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# Instrument and Measurement Science

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## Topical Group of the American Physical Society GIMS Newsletter 46, Fall 2020

*“The whole idea is to get publicity to newer techniques and newer equipment. Lord Kelvin once made the statement that if you can’t measure something you don’t know anything about it.”*

Lawrence Rubin  
GIMS Founder

From GIMS 25<sup>th</sup> Anniversary article, *APS News*, March 2009 by Michael Lucibella



TOPICAL GROUP ON  
Instrument &  
Measurement  
Science

The APS Topical Group for Instrument and Measurement Science (GIMS) was formed in 1984 to encourage precision in measurements, to encourage development of instrument and measurement science, to provide a forum for discussions of these topics, and to provide professional recognition of the importance of instrument and measurement science.

This newsletter was prepared by Publication Committee, with input from the Executive Committee and past officers. The articles in this issue represent the views of the GIMS Publication Committee and are not necessarily those of individual GIMS members or the APS.

Any questions, comments or corrections regarding the newsletter should be directed to the GIMS Secretary-Treasurer.

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## Nuggets

**Congratulations to our membership for a very good turnout in the GIMS 2020 Election!**

**The Executive Committee has appointed 2021 committees for Keithley Award, APS Fellowship, Program, Publication, and Student Award (<https://aps.org/units/gims/governance/committees/index.cfm>).**

**We are happy to announce a new Student Presentation Award which will launch in 2021. More details will be forthcoming.**

**We are excited to announce a new virtual seminar series. These seminars will feature two 30-minute talks on topics of interest to GIMS, delivered by a different pair of speakers each month. Details of our first monthly meeting will be circulated soon.**

**2021 March Meeting sessions have been organized by the Program Committee. Due to cancellation of this year's meeting, 2021 program is mostly based on 2020 sessions. [Deadline for Abstract submission is 23 October 2020.](#)**

**This newsletter showcases a new GIMS logo as a watermark and header!**

minority groups, and scientists from outside the United States are especially encouraged.

## Newsletter Resumes

It is our goal to publish the GIMS Newsletter at least once per year in the fall as a summary of past and upcoming activities. We will be using email for reminders to the membership regarding GIMS elections, nominations to APS fellowship, GIMS student travel grants, nominations for the Keithley Award and other matters.

Any questions, comments or corrections regarding the newsletter should be directed to the GIMS Secretary-Treasurer. We highly encourage our membership to suggest news items or highlights. See bottom of this newsletter for Contact information of GIMS officers.

## Diversity Statement

APS is diverse and global, so officers, committee members, Prize and Award winners as well as Fellows of the APS should reflect that diversity. Nominations of women, members of underrepresented

## GIMS Service to Members

GIMS provides services to its membership that include:

- A path to APS fellowship based on work in instrument and measurement science
- The Keithley Award for instrumentation
- Focus sessions at the March Meeting
- Organization of March Meeting sessions
- Student Travel Grants
- A voice in governance of the APS

These efforts can only be maintained through the efforts of members who volunteer to serve as officers and committee members. We thank all past and present officers and committee members of GIMS. Please consider serving as an officer or a committee member.

Please bring GIMS to the attention of your colleagues and encourage them to join – particularly younger colleagues. We need a constant infusion of young physicists to maintain the organization.

## Awards and Fellowship

### APS Joseph F. Keithley Award

The Keithley Award is presented annually to recognize physicists who have been instrumental in the development of measurement techniques or equipment that have impact on the physics community by providing better measurements.

Details of the award may be found at [www.aps.org/programs/honors/awards/keithley.cfm](http://www.aps.org/programs/honors/awards/keithley.cfm)

Nominations for the award are submitted in the early spring to summer, a year in advance of the presentation of the award at the March Meeting. Due to COVID-19, the deadline for nominations was extended to July 1 this year. We thank all those who have nominated their colleagues for this award.

#### 2021 Keithley Award Committee

Charles Agosta (Chair), *Clark University*

Zahid Hussain, *Lawrence Berkeley National Laboratory*

Chris Jacobsen, *Northwestern University*

Fedor Balakirev, *Los Alamos National Laboratory*

Zahir Islam, *Argonne National Laboratory*

#### GIMS APS Fellow

GIMS can nominate APS members to APS Fellowship. GIMS has a committee for fellowship nominations that selects nominees (must be an APS member) from proposals made by GIMS members. The nomination process is described on this page<sup>1</sup>. Fellowship nominations closed on July 1 this year. If you are considering submitting a nomination for next year, now is the time to begin preparation.

#### 2021 Fellowship Committee

Joseph Stroschio (Chair), *National Institute for Standards and Technology*

Hans Herrmann, *Los Alamos National Laboratory*

Peter Grutter, *McGill University*

James Werner, *Los Alamos National Laboratory*

<sup>1</sup> <http://www.aps.org/programs/honors/fellowships/nominations.cfm>

## 2019 Keithley Award Recipient

### Zahid Hussain

Lawrence Berkeley National Laboratory

*"For the development of soft X-ray instrumentation such as monochromators and spectrometers for synchrotron radiation beamlines, leading to significant measurement improvements of angle resolved photoemission spectroscopy and resonant inelastic soft X-ray scattering."*



## 2019 APS Fellowship Recipient

### Hans W. Hermann

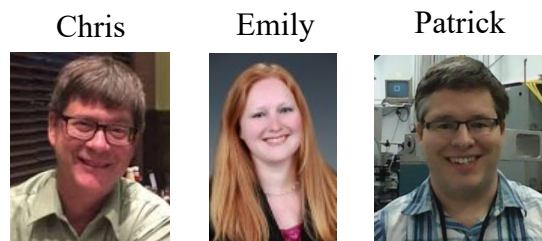
Los Alamos National Laboratory

*"For pioneering the use of Cherenkov radiation techniques for high energy gamma spectroscopy applications at the National Ignition and Omega Laser Facility."*



## GIMS Elections 2020

We would like to congratulate our membership for a successful 2020 election. Historically, it is typical to find 12-15% of members turning out in unit elections. We appreciate GIMS members who have taken the time to vote and hope that more members will participate in the next election.

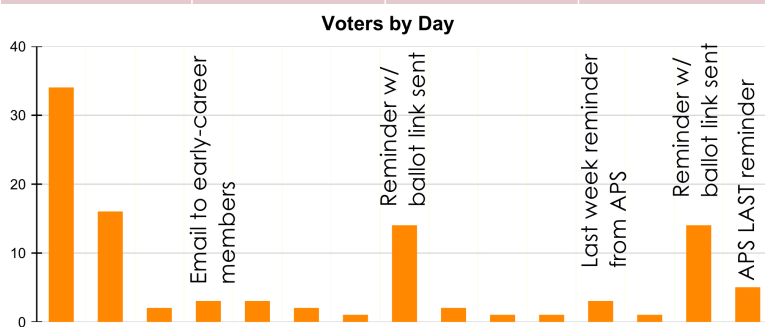


### 2020 Election Results

Name	Role
<b>Chris Jacobsen</b>	Argonne Nat'l Lab./Northwestern U. Vice-Chair
<b>Emily Mace</b>	Pacific Northwestern Nat'l Lab Member-at-Large
<b>Patrick Clancy</b>	McMaster University Member-at-Large

YEAR	GIMS Membership	Total Voters	Voting Percentage
2020	515	102	19.81%
2019	472	76	16.10%
2018	NO ELECTION HELD		
2017	560	82	14.64%
2016	563	75	13.32%

Each year GIMS holds an election to fill vacant offices; for details see GIMS Bylaws webpage<sup>2</sup>. In general, each year we fill slots for two executive committee members at large and one Vice-Chair, which is the entry position for the Vice-chair, Chair-Elect, Chair, Past-Chair sequence. Every 3<sup>rd</sup> year the Secretary-Treasurer position must be filled. Ideally this process should be completed before the APS March Meeting each year so that new officers can take office. We are on our way to putting the GIMS election cycle back in line with the March Meeting, with the next election planned for early 2021.



Anyone interested in helping with GIMS governance as an officer, executive committee member or member of any of the appointed committees (Keithley Award, APS Fellowship, Nomination, Program) should contact the GIMS Secretary-Treasurer. Volunteers are welcome at any time.

<sup>2</sup> <http://www.aps.org/units/gims/governance/bylaws.cfm>

## GIMS Business Meeting

Although the annual business meeting could not be held in Denver, CO due to the cancellation of this year's March Meeting we have continued to send announcements to keep membership aware of activities and deadlines. We appreciate members who have stepped up to volunteer their time and efforts to staff committees for APS Fellowship, Keithley Award, and March Meeting Program.

## March Meeting Sessions (2020, 2019)

Although COVID-19 pandemic forced a cancellation of this year's March Meeting, we would like to thank the organizers of planned sessions for GIMS. A set of 4 FOCUS and 2 INVITED sessions were among 11 sessions in total. A one-sentence key highlight (extracted using Artificial Intelligence) for each of the over 100 hundred abstracts can be found at the following site:

<https://www.paperdigest.org/2020/03/highlights-of-instrument-and-measurement-science-gims-talks-aps-2020-march-meeting/>

Session A10 **FOCUS** – Advances in Scanned Probe Microscopy 1: Novel Approaches and Ultrasensitive Detection

Invited Speaker: Christopher Lutz

Session B10 **FOCUS** – Advances in Scanned Probe Microscopy 2: High Frequencies and Optical Techniques

Invited Speaker: Lukas Eng

Session D10 – Scattering and Diffraction

Session F10 **FOCUS-** – Advances in Scanned Probe Microscopy 3: Scanning Probes Spectroscopic Techniques

Invited Speaker: Neus Domingo

Session G10 – Detectors, Sensors, and Transducers

Session G28 **INVITED INDUSTRY** – Infrared Sensing and Imaging

Invited Speakers: Jose Menendez, Sarath Gunapala, Arnold Kiefer, Brandon Collings, Gary W Wicks

Session J10 **FOCUS-** – Advances in Scanned Probe Microscopy 4: Machine Learning for Correlative and Analytical Measurements in Scanning Probe Microscopy

Invited Speaker: Petro Maksymovych

Session J27 – Experimental optical spectroscopic measurements of 2D materials



Session L10 – Fundamental Measurement Science

Session L37 **INVITED** – Nanoscale Characterization of Correlated and Entangled Quantum Phenomena

Invited Speakers: Markus B. Raschke, An-Ping Li, Shashank Misra, Patrick Blackstone, Benjamin J Lawrie

Session M27 – Optical Spectroscopic Measurements of 2D Materials

Session Q10 – GIMS Business Meeting

For reference we also include the webpage link for talks in 2019 March meeting.

<https://www.paperdigest.org/2019/03/highlights-of-instrument-and-measurement-science-gims-talks-aps-2019-march-meeting/>

These lists provide a testimony to the diverse nature of interests of GIMS membership.

## March 2021 Program Committee

We have formed a Program committee for the March 2021 meeting. In general, if any GIMS member would like to propose a focus session for a March meeting, they should contact either the Chair-Elect, or the Secretary-Treasurer. However, due to cancellation of 2020 March meeting 2021 program will be substantially the same with some modifications as determined by this committee.

Jonathan C. Lang, Chair  
Argonne National Laboratory

Joseph Hagmann  
National Institute for Standards and  
Technology

Angela di Fulvio  
University of Illinois Urbana-Champaign

Elias Garratt  
Michigan State University

Michael Armstrong  
Lawrence Livermore Berkeley Laboratory

Catherine Pappas  
Delft University of Technology

Laurel Winter Stritzinger  
Los Alamos National Laboratory

Alex Frano-Pereira  
University of California San Diego

Jobayer Hossain  
University of Central Florida

Stephen Jesse  
Oak Ridge National Laboratory

Roger Procksh  
Oxford Instruments



## Student Travel Grants

GIMS is able to provide a limited number of travel grants for students who are attending the March Meeting to present a paper in one of the GIMS sponsored sessions. The process for awarding a grant is currently as follows:

- 1) The applicant must be an active student at an accredited degree granting institution.
- 2) The applicant must be the first author of a paper in a GIMS sponsored session at the March meeting – focus or regular session.
- 3) Applicants must be GIMS members.
- 4) Awards are capped at \$500; this covers travel, accommodation and food. Awards do not cover registration fees.
- 5) The applicant may apply for the grant by sending a package consisting of the following items to the GIMS Secretary-Treasurer via email:
  - a) An application letter that provides the (a) paper name, (b) abstract, (c) log number for the online submission, (d) sorting category, (e) a description of the applicant's role(s) in the paper, (f) full contact information for the student (Name, Institution, Address, phone, email) and (g) an itemized estimate of the expenses the applicant plans to submit if awarded a grant.
  - b) A copy of the applicant's CV; this should include other publications.
  - c) A letter of recommendation from the applicant's faculty advisor -- this may be sent separately.
  - d) A copy of the paper being presented. This may be only the abstract if that is all that is ready. However, a full paper provides better information upon which to base an award decision than an abstract alone.
- 6) Deadline for application is two weeks after the sorting session for the March Meeting which is normally held in early December.
- 7) Evaluation of the applications will take place by email, by the GIMS executive committee.
- 8) The selection of awardees will be based on the quality of the paper and the applicant's CV and recommendation. Incomplete applications will not be considered.
- 9) The selection(s) will be announced six weeks after the paper assignments to sessions have been made available to the GIMS Secretary-Treasurer.
- 10) Awardees send receipts and a completed APS travel and expense report form to GIMS Secretary- Treasurer after the meeting – form is available at [www.aps.org/about/governance/committees/travel.cfm](http://www.aps.org/about/governance/committees/travel.cfm)
- 11) Secretary-Treasurer submits expenses to APS and requests that the expense check be sent directly to the awardee. The awardee should allow at least 6 weeks after the receipt of the expense form by the Secretary-Treasurer for receipt of the check.

## GIMS Governance & Contact Information

The most up-to-date information for GIMS officers may be found at [www.aps.org/units/gims/governance/officers](http://www.aps.org/units/gims/governance/officers)

**Chair:** Stephen Jesse  
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University of Tennessee  
[sjesse@ornl.gov](mailto:sjesse@ornl.gov)

**Chair-Elect:** Joseph Hagmann  
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**Vice Chair:** Chris Jacobsen  
(03/20 - 02/21)  
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**Past Chair:** Roger Proksch  
(03/20 - 02/21)  
Oxford Instruments

[thephaseisalwayson@gmail.com](mailto:thephaseisalwayson@gmail.com)

**Secretary/Treasurer:** Zahir Islam  
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**Member-at-Large:** Patrick Clancy  
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**Assigned Council Representative**  
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James M. Adams (01/20 - 12/23)  
National Institute of Standards and Technology  
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## GIMS Statistics (2020)

### GIMS Membership

APS Membership: 54,069

GIMS Membership: 535 (1.0% of APS membership).  
This has changed little over the years (*e.g.* it was 530 in 2002)

GIMS Student Members: 185 (~35% of GIMS membership)

GIMS Early Career Members: 24 (~ 4.5% of GIMS membership)

GIMS Female Members: 70 (~ 13.1% of GIMS membership)

### GIMS Treasury

Current Balance: \$85,779

Past year (2019) expenses: \$2,457

## Acknowledgments

We would like to thank James Matey for providing newsletter templates. We are grateful for constant support and guidance from APS staff Holly Croft, Sarah Monk, and Jacob Robertson. We also thank APS Graphics Design Manager Leanne Poteet for GIMS new logo.

This Newsletter was prepared by GIMS Publication Committee comprising Emily Mace, Patrick Clancy, Rachael Floyd, and Zahir Islam.