the dinner. Reservations must be made no later than noon on Monday, February 18th.

For Science Museum members, don't forget to bring your membership card with you to the meeting.

### Dinner

There will be an informal dinner at the Irish pub, The Liffey, which is in the Holiday Inn at 175 W 7th Street, St. Paul. A shuttle will be available from the Museum, so we won't have to park twice.

### Location Map - Science Museum of Minnesota



### Parking

The Science Museum's parking ramp can be accessed from either Kellogg Boulevard or Chestnut Street. Enter the museum by taking the parking ramp elevator to the Lobby level. Parking discounts also apply for Museum members. Ask when picking up your exhibit pass.

# MinnTS

(Minnesota Technical Symposium)

Thursday, March 20, 2008

## Operation Stardust

**Astrophysical Dust, in Space and in the Laboratory  
and**

**Infrared Astronomy with NASA's New Spitzer Space Telescope**

MinnTS is an annual joint meeting of area technical and scientific organizations. This will be our sixth symposium. MinnTS was formed to provide a venue for local technical professionals to get together for networking, dining, and to provide an enriching evening of top quality speakers. Check the MinnTS web site at [www.MinnTS.org](http://www.MinnTS.org) for any late-breaking news about the meeting.

### Location

Medtronic Inc.  
710 Medtronic Parkway (I-694 & Hwy 65)  
Fridley, MN 55432

### Schedule

|             |  |
|-------------|--|
| 5:00 - 6:00 | Registration, Tours and Social Hour*   |
| 5:00 - 5:30 | Medtronic Lab Tours (every 5 min)  |
| 6:00 - 7:00 | Dinner   |
| 7:00 - 7:15 | <i>Welcome &amp; Introductions</i><br>- Gary Korba   |
| 7:15 - 8:00 | <i>Infrared Astronomy with NASA's<br/>New Spitzer Space Telescope</i><br>- Dr. Robert D. Gehrz |
| 8:00 - 8:15 | Break  |
| 8:15 - 9:00 | <i>Astrophysical Dust, in Space and in<br/>the Laboratory</i><br>- Dr. Robert O. Pepin         |

**Cost** \$25 for members / \$15 for students

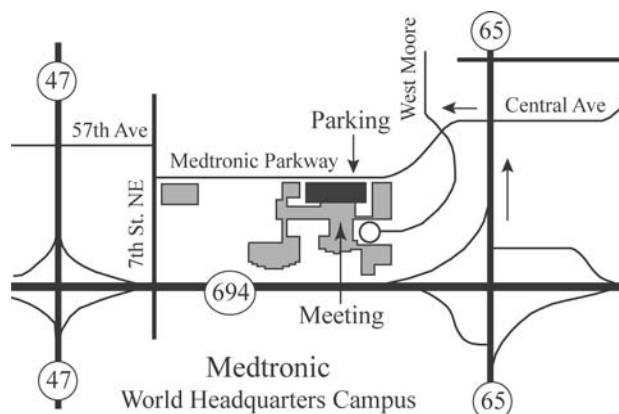
\* The Social Hour is sponsored by a generous gift from Medtronic.

### Registration

Reservations **MUST** be made no later than midnight **Friday, March 14th**. Register by e-mail at [reservations@minnts.org](mailto:reservations@minnts.org), or by phone at 651-236-5470 (Bede Willenbring). Include your name, company, phone number, e-mail address and society affiliation. Reservations cannot be cancelled after March 14th.

### Dinner Menu

- ◆ Garden salad with assorted dressings
- ◆ Bakery fresh rolls and butter
- ◆ Herb crusted chicken with pan glaze, or wild mushroom strudel
- ◆ Potatoes
- ◆ Steamed carrots
- ◆ Assorted desserts (mini tarts, chocolate dipped fruits, mini cakes and pies)
- ◆ Assorted soda and water
- ◆ Coffee service with hot tea

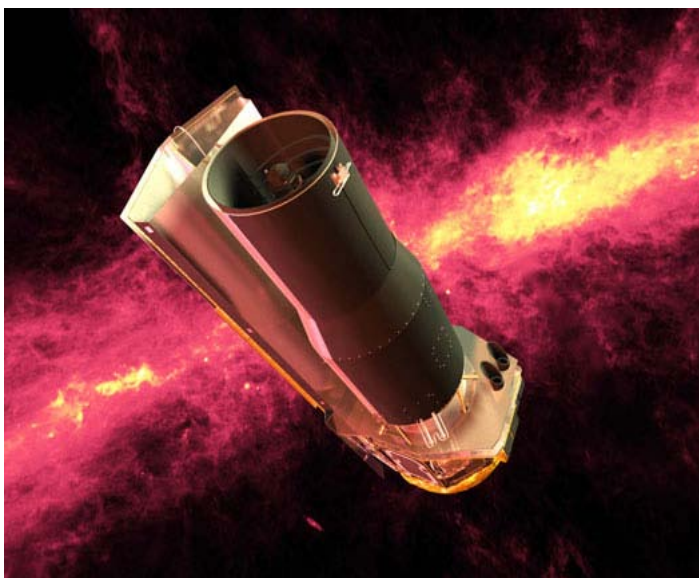


*Location map - Medtronic World Headquarters.  
Parking is in the ramp north of the building. Visitors enter on the third level.*

**Dr. Robert D. Gehrz** - University of Minnesota  
Department of Astronomy  
*Infrared Astronomy with NASA's New Spitzer  
Space Telescope*

Launched from Kennedy Spaceflight Center in the early morning of August 25, 2003, NASA's Spitzer Space Telescope (formerly Space Infrared Telescope Facility, SIRTf) is the fourth and final facility in the Great Observatories Program, joining Hubble Space Telescope (HST, 1990), the Compton Gamma-Ray Observatory (CGRO, 1991-2000), and the Chandra X-Ray Observatory (CXO, 1999). Spitzer, with a sensitivity that is orders of magnitude higher than that of any previous ground-based and space-based infrared (IR) observatories, is expected to revolutionize our understanding of the creation of the universe, the formation and evolution of primitive galaxies, the genesis of stars and planets, and the chemical evolution of the universe. A brief overview of infrared (IR) astronomy and of Spitzer's role in the NASA's Space IR Astronomy program for the New Millennium will be given. The construction, launch, and in-orbit checkout of the observatory will be reviewed. Science highlights from the first two and a half years of observations will be presented.

Further information about the Spitzer can be found on the WEB at <http://spitzer.caltech.edu/>.



**Dr. Robert Pepin** - University of Minnesota  
School of Physics and Astronomy  
*Astrophysical Dust, in Space and in the Laboratory*

Comets are frozen, largely unaltered reservoirs of dust and gases present in the early solar nebula. They are likely to contain well-preserved records of the chemical, mineralogic, and isotopic character of primordial solar-system matter. On January 15, 2006, the Stardust Mission returned to Earth with a cargo of particles collected from the coma of comet Wild 2, the first samples of indisputably cometary matter available for laboratory study. Among these investigations, the noble gases provide unique data on contributions to comets from various solar-system volatile reservoirs, and of physical processing of gases acquired from these reservoirs. In this talk, I discuss the first study of helium and neon in Stardust material, and of the identity of their likely carrier particles, carried out over the past year by workers in four different laboratories.

One of the surprises in the samples collected from an icy object that formed and spent most of its lifetime in the cold outer reaches of the solar system was the discovery that many of its constituent particles are igneous, refractory "rocklets" formed at very high temperatures, presumably close to the early Sun. These particles were then somehow transported to the trans-Neptunian Kuiper Belt and incorporated into Wild 2 at about the time of the solar system's birth 4.57 billion years ago. (In retrospect, the presence of these "rocklets" wasn't all that astonishing: Ed Ney, Louis Rose and others at Minnesota argued three decades ago from IR spectroscopic data that comets contained igneous grains.). A second and completely unanticipated feature of Stardust matter was enormous concentrations of He and Ne that, of known gas acquisition mechanisms, only intense ion irradiation seems able to explain. These two observations, together with Ne isotopic data suggest that gases in Stardust grains were implanted from an ancient, energetic nebular reservoir near the young evolving Sun.

## Biographies

### Dr. Robert Gehrz

Robert D. Gehrz was born in Evanston, Illinois and grew up in St. Paul, MN where he graduated from Central High School in 1963. He received a BA in Physics from the University of Minnesota in 1967 and a Ph.D in Physics from the University of Minnesota in 1971. From 1972 until 1985, Gehrz was on the faculty of the Department of Physics and Astronomy of the University of Wyoming where, in collaboration with John A. Hackwell, he built the Wyoming Infrared Observatory Wyoming Infrared Observatory. The 2.34-meter Wyoming Infrared Telescope, funded jointly by the State of Wyoming and The National Science Foundation, was the largest IR telescope in the world at the time of its completion in 1977. Since 1985, Gehrz has been a Professor of Physics and Astronomy and Director of the Observatories at the University of Minnesota and a frequent guest observer at ground based and space based observatories worldwide. In addition to conducting an extensive research effort in ground based infrared astronomical observations and instrumentation development, Gehrz is a member of the Science Working Group SWG for

NASA's Spitzer Space Telescope with Facility Scientist responsibilities for the Cryogenic Telescope Assembly (CTA). His space infrared astronomy research has included programs conducted with the (International Ultraviolet Explorer (IUE), the Kuiper Airborne Observatory (KAO), the European Space Agency's Infrared Space Observatory (ISO), Hubble Space Telescope (HST) and the new Chandra X-ray Observatory. He was Chairman and member of the Board of the International Gemini Project during 1996- 1999 and was President of the American Astronomical Society during 1999-2000. During 2001, he served as a member of the Committee on the Organization and Management of Research in Astronomy and Astrophysics (COMRAA). Gehrz is a past chair and member of the NSF/NASA Astronomy and Astrophysics Advisory Committee (AAAC). He currently serves as a member of the NASA James Webb Space Telescope (JWST) Product Integrity Team (PIT) that reviews the optical telescope assembly and is the Leader of the NASA SOFIA Community Task Force (SCTF).

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### Dr. Robert Pepin

Bob Pepin received his Ph.D in Physics from the University of California, Berkeley, after which he came to Minnesota. He joined the Physics Department at the University of Minnesota in 1965. Dr. Pepin has been involved in astrophysics research since the beginning of his career. He has received many honors for his achievements, including having an asteroid named after him. Dr. Pepin's present research focuses on the origin and early history of volatile elements and compounds in the solar system as revealed by mass spectrometry measurements of the distributions and compositions of noble gas and nitrogen isotopes

trapped in meteoritic carrier phases, implanted in lunar and asteroidal regolith grains by solar wind and solar flare ion irradiation, and dissolved in minerals from the Earth's mantle. Areas of particular interest include the composition of the primordial solar nebula, isotopic signatures of nucleosynthesis in primitive meteorites, the compositional history of solar wind and flares over the past 4+ billion years, the origin of volatiles in planetary interiors and atmospheres, and more generally the mechanisms of nuclear processing, mass fractionation, gas acquisition, and mixing responsible for the elemental and isotopic evolution of solar system volatile reservoirs through time.

## Minnesota Microscopy Society's Treasurers Report - Year 2007

### Cash Flow Summary

01/01/2007 Through 12/31/2007

#### INCOME

##### Dues

*Corporate* 2,175.00  
*Members* 1,054.00

Total Dues 3,229.00

##### Interest Income

*Interest - CD* 410.98  
*Interest - Checking* 20.07

Total Interest Income 431.05

##### Meeting Registrations

*MinnTS* 5,137.00  
*MMS Meetings* 2,635.00

Total Meeting Registration 7,772.00

Donations 150.00

Spring Symposium 2007 4,935.00

**TOTAL INCOME** 16,517.05

#### EXPENSES

Credit Card Fees 488.34

##### Meeting Expenses

*MinnTS* 5,102.55  
*MMS Meetings* 4,111.18

Total Meeting Expense 9,213.73

Miscellaneous 350.27

Newsletter 195.77

Project Micro 2,019.32

Spring Symposium 2007 Expense 4,198.52

**TOTAL EXPENSES** 16,465.95

**OVERALL TOTAL** 51.10

### Needed:

#### New Editor for the MMS Newsletter

Work load: - Highly variable  
Contribution to MMS: - Very significant  
Requirements: - Must be able to spel, and attend most monthly MMS Board meetings.

For more information contact Peter McSwiggen at [PMcS@McSwiggen.com](mailto:PMcS@McSwiggen.com)

## Up-Coming Meetings

### Annual MMS Spring Symposium

**Friday, May 2, 2008**

Science Museum of Minnesota

More information in upcoming newsletters.

### Regional Meetings

#### MAS EBSD Topical Workshop

**May 20 - 22, 2008**

University of Wisconsin-Madison

The first day of the meeting will be an all day tutorial for beginners on the basics of EBSD techniques and applications. The next two days will consist of talks with categories including:

- ◆ In situ measurements in EBSD,
- ◆ EBSD in three dimensions,
- ◆ Frontiers in EBSD technique development,
- ◆ Materials science and engineering applications,
- ◆ Geological applications.

For more information contact John Fournelle at [johnf@geology.wisc.edu](mailto:johnf@geology.wisc.edu).

### National Meetings

**M&M 2008**

**August 3 - 7, 2008**

Albuquerque Convention Center  
Albuquerque, New Mexico

This is the joint annual meeting of the Microscopy Society of America and the Microbeam Analysis Society. For more information go to: <http://www.microscopy.org/MMMeetings/MM08/HomePage.html>

## Sustaining Members

Sustaining members are the backbone of financial support for the Society. These members make it possible for the Society to support Project Micro and to cover many expenses of the regular meetings and the Spring Symposium. We greatly appreciate the continued support of these individuals and corporations. To become a Sustaining Member, complete and return the MMS membership form at the end of the newsletter.

|                     |   |              |
|---------------------|---|--------------|
| John Benson         | <b>Thermo Electron</b>                              | 608-826-9049 |
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| Melissa Dubitsky    | <b>Tousimis Research Corp</b>                       | 301-881-2450 |
| Matt Dugas          | <b>ARC</b>  | 651-789-9000 |
| Lester Engel        | <b>Engel Metallurgical Ltd.</b>                     | 320-253-7968 |
| Chris Frethem       | <b>University of Minnesota</b>                      | 612-624-4652 |
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| Nicholas Piotrowski | <b>Keyence</b>                                      | 888-539-3623 |
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| Jack Vermeulen      | <b>Ted Pella, Inc.</b>                              | 530-243-2200 |
| Ted Weldon          | <b>Leeds Precision Instruments</b>                  | 612-546-8575 |
| Bede Willenbring    | <b>BY Design of New Hope, Inc.</b>                  | 763-533-0649 |

If any Sustaining Members are missing from this list, *please* contact either: Jason Heffelfinger (763-514-1021, [jason.r.heffelfinger@medtronic.com](mailto:jason.r.heffelfinger@medtronic.com)) or Peter McSwiggen (612-781-2282, [PMcS@McSwiggen.com](mailto:PMcS@McSwiggen.com)).

## MMS Patron Members

The Minnesota Microscopy Society would like to express sincere thanks to our Patron Members. These members provide financial support to the organization above the standard membership fee. This additional support makes it possible for MMS to maintain its financial well being. To become a Patron Member, complete and return the MMS membership form at the end of the newsletter.

|                  |                                     |                  |                                 |
|------------------|-------------------------------------|------------------|---------------------------------|
| Gib Ahlstrand    | Imaging Center, U of M, St. Paul    | Susan Okerstrom  | Medtronic Inc., Brooklyn Center |
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| Mary Buckett     | 3M Company, St. Paul                | Ann Palmer       | University of Minnesota, Mpls   |
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| Dan Crosswell    | 3M Company, St. Paul                | Ky Pham          | Medtronic Inc., Mpls            |
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| Stuart McKernan  | 3M Company, St. Paul                | Klaus Wormuth    | SurModics, Eden Prairie         |

## MMS BOARD and OFFICERS 2007-2008

**President:** Peter Yurek, Medtronic Inc.,  
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kwormuth@surmodics.com

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**Treasurer:** Bede Willenbring, H.B. Fuller Co., St. Paul, MN;  
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**ProjectMicro Director:** Jeff Payne, 3M Center,  
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(651) 733-2352; jjpayne@mmm.com

### Other Board Members:

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Ky Pham, Medtronic Inc., Minneapolis, MN;  
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Dwight Erickson, 3M Center, St. Paul, MN;  
(651) 736-2830; dderickson3@mmm.com

## Minnesota Microscopy Society – Membership Form

All microscopists are urged to support their Society at one of the membership levels offered below. Often, supervisors will support MMS memberships out of their project budget because they recognize that it is a very inexpensive way to maintain and increase the skills of their microscopists. If you have been a member over the years and recognize the value of MMS to the community of microscopists it serves, consider upgrading your membership this year to the patron or sustaining level. Thank you.

Name \_\_\_\_\_ Dr \_\_\_\_\_ Mr \_\_\_\_\_ Ms \_\_\_\_\_ Phone (\_\_\_\_\_) \_\_\_\_\_

Affiliation \_\_\_\_\_ Position \_\_\_\_\_

Address \_\_\_\_\_ ZIP \_\_\_\_\_

E-mail address \_\_\_\_\_

Indicate the method by which you would like to receive the Newsletter: e-mail/web \_\_\_\_\_ mail \_\_\_\_\_

Check here \_\_\_\_\_ if you do NOT want your name and address to appear in the Society directory.

Are you an MSA member? \_\_\_\_\_ MAS Member? \_\_\_\_\_ Other Professional groups? \_\_\_\_\_

Student (\$5) \_\_\_\_\_ Basic (\$10-\$24) \_\_\_\_\_ Patron (\$25-\$99) \_\_\_\_\_ Corporate Sustaining (\$100- ) \_\_\_\_\_

Payment: \_\_\_\_\_ Check \_\_\_\_\_ Visa \_\_\_\_\_ Mastercard \_\_\_\_\_ American Express \_\_\_\_\_ Discover \_\_\_\_\_

Credit Card Number: \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ Exp. Date: \_\_\_\_\_ / \_\_\_\_\_

Signature (for credit card payment): \_\_\_\_\_

Make checks payable to MMS and mail to our Treasurer:

Bede Willenbring, MMS Treasurer, 4763 Decatur Ave. North, New Hope, MN 55428-4402

### Minnesota Microscopy Society

Peter McSwiggen, MMS Editor  
McSwiggen & Associates  
2855 Anthony Lane South, Ste B1  
St. Anthony, MN 55418

Forwarding and Address  
Service Requested

**February 21, 2008**

***Tour - Science  
Museum of Mn***