
Minnesota Microscopy Society

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



Newsletter

November 2003

Minnesota Microscopy Society - November Meeting

Thursday, November 20, 2003

"Nanoparticles in Frogs"

by Dr. David Norris

Speaker

David Norris, Ph.D.
University of Minnesota

Location

Four Points by Sheraton Minneapolis Metrodome
1330 Industrial Boulevard
Minneapolis, MN 55413

Schedule

Registration and Social Hour	5:30 PM - 6:15 PM
Dinner	6:15 PM - 7:15 PM
Business meeting	7:15 PM - 7:30 PM
Talk	7:30 PM - 8:30 PM

Dinner Buffet

Italian Buffet (both meat and vegetarian choices).

Cost of the Meeting

The cost for the meeting and dinner is \$25 for members and \$15 for students.

Reservations

Reservations for the meeting **MUST** be made no later than **Friday, November 14**. Contact Bede Willenbring at Bede.Willenbring@HBFuller.com or by phone at (651) 236-5470 to make your reservations.

Abstract:

While fluorescent semiconductor quantum dots (nanocrystals) promise to revolutionize biological imaging,^{1,2} their use has been limited by difficulties in obtaining quantum dots that are bio-compatible. Recently there have been several new strategies that try to address this problem. Here, I will discuss our approach.³ We found that, by encapsulating individual quantum dots in phospholipid block-copolymer micelles, bio-compatibility could be obtained. We then demonstrated both in vitro and in vivo fluorescent imaging with such quantum dots. When conjugated to DNA, the quantum dots act as in vitro fluorescent probes to hybridize to specific complementary sequences. More importantly, when injected into *Xenopus* (frog) embryos, the quantum dots are stable, non-toxic (below 5×10^9 nanocrystals per cell), cell autonomous, and slow to photobleach. The quantum dot fluorescence can also be followed to the tadpole stage, allowing lineage tracing experiments in embryogenesis. Our experiments demonstrate that very simple approaches to producing bio-compatible dots are possible and that the resulting nanomaterials should have a high impact in biological imaging.

1. M. Bruchez, M. Moronne, P. Gin, S. Weiss, A. P. Alivisatos, *Science* 281, 2013 (1998).
2. W. C. W. Chan, S. Nie, *Science* 281, 2016 (1998).
3. B. Dubertret, P. Skourides, D. J. Norris, V. Noireaux, A. H. Brivanlou, A. Libchaber, *Science* 298, 1759 (2002).

Biography

David J. Norris is currently an Associate Professor of Chemical Engineering and Materials Science at the University of Minnesota in Minneapolis, MN. His research interests include developing and investigating novel materials, including nanocrystals, photonic crystals, and other nano- or micro-structured solids.

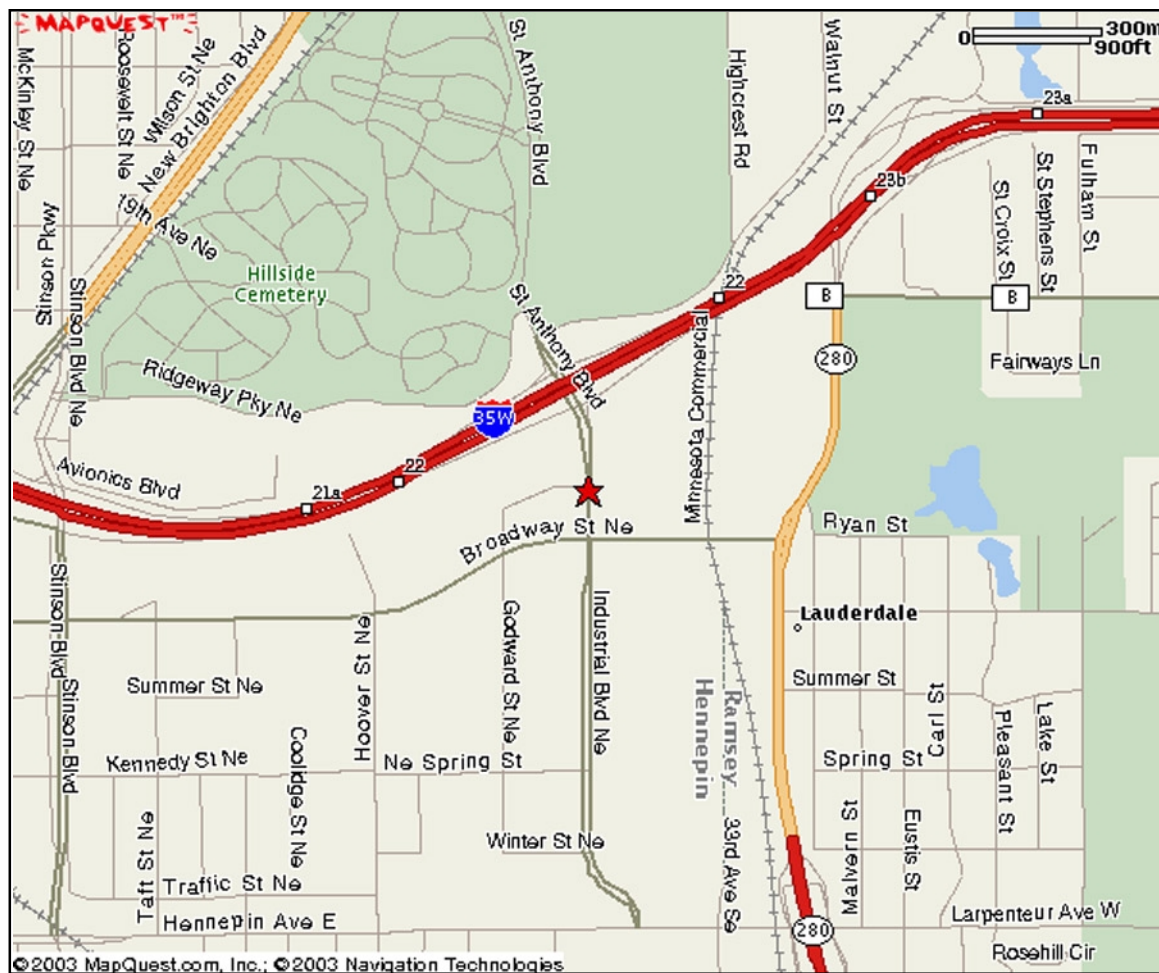
Norris received his B.S. in chemistry from the University of Chicago in 1990. He then pursued his doctorate in physical chemistry at MIT under a NSF Fellowship. During his thesis, he investigated the optical properties of nanometer-scale semiconductor particles (nanocrystals) in the laboratory of M. G. Bawendi.

After receiving his Ph.D. in 1995, he then studied single-molecule spectroscopy as a NSF Postdoctoral Fellow in Chemistry with W. E. Moerner at the University of California, San Diego. In 1997, he joined the NEC Research Institute in Princeton, New Jersey, as a Research Scientist. At NEC he initiated and led a research group on photonic materials. In 2001, Norris moved to the University of Minnesota.

Norris is a member of the advisory board of the Petroleum Research Fund as well as the journals *Advanced Functional Materials* and *Chemistry of Materials*. He is a member of the Executive Committee of the Physical Chemistry Division of the American Chemical Society. Norris can be reached by email at: dnorris@umn.edu.

Four Points Hotel Location Map

The Four Points by Sheraton Minneapolis Metrodome Hotel is located five miles north of downtown Minneapolis. It is just south of Highway 35 W on Industrial Boulevard. Parking is free.



Upcoming MMS Meetings 2004

February 19

Forensic Medicine / Biological Microscopy

March 18

Joint Meeting with ASM, AVS
at Medtronic World Headquarters.

May 7

Spring Symposium

Our Digital World

Time to Renew Your MMS Membership

The Minnesota Microscopy Society's membership year runs from October 1st to September 30th. Membership renewals are due in September or October. So now is the time to renew your membership by sending your dues to our treasurer Bede Willenbring at 4763 Decatur Ave. North, New Hope MN 55428-4402. Basic membership is still ONLY \$10 per year; better yet, become a Patron member for only \$25.

Membership rates have not changed in decades. The MMS Board is discussing the rates for the upcoming year. If you would like some input on this matter, please feel free to contact our President or any other member of the MMS Board.

SEM/EDS Scientist Wanted Evans PHI, Evans Analytical Group Chanhassen, MN

The Evans PHI Analytical Lab (see <http://www.eaglabs.com/evansphi/evansphi.htm>) currently has a full time position for an SEM/EDS surface analyst. Evans PHI is a member of the Evans Analytical Group – a network of labs providing surface and micro-analytical support on a contract basis.

The duties of this position include:
Responsible for the daily operation and maintenance of a field-emission scanning electron microscope and energy dispersive x-ray analyzer (SEM/EDS), as well as associated sample prep equipment. Provide SEM/EDS contract analysis for clients. This includes customer contact to define scope of work and clarify information, data acquisition and interpretation, a full written report, and customer follow-up. Sustain customer accounts and develop new business by providing valuable analytical results. Participate in application projects and seminars for the purpose of developing new market segments with significant growth potential.

The position requires a B.S. or advanced degree in science (physics, chemistry or materials science) and demonstrated proficiency in SEM/EDS. Minimum of two years of direct experience with, or four years without, an advanced degree. XPS experience a plus. Excellent English communications skills, both written and verbal, required. Works well with others or independently. EOE.

Please submit resumes to:

email: resumes@eaglabs.com
Fax: 408-530-3503
EVANS ANALYTICAL GROUP
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Sustaining Corporate 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.

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

MMS Patron Members

The Minnesota Microscopy Society would like to express a sincere thanks to our Patron Members. These members provide financial support to the organization above the standard membership fee. This type of added 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.

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Your MMS Annual Membership dues are payable in September/October!

All microscopists are urged to support their Society at one of the membership levels offered below. The more dues-paying members we have, the more likely we are to attract sustaining corporate memberships which form the financial backbone of our Society. 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 _____

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

E-mail address _____

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

Area of interest: Bioscience _____ Materials Science _____ SEM _____ TEM _____ X-ray _____

Basic \$10 _____ Patron ≥ \$25 _____ Corporate Sustaining \$100 _____ Student \$5 _____

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
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Forwarding and Address
Correction Requested

November 20, 2003***Nanoparticles in Frogs***