



# The MMS Scope

## Minnesota Microscopy Society

Local affiliate of the **Microscopy Society of America**  
and the **Microanalysis Society**

January 2021

### In this Issue:

#### 2021 kickoff event:

Imitate nature in the design of innovative new ideas: Plan to participate in a unique online invention jam session Feb. 4 with live microscopy and team brainstorming exercises. The session uses bio-inspired design strategies to imagine new solutions to your current challenges.

#### MinnTS 2021:

Participate in the 18th annual Minnesota Technical Symposium held online March 10, sponsored by Ecolab and featuring two presentations on wearable technologies.

#### Up ahead:

Spring Symposium in May, details to come.

#### MMS dues:

Please remember to submit your annual 2021 membership dues. Students will be free for 2021. Thank you.



### Letter from the President

Dear Minnesota Microscopists,

I hope this newsletter finds you well and healthy! While we are still unable to gather in person, we had our first two virtual society events this fall. In September, **Scott Peterson** told us about his search for micrometeorites in the Twin Cities (and far beyond) in a live webinar. Then, we had our first "Non-Microscopy Microscopy" Trivia Mixer, expertly put together by our president-elect **Gail Celio** with **Patti Sanft** at the "bar." Thanks to everyone who attended.

We hope to continue the success of these events with the upcoming NERD Jam and MinnTS, both in a virtual format. So please keep in touch, mark your calendars, and consider joining us for these and other coming events until we can safely see each other again.

Wishing you and yours a safe, healthy, and prosperous 2021!

*Anette von der Handt*

NEW YEAR KICKOFF!

February 4, 2021  
7:00 p.m.

**N.E.R.D. Jam – an  
online invention  
session with  
Nature!**

The **Nature Experience Radical Design (N.E.R.D.) Jam** is an exciting interactive online session exploring biomimicry to spark product ideas and solutions.



## MMS New Year Kickoff | continued

### N.E.R.D. Jam Session



### RESERVATIONS

There is no fee for the event, but registration is required. The registration deadline is end of day **Tuesday, February 2nd**.

Register in advance for the meeting here:

<https://umn.zoom.us/meeting/register/tJ0pce2sqDsuGdyDq7hCeifoJ7X6tndcy7N->

After registering, you will receive a confirmation email containing information about joining the meeting.

You may also find the registration link on the [MMS events page](#).



### INTRODUCTION

As part of the water series, [Lichen Labs](#) and Origen Group would like to serve you a piece of a Human - Nature connection experience. "From the wild to the invention table," we will share a new way to see Nature's genius in a macro to micro-adventure with live microscopy and radical design. We see Nature as a source of creativity and a model to create a better future. In this session, you will imagine new ideas to solve challenges in your field.



### AGENDA

In this session, we will start with an organism from Nature that has a special relationship with water. We will tell a story about how it was found and collected. Then we will explore and reveal its unique structural adaptations, while you watch, under a stereo light microscope and in the SEM. We will think of this organism as a device made by Nature with various features. We will all note characteristics we see with their possible function. After our macro-to-micro adventure, we will break into four guided teams. Each team will brainstorm ideas for a product they would use in similar conditions in their world based on the design of feature(s) of the "natural device."



### BIOS

**Sue Okerstrom** is Principal Scientist/Owner at Lichen Labs LLC.

Lichen Labs is a microscopy lab and biomimicry research and consulting business R&D and problem-solving in companies and new experiences using biomimicry and microscopy in education.

Prior to Lichen Labs, Sue was a Technical Fellow at Medtronic Inc. performing and failure analysis, microscopy, mechanical and metallurgical testing for over 25 years.

Sue completed an M.S. in biomimicry from Arizona State and a Professional Certificate in Biomimicry from Biomimicry 3.8 Institute in November 2015. She also holds an M.S. in materials science and engineering from the University of Minnesota and a B.S. in environmental studies from Bemidji State University.



## MMS New Year Kickoff | continued

### N.E.R.D. Jam Session



#### BIOS cont'd

**Carolina Fernandez-Jansik** is a regenerative business strategist, biomimic, and sustainable finance expert.

She helps companies and their leaders realign with the way nature works to improve their positive impact and financial performance.

Carolina has more than 15 years of experience working with leaders in sustainable finance and business in Europe, Latin America, and North America. She is the founder of Cascading Sustainability LLC, a regenerative business consultancy. She is Head of the Americas at COBIOM, a sustainable swarm intelligence platform.

Carolina has a master's degree in B.A. from the Erasmus-Rotterdam School of Management and is certified in Biomimicry by Biomimicry 3.8. She has received training in ELEM Health from nRhythm and Regenerative Entrepreneurship from the University for International Cooperation.



**Ana Carolina Freitas** is a product designer, and innovation and biomimicry consultant.

Biomimicry is a science that creates innovative strategies from nature for projects and companies. Ana has a bachelor's degree in product design from the University of Brasilia, a master's degree in biomimicry from the University of Arizona, is professional certified by Biomimicry 3.8, as well as training in Bioempathy and Bio-leadership from the Amani Institute.

Ana is the main consultant for Nous Consultancy in Brasilia and co-founder of the BiomimicryBrazil Network. In addition to consulting, she is also a speaker and mentor in startup programs such as Founder Institute, Nasa, and Startup Weekend Women.

In her studies, she has visited various biomes in the United States, Canada, and Africa, learning how nature can help human beings to create in harmony with the planet.



**Daniela Esponda** is a biomimetic industrial designer with 10 years of experience in product design and development, biophilia, and green businesses.

Daniela is not afraid to imagine the future of nature-inspired design. She has won multiple international awards for her creative and innovative biomimetic solutions, such as The Biomimicry Launchpad; Haechi Award for Olympic Design in Seoul, Korea; Cleantech Challenger Mexico; and installation of a green shelter. She has developed several patents and trademarks.

She has facilitated conferences and workshops on the Science of Biomimicry and is a professor of Biomimetic Sciences at the Faculty of Sciences of the UNAM in Mexico and is the Founder of Nature Design Lab, a firm focused on the development of sustainable innovative technologies. She holds the position of Functional Leadership in the BiomimicryMex network, based in Mexico City.

Daniela has a degree in industrial design from the Universidad Iberoamericana, a master's degree in biomimicry from the University of Arizona and is a certified professional by Biomimicry 3.8.





# 18th Annual MinnTS

(Minnesota Technical Symposium)



[minnts.org](http://minnts.org)

**Wednesday, March 10, 2021**  
**7:00 p.m.**

## WEARABLE TECHNOLOGIES



### Lucy Dunne

Professor, Director of the  
Apparel Design Program,  
University of Minnesota



### Dave Fabry

Chief Innovation Officer,  
Starkey Hearing  
Technologies



## RESERVATIONS

There is no fee for the event, but registration is required. Register in advance for the MinnTS webinar at: [https://umn.zoom.us/webinar/register/WN\\_nza1LHd\\_QkysR\\_q8hyCYYg](https://umn.zoom.us/webinar/register/WN_nza1LHd_QkysR_q8hyCYYg)

After registering, you will receive a confirmation email containing information about joining the webinar. Please visit the MinnTS website for more information: [www.minnts.org](http://www.minnts.org).



## SPEAKERS

**Lucy E. Dunne** is a Professor at the University of Minnesota, where she directs the Apparel Design program and is the founder and co-director of the Wearable Technology Lab. She is a co-author (with Susan Watkins) of "Functional Apparel Design: From Sportswear to Space Suits" (Bloomsbury, 2015), and her academic background includes degrees in Apparel Design (Cornell University, B.S. and M.A.), Electronic Engineering (Tompkins-Cortland Community College, AAS), and Computer Science (University College Dublin, Ph.D.). Her research is focused on pursuing the vision of scalable, wearable garment-integrated technology, and explores new functionality in apparel, human-device interface, production and manufacture, and human factors of wearable products. Dr. Dunne has received the National Science Foundation's CAREER award and the NASA Silver Achievement Medal for her work with functional clothing and wearable technology.



## MinnTS | 18th Annual Meeting

continued



**Dave Fabry**, Ph.D., leads end-to-end innovations within the Starkey clinical audiology department. His collaboration with the engineering and marketing teams allows Starkey Hearing Technologies to continue to design and provide superior products. Dave received his Ph.D. in hearing science from the University of Minnesota. Subsequently, he divided his career between academic/clinical roles at the Mayo Clinic, Walter Reed Army Medical Center, the University of Miami Medical Center, and several industry positions. He served as President and Board Member of the American Academy of Audiology and was recently elected to the Board of Directors of the American Auditory Society. Dave has served as Editor-in-Chief of *Audiology Today* since 2008 and is a past Editor of the American Journal of Audiology and Section Editor of *Ear and Hearing*. He is licensed as an audiologist in Minnesota, Florida, and Rwanda. His nearly 40 years of industry experience and proven ability to implement forward-thinking concepts helps shape future innovations at Starkey Hearing Technologies.



### ABSTRACTS

**Dunne:** *Moving Beyond Smart Wristbands: Future Directions for Wearable Technology and Smart Clothing*

In the years after the mid-2010s peak of consumer wearable devices, some key obstacles and limitations to the scope of utility and usability of wearables have risen to the forefront. A leading limitation is the form factor: localized devices worn in one spot on the body pose inherent limitations to the scope of functionality that can be provided to the user. Yet at the same time, distributing functionality over the body surface is also a significant challenge. This talk will discuss current University of Minnesota research exploring the potential of textile- and garment-form wearable devices to expand the horizons of what can be done using wearable technologies, with a focus on expanding human capabilities and delivering more seamless experience.

**Fabry:** *Reimagining Hearing Aids by Providing a Gateway to Health and Wellness*

During the past decade, hearing aids have evolved from “stand alone” devices that provide audibility for speech and other sounds for those with hearing loss to “connected” ones that facilitate phone/media streaming via smart phone technology. Today, the use of machine learning, artificial intelligence and embedded sensors promise to further continue the hearing aid’s evolution into devices that can provide a gateway to health and wellness, particularly for health conditions where there is high disease comorbidity with hearing loss. This session will address recent advances in technology that challenge assumptions and stigma associated with hearing loss.



## 2021'S CALENDAR of EVENTS

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**04 FEB 2021**

**2021 Kickoff Event / N.E.R.D. Jam**  
 Zoom meeting online – [register here](#)  
 7:00 p.m.



**10 MAR 2021**

**18th Annual MinnTS (Minnesota Technical Symposium)**  
 Zoom meeting online – [register here](#)  
 7:00 p.m.



**MAY 2021**

**MMS Spring Symposium**  
*\*Virtual event\**  
 More information to follow.

**\* Project MICRO**  
*Remains on hold until further notice.*



**Project MICRO**



## PLEASE NOTE

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The Society will be collecting 2021 membership dues but students will be free for 2021.



## FISCAL REVIEW

## MMS Cash Flow Summary 01/01/2020 through 12/31/20

**INCOME****Dues**

Corporate	500.00
Patron	75.00
Regular	50.00
Student	0.00
Sustaining	0.00

<b>Total Dues</b>	<b>625.00</b>
<b>Interest Income</b>	<b>454.60</b>
<b>MinnTS Meeting Registration</b>	<b>0.00</b>
<b>Miscellaneous Income</b>	<b>75.00</b>
<b>Spring Symposium Income</b>	<b>75.00</b>

**TOTAL INCOME** **1,229.60**

**EXPENSES**

<b>Interest</b>	<b>0.00</b>
<b>PayPal Credit Card Fees</b>	<b>23.92</b>
<b>Insurance</b>	<b>328.02</b>

**Meeting Expenses:**

MMS Regular Meeting Expenses	50.00
MinnTS Meeting Expenses	0.00

<b>Total Meeting Expenses</b>	<b>50.00</b>
<b>Miscellaneous</b>	<b>30.91</b>
<b>Newsletter</b>	<b>570.00</b>
<b>Website</b>	<b>165.05</b>
<b>Project Micro</b>	<b>92.32</b>
<b>Spring Symposium Expense</b>	<b>0.00</b>

**TOTAL EXPENSES** **1,260.22**

**OVERALL TOTAL** **-30.62**





## MMS CORPORATE SPONSORS

Corporate Sponsors 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. MMS gratefully acknowledges the corporate sponsorships provided by the following companies. To become a Corporate Sponsor, complete and return the MMS membership form at the end of the newsletter.

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Peter Yurek	<b>Medtronic</b>	763-514-1250

If any sponsors are missing from this list, please contact Jason Heffelfinger (763-514-1021, [jason.r.heffelfinger@medtronic.com](mailto:jason.r.heffelfinger@medtronic.com)).





## MMS SUSTAINING & PATRON MEMBERS

The Minnesota Microscopy Society would like to express sincere thanks to our Sustaining and 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 or Sustaining Member, complete and return the MMS membership form at the end of the newsletter.

### MMS Sustaining Members

Michael Coscio	Medtronic (retired)	Bill Theilacker	Medtronic, Fridley
Jeffrey Salisbury	Mayo Clinic, Rochester	Bede Willenbring	retired, New Hope
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**Treasurer:** David Burlson, Ecolab, 655 Lone Oak Dr., ESC F64, Eagan, MN 55121; (651) 795-5887; [david.burlson@ecolab.com](mailto:david.burlson@ecolab.com)

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**MSA Representative:** Stuart McKernan, retired, St. Paul, MN; [stuart.mckernan@gmail.com](mailto:stuart.mckernan@gmail.com)

**Project MICRO Director:** Jeff Payne, 3M Center, Bldg. 201-BS-03, St. Paul, MN 55144-1000; (651) 733-2352; [jjpayne@mmm.com](mailto:jjpayne@mmm.com)

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**Newsletter Editor:** Maria Graff, Minneapolis, MN; [mariagraff@me.com](mailto:mariagraff@me.com)

## Other Board Members

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Please visit the MMS website @ [mnmicroscopy.org/membership](http://mnmicroscopy.org/membership) and scroll down to the 'Membership Application/Information' section for an online or PDF membership form. If using the PDF form, [email](#) or snail mail the form to the Treasurer at the address below. To pay dues via credit card, please go to [mnmicroscopy.org/membership](http://mnmicroscopy.org/membership) and use the PayPal link at the bottom.

## MINNESOTA MICROSCOPY SOCIETY | MEMBER INFORMATION 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.

Dr  Mr  Mrs  Ms  First Name \_\_\_\_\_ Last Name \_\_\_\_\_

Affiliation \_\_\_\_\_ Phone (\_\_\_\_) \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

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

(Newsletter notifications will be e-mailed to the address above.)

Are you an MSA member?  MAS Member?

Student (\$5-\$9)  Basic (\$10-\$24)  Patron (\$25-\$99)  Corporate/Sustaining ( $\geq$  \$100)

Payment: Check  PayPal

(Please go to [mnmicroscopy.org/membership](http://mnmicroscopy.org/membership) to make your payment via PayPal.)

### Make checks payable to MMS and mail to our Treasurer:

David Burleson, MMS Treasurer  
846 Arlington Ave. W, Saint Paul, MN 55117  
E-mail: [treasurer@mnmicroscopy.org](mailto:treasurer@mnmicroscopy.org)

*We are asking for membership dues for the 2021 calendar year; however, student memberships will be free for 2021.*