IEEE Advancing Technology for Humanity

Philadelphia Section Almanack

Vol. 63, No. 04 April 2018

Almanack

IEEE Philadelphia Section Website

Membership in the Following Counties

Pennsylvania: Bucks, Chester, Delaware, Montgomery and Philadelphia.

New Jersey: Burlington, Camden and Gloucester

(Entries are Hyperlinked – point+ctrl+click)

April 2018

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
		*ADCOM	*Temple U. & AESS Present	*WIE Penn State - Joanne Vitali		* 2018 Awards Banquet & Gala
15	16	17	18	19	20	21
		* IEEE Section Night	*2018 Benjamin Franklin Medal			
22	23	24	25	26	27	28
29	30					

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Vol. 63, No. 04 **April 2018**

INSIDE THE ALMANACK

(Entries are Hyperlinked point+ctrl+click)

ALMANACK

Published Monthly Nine Times per Year, January to May a Summer issue and September to December.

Publisher: Peter.silverberg@ieee.org
Editor: Michael.mayor.pe@ieee.org
Section Office: sec.philadelphia@ieee.org

IEEE Section Night

Meetings are conducted on the 3rd Tuesday of the Month, eight times per year, January through May and September through November.

ADMIN. COMMITTEE (ADCOM)

Meetings are conducted on the 2nd Tuesday of the Month: January through June and September through December. Members are welcome to attend the meeting only. Reserve a seat by calling Friday before the meeting. **Phone: 484-270-5136.**

IEEE SECTION NIGHT

Philadelphia Section Meeting
Tuesday, April 17, 2018

Sponsored by the Electronics Packaging / Electronics Design (EP/ED) Society Chapters

Note: In the event of bad weather please call the Sheraton after 1:00 PM the day of the meeting:

215-387-8000

Ask the front desk if the meeting has been canceled.

When:

Tuesday, April 17, 2018
Dinner at 6:00 PM,
Speaker at 7:00 PM.

Where:

Sheraton University City,
3549 Chestnut St,
Philadelphia, PA 19104
(215) 387-8000

- *Meal Cost: $25 (students $15). The meal cost is $40 but it is subsidized by the IEEE Philadelphia Section.*
- *You can attend the talks only for free (with no dinner), however, we ask that you register.*
- *Parking is paid by the IEEE Philadelphia Section, make sure you have your parking ticket stamped at the meeting.*

Registration Link

Or call (484) 270-5136 or email the section office: sec.philadelphia@ieee.org

PROFESSIONAL DEVELOPMENT HOURS (PDH)

PDH Certificates are free for IEEE members. For non-members, the cost is $9 per certificate. You can pay during registration or by check at the meeting.

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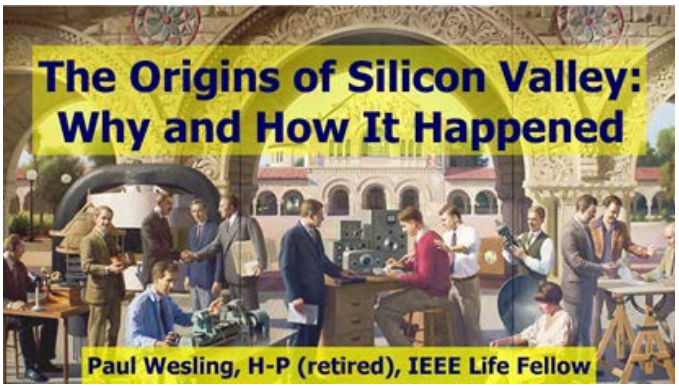
Speaker

Paul Wesling, IEEE Fellow & Distinguished Lecturer Speaker

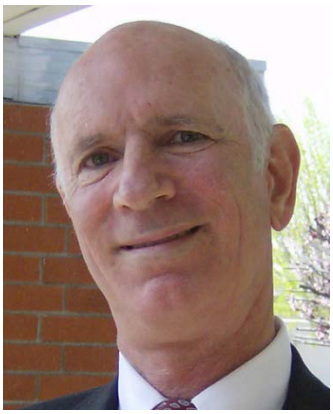
The Origins of Silicon Valley: Why and How It Happened



Abstract: Why did *Silicon Valley* come into being? The story goes back to local Hams (amateur radio operators) trying to break RCA's tube patents, the sinking of the Titanic, Fred Terman and Stanford University, local invention of high-power tubes (gammatron, klystron), WW II and radar, William Shockley's mother living in Palo Alto, and the SF Bay Area infrastructure that developed -- these factors pretty much determined that the semiconductor and IC industries would be located in the Santa Clara Valley, and that the Valley would remain the world's innovation center as new technologies emerged -- computers, software, mobile, biotech, Big Data, and now autonomous vehicles -- and it would become the model for innovation worldwide.

Paul Wesling, an IEEE Electronics Packaging Society Distinguished Lecturer, will give an exciting and colorful history of device technology development and innovation that began in San Francisco and Palo Alto, moved down the Peninsula, and ended up in the Santa Clara Valley during and following World War II. You'll meet some of the colorful characters – Leonard Fuller, Lee DeForest, Bill Eitel, Charles Litton, Fred Terman, David Packard, Bill Hewlett and others -- who came to define the worldwide electronics industries through their inventions and process development. You'll understand some of the novel management approaches that have become the hallmarks of tech startups, and the kinds of engineers/developers who thrive in this work environment. He'll end by telling us about some current local organizations that keep alive the spirit of the Hams, the Homebrew Computer Club, and the other entrepreneurial groups where geeks gather to invent the future.

Biography: Paul Wesling received his BS in electrical engineering and his MS in materials science from Stanford University. Following assignments at GTE / Lenkurt Electric, ISS /Sperry-Univac, Datapoint Peripheral Products (VP - Product Integrity), and



Amdahl (mainframe testing), he joined Tandem Computers in Cupertino (now part of Hewlett Packard) in 1985. He designed several multi-chip module prototypes, managed Tandem's Distinguished Lectures series, and organized a number of advanced technology courses for his Division and also for the IEEE. He managed a grant from the National Science Foundation for the development of multimedia educational modules. Paul retired from HP in 2001, and then served for 10 years as the Communications Director for the IEEE's S.F. Bay Area Council.

As vice president of publications from 1985 through 2008, he supervised four archival journals and a newsletter for IEEE's Electronics Packaging (previously the CPMT) Society. He is a Fellow of the IEEE, and received the IEEE Centennial Medal, the Board's Distinguished Service award, the Society Contribution Award, and the IEEE's Third Millennium Medal. He has organized over 300 courses for the local IEEE chapter in the Santa Clara Valley (Silicon Valley), many of them held at Stanford University (and, more recently, at Silicon Valley company facilities). An Eagle Scout, he served as scoutmaster of his local Boy Scout Troop for 15 years, was Advisor of a High-Adventure Crew, and enjoys backpacking, fly fishing, guitar and amateur radio (call sign: KM6LH).

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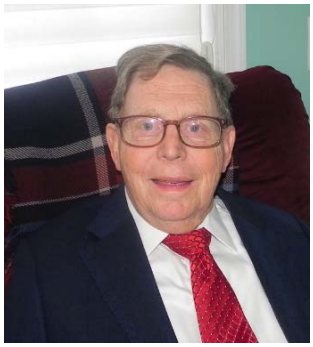
MESSAGE FROM THE CHAIR

Peter Silverberg, IEEE-LSM, P.E.

Into every life a little snow may fall (at least in our area). Unfortunately for Emilio Salgueiro and Peter Marchese it fell twice. They were scheduled for IEEE Night in January and postponed for snow reasons until March. Bad snow postponed them again. Watch our website for a third attempt.



We think that the snow will stop in April, and so big events are coming. The Section Awards Banquet is one no one should miss. It is scheduled for April 14 at the Union League of Philadelphia, which is located at 140 South Broad Street, Philadelphia, PA. 19102. The time plan is this: Cocktail Reception with cash bar 5:45 PM | Dinner 7:00 PM | Presentation of Awards 8:00 PM. It is NOT Formal—just Business Attire. Come and honor local technical excellences, and a regional award that was given to Tom Fagan, and a IEEE-USA Award too. Our guest speaker is Michael Quinn, President and CEO of the Museum of the American Revolution. Contact the office or go to the website to get your reserved seat before it sells out.

There's more: Paul Wesling (IEEE Life Fellow) is coming to speak on April 17. He is author of a book "The Origins of Silicon Valley: Why and How It Happened." That is something we all would like to know. A busload of students is going to Pittsburgh April 6-8 for the Region 2 Student Activities Conference with Dr. Barney Adler. WIE will hold a seminar April 12 featuring Joanne Vitali. The Delaware Valley Science Fair is April 4. The section provides judges for special awards. Read the Almanack for more details.

I have to end with a little lecture on email etiquette. Some emails go to a group looking for answers. The question may be as low level as the choice of a sandwich for a meeting. Often the reply is best directed to the originator. Mail programs are designed with the REPLY ALL key next to the REPLY key. Please look for a minute to hit the right one. All our mailboxes fill fast, and you can be polite by not filling everyone's with useless information

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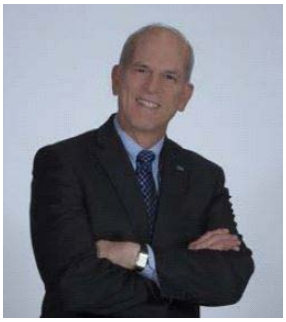
The Philadelphia Section of the IEEE Cordially Invites You to the Annual Awards Banquet & Gala Saturday, April 14, 2018

Reception 5:45 P.M. | Dinner 6:45 P.M.

Awards Banquet, Exhibits, Full-Course Dinner at the prestigious Union League of Philadelphia

We will recognize those who have been honored by the section for their contributions to the industry while spending an enjoyable evening with your spouse or significant other networking with friends and colleagues!

Featured Speaker
Michael C. Quinn
President & CEO, Museum of the American Revolution



Michael Quinn joined the Museum of the American Revolution as President and CEO in April 2012.Since then, he has raised more than $150 million from donors across the nation, managed the construction of a new 120,000 square-foot museum facility on budget and on schedule, and opened the Museum on April 19, 2017 to national media attention. Since opening, the Museum has drawn tens of thousands of visitors and accolades for its innovative, engaging presentation of the Revolution.

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TEN REASONS FOR ATTENDING THE 2018 IEEE Philadelphia Section Awards Banquet & Gala

1. **This is one** of the best ways to celebrate your engineering profession and to increase your contact and friendship with your peers in the Delaware Valley.
2. **The Philadelphia Section is one** of the largest and most influential sections in the IEEE. Become a part of its activities.
3. **For management,** this is an ideal way to reward your engineers and managers and increase your social contact with them and their families in a most pleasant atmosphere.
4. **The Union League** is one of the most prestigious locations for professional banquets in the Philadelphia area.
5. **You will be present** and participate when we recognize and reward our outstanding members (your peers) in a short ceremony.
6. **The Philadelphia Section** partly subsidizes the banquet.
7. **You will hear** an interesting and provocative keynote address.
8. **Organization and corporate sponsorship** will be recognized at the Banquet, in the Award Brochure, and in the Philadelphia Section Newsletter (the Almanack), which goes to 4,000 professionals and decision makers.
9. **The evening will conclude with a gala** that you can enjoy with your friends at your leisure.
10. **All in all,** this is quite an opportunity.

Don't miss it. Be sure to reserve early! Call the IEEE Office at 484.270.5136. The reservation form is on the preceding page. Sponsorship forms are on the web site. The opportunity to sponsor closed March.

CLICK HERE TO REGISTER!

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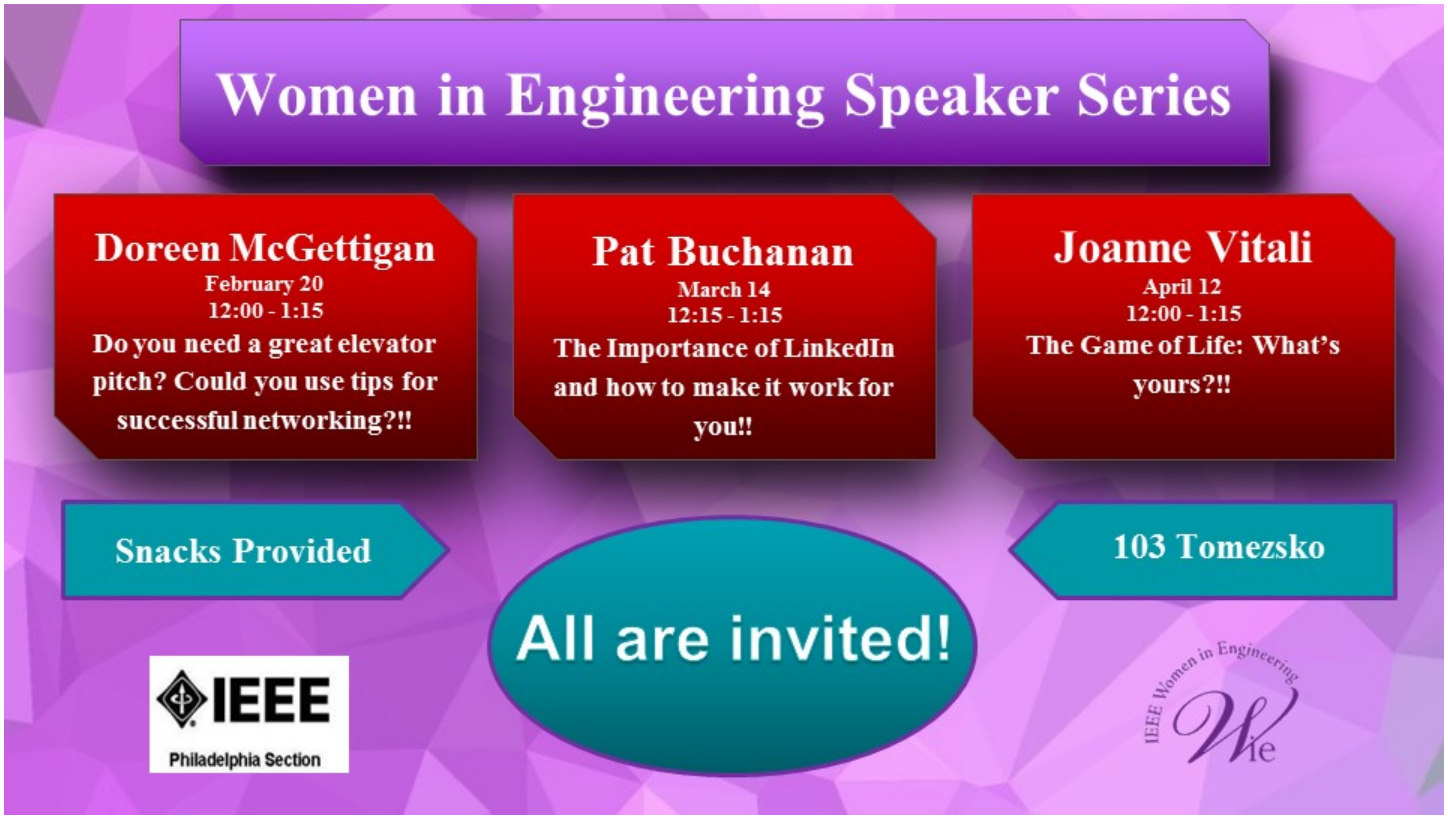
IEEE WIE MEETING 2018

IEEE Women in Engineering Affinity Group of Philadelphia



Read Further

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Joanne Vitali Presents The Game of Life

When: Thursday, April 12, 2018, ***12:00 PM to 01:15 PM***
Where: Penn State University, Brandywine, Tomezsko Building, Room 103

What would be possible for you if you 'played' rather than 'worked on' your life? We've been trained to be workers who focus on checking tasks off of a to-do list. Not a very inspiring way to live and also quite limiting. On the other hand, we naturally know how to play, experiment, and have fun. As a coach, my purpose is to help you win your life games. What's your big game?

In this session we will:

- Discuss how a shift in thinking from the Industrial Age (work) vs. Inspired Age (play) mindset could open up your life
- Name your game
- Clarify your "BIG Why"
- Begin to define the Object of your game including tangible outcomes, skills to master, who you will become AND the upgrades that need to be made to your environment (often overlooked)
- Finally, we will consider the key question: ***What does winning look like?***

Join me! Game on!

Register by emailing Kate McDevitt at:

KMTR1011@yahoo.com

Or text me at: 609-410-6245

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WIE Previous Meetings

Doreen McGettigan - Elevator Speeches – February 20

Pat Buchanan - LinkedIn – March 14

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IEEE PHILADELPHIA CHAPTER OF AEROSPACE AND ELECTRONIC SYSTEMS SOCIETY
IN COLLABORATION WITH
TEMPLE UNIVERSITY'S ELECTRICAL AND COMPUTER ENGINEERING DEPARTMENT
PRESENTS

MACHINE LEARNING IN AUTONOMOUS SYSTEMS: THEORY AND PRACTICE

BY

PROF. DANIEL LEE, UNIVERSITY OF PENNSYLVANIA

Date and Time: Wednesday, April 11, 2018, 12 Noon to 1 PM

Venue: Room 301, 3rd floor, Engineering Building, Temple University, 1947 N 12th St., Philadelphia, PA 1922

Abstract: Current Artificial Intelligence systems for perception and action incorporate a number of techniques: optimal observer models, Bayesian filtering, probabilistic mapping, trajectory planning, dynamic navigation and feedback control. In order to model data variability due to pose, illumination, and background changes, low- dimensional manifold representations have long been used in machine learning. But how well can such manifolds be processed by neural networks? I will briefly describe and demonstrate some of these methods for autonomous driving and for legged and flying robots, and contrast these models with neural representations and computation.

Biography: Dr. Daniel Lee is the UPS Foundation Chair Professor in the School of Engineering and Applied Science at the University of Pennsylvania. He received his B.A. summa cum laude from Harvard University and his Ph.D. in Condensed Matter Physics from the Massachusetts Institute of Technology. Before coming to Penn, he was a researcher at AT&T and Lucent Bell Laboratories in the Theoretical Physics and Biological Computation departments. He is a Fellow of the IEEE and AAAI and has received the National Science Foundation CAREER award and the University of Pennsylvania Lindback award for distinguished teaching. He was also a fellow of the Hebrew University Institute of Advanced Studies in Jerusalem, an affiliate of the Korea Advanced Institute of Science and Technology and has organized the US-Japan National Academy of Engineering Frontiers of Engineering symposium and the Neural Information Processing Systems (NIPS) conference. As director of the GRASP Laboratory and founding director of the CMU-Penn University Transportation Center, his group focuses on understanding general computational principles in biological systems, and on applying that knowledge to build autonomous systems

Registration is free: Registration Link

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PHILADELPHIA SECTION PLANNING CALENDAR

Current Month: April

Date	Activity
April	
April 04	Science Fair Judging (Oaks)
April 6-8	SAC Conference at University of Pittsburgh
April 10	ADCOM
April 12	WIE – Joanne Vitali
April 14	MATE Regional ROV competition
April 14	Awards Banquet
April 17	IEEE Section Night
April 18	2018 Benjamin Franklin Medal in Electrical Engineering
April 22-25	VLSI Test Symposium (San Francisco)
May	
May xx	WIE Leadership Conference in San Jose
May 1	New members get 8 months for the price of 6
May 1	Closing date for nominations for IEEE Educ. Activities Board Awards
May 8	ADCOM
May 15	IEEE Night
May 15	Apply for Outstanding Section
May 15	Applications due for scholarships
May 21-22	WIE ILC in San Jose
May 31	Nominating Committee presents slate for 2019
June	
June xx	Microwave Emporium (WIE)
June 10-15	International Microwave Symposium
June 12	ADCOM
June 15	ARFTG Microwave Measurements Conference
June 15	Application for Project Funds from IEEE Foundation
June 30	Send Sponsorship Donation to Future City
July	
July 15	Application for project funds from IEEE Foundation
July 30	Send sponsorship donation to Future City
July 30	Application due for PES Scholarships
August	
August 6-8	IEEE International Symposium on Safety, Security and Rescue Robotics

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PHILADELPHIA SECTION PLANNING CALENDAR

Current Month: April

Date	Activity
September	
September 11	ADCOM
September 18	IEEE Night (Conflict with Yom Kippur)
September 22	Maker Faire (NYC)
September 18?	Sarnoff Symposium
October	
Oct 3?	IEEE Day
October 9	ADCOM
October 10	Volunteer sign-up mentors for Future City
October 15	Voting closes for section officers
October 15	New members get 15 months by joining in October
October 15	Nominations due for Engineer of the Year (DVEW)
October xx	RISE
October 16	IEEE Night
October 26-27	Electric Expo
Oct. 26 to Nov. 4	ITC Meeting (Phoenix)
October 30	Voting closes for Engineer of the year
November	
November 2	Chairman starts to assemble ADCOM for next year
November xx	WIE Forum in White Plains
November 13	ADCOM
November 20	IEEE Night
December	
December 1	Application due for Region 2 Awards nominations
December 1	Signal Processing in Medicine and Biology Conference at Temple. Dr. Joseph Picone, Chair. Co-Sponsored Philadelphia Section and SPS Chapter.
December 11	ADCOM
December 11	Send sponsorship donation to Del. Valley Eng. Week
December 31	Last Day to pay 2019 dues

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PHILADELPHIA SECTION

NOTES

IEEE PHILADELPHIA SECTION OFFICERS

Chair: Peter M. Silverberg, P.E.: psilverberg3@comcast.net
Vice Chair: Mark Soffa: msoffa@kns.com
Treasurer: Robert Johnston: rlj1620@gmail.com
Secretary: Chris Vaile: cvaile@burns-group.com
Past Chair: Philip Gonski, P.E.: philip.m.gonski@ieee.org

ADMINISTRATIVE COMMITTEE (ADCOM)

ADCOM meets the second Tuesday of the month at the Sheraton University City, 3549 Chestnut St, Philadelphia, PA 19104. Members are welcome to attend. If you want to attend, reserve a seat by calling the IEEE Section Office by the Friday before the meeting.

DIECTORIES

Link to ADCOM Members **Link to SECTION Chapters**

ALMANACK STAFF

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sec.philadelphia@ieee.org

ADVERTISEMENTS – Contact: michael.mayor.pe@ieee.org.

The IEEE Philadelphia Section encourages placement of technical, professional, promotional and commercial advertisements. The Almanack is published ten times a year and is read by approximately 4,000 members in over 150 key industries.

The following rates are designed for the occasional advertisers. A more comprehensive set of benefits is offered in the Sponsorship Program (next page).

Almanack, Website, Email Blasts

One Month Full Page: $200.-
Three Months Full Page: $400.-

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PHILADELPHIA SECTION

SPONSORSHIP PROGRAM

Contact: sec.philadelphia@ieee.org

	Platinum	Gold	Silver	Bronze
Cost per Year	**$3,500**	**$2,500**	**$2,000**	**$1,000**
Awards Banquet[1]	• Full Table- 10 tickets • Full page Awards Brochure • 6-ft Exhibit Table	• 6 tickets • Half page Awards Brochure • 6-ft Exhibit Table	• 4 tickets • Quarter page Awards Brochure • 6-ft Exhibit Table	• 2 tickets • Quarter page Awards Brochure
IEEE Almanack[2]	12 Months Full Page	9 Months Full Page	6 Months Full Page	3 Months Full Page
IEEE Website[2]	12 Months Full Page	9 Months Full Page	6 Months Full Page	3 Months Full Page
IEEE Email Blast[2]	12 Months 4 Times / month Full Page	9 Months 4 Times / month Full Page	6 Months 2 Times / month Full Page	3 Months 1 Time / month Full Page

NOTES

[1] **The Awards Banquet is held annually at the prestigious Union League of Philadelphia.** The Awards Banquet is a major social occasion, recognizing those honored by the Institute & the Section for their contributions & those honored by organizations with mutual interests of IEEE.

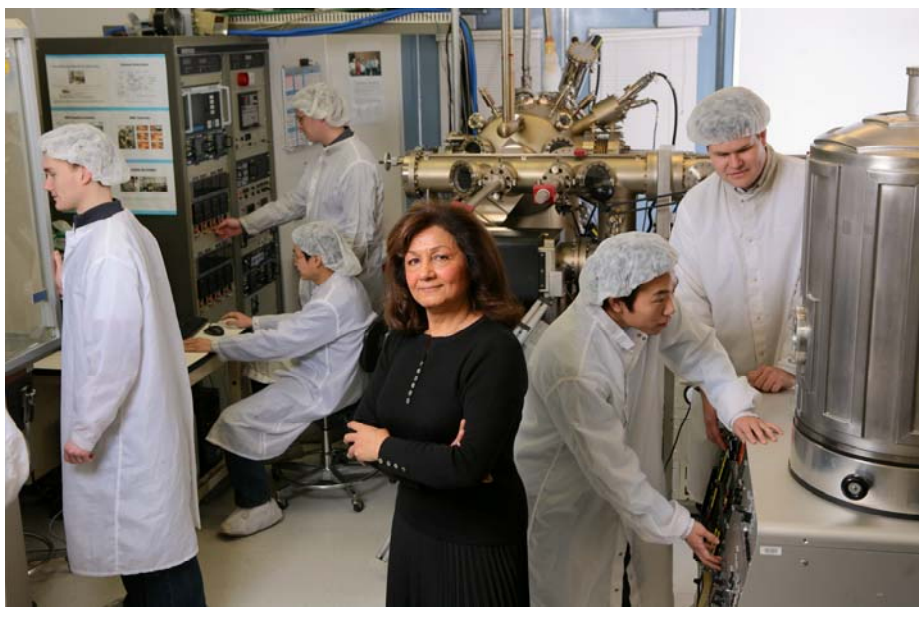
[2] **Advertisement(s) are prepared by the Sponsor and can contain links to the Sponsor's website and/or specific events.** Advertisement(s) can be different one for each month of benefit or the same for one or more months.

THE FRANKLIN INSTITUTE *Awards*

High-Power Room-Temperature THz Frequency Sources

Honoring Manijeh Razeghi,
Recipient of the 2018 Benjamin Franklin Medal in Electrical Engineering

Leading international scholars are assembled in a symposium dedicated to the technical contributions of Prof. Razeghi, founding Director of Center for Quantum Devices of Northwestern University, for her innovative design of *high-power, room-temperature THz sources using nonlinear optics, and for developing the epitaxial manufacturing techniques to produce them*. Spectroscopy operates on the principle of using electromagnetic spectrum for characterization of materials for the study of various natural phenomena, and relies on availability of tunable high-power frequency sources and sensitive detectors. The THz frequency region has been quite an elusive portion of the electromagnetic spectrum, even though molecular vibration frequencies of most materials - with their distinct spectroscopic signatures – fall into this domain. The development of THz frequency sources has been of great interest for quite some time due to their scientific and engineering applications in sensing, imaging, and telecommunications with significant societal implications.

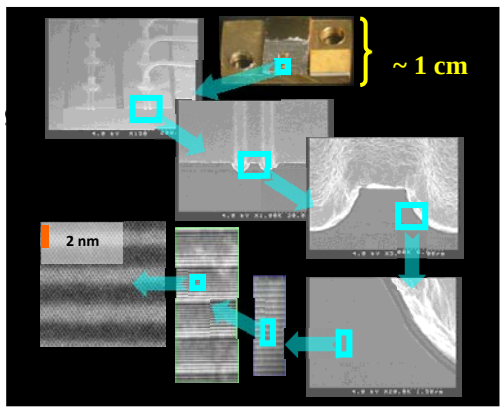


The frontier of the trillion-cycles per second is the terahertz (THz) realm, which bridges the electromagnetic spectrum between the highest radio waves (microwaves) and the lowest frequencies of light (infrared). It is an area that has long been a sort of technological No Man's Land, since THz waves are difficult to generate and tend to be weakened by most materials. But Manijeh Razeghi is one electrical engineer who has ignored these limitations, seeking to overcome them instead.

Quantum Cascade Laser (QCL), a semiconductor laser first invented in the 1990s, operates in the infrared to terahertz range and mostly functions at super-cold temperatures with low output power, unsuited for practical applications. Razeghi built upon her previous achievements in semiconductor development, particularly the use of indium phosphide materials, to improve upon existing THz source designs, achieving the first wide-range high-power, room-temperature QCLs and transforming the device from a technological novelty to a practical, commercially viable product. Using Razeghi's QCL designs, the promise of terahertz technology could be fully realized at last.

IEEE Philadelphia Section

TEMPLE UNIVERSITY College of Engineering



WEDNESDAY APRIL 18TH, 2018

8:30 AM to 12:30 PM
Mitchell Auditorium
Bossone Research Center
3140 Market Street, Drexel University
Philadelphia, PA 19104

Program:

9:00 - 9:15 **Welcoming Remarks**
President John Fry, Drexel University

9:15 -9:30 **Introduction to THz Frequency Sources**
Afshin S. Daryoush, Drexel University

9:30 - 9:45 **Letters from Distinguished Guests and Laureates**
Martin Defour, Thales - Defense Missions System

9:45 - 10:15 **Building Blocks and Concepts for THz Remote Sensing and Communications**
Daniel Dolfi, Thales Research and Technology (TRT)-France

10:15 - 10:30 **Coffee Break**

10:30 - 11:00 **Progress on the High Power Semiconductor Lasers at CIOMP**
Cunzhu Tong, Changchun Institute of Optics, Fine Mechanics and Physics (CIOMP)

11:00 - 11:30 **$Al_xGa_{1-x}N$/GaN Engineered Intersubband Devices**
Can Bayram, University of Illinois Urbana-Champaign

11:30 - 12:00 **Nanovation: Genesis of Material Scientists and Entrepreneurs By Manijeh Razeghi**
Ferechteh H. Teherani, Nanovation Company

12:00 - 12:30 **2018 Franklin Medalist: Laureate Lecture**
Manijeh Razeghi, Northwestern University

Registration: ***Free and open to the public***
Information & Registration

Contact: ***Prof. Afshin S Daryoush***
daryoush@COE.Drexel.edu (215)895-2362

THE FRANKLIN INSTITUTE *proudly presents* THE FRANKLIN INSTITUTE AWARDS

For nearly two centuries, The Franklin Institute has honored pioneering achievements in science, engineering, and industry. The Franklin Institute Awards dates back to 1824 and is considered one of the most prestigious awards in science and engineering. This honor has been bestowed to likes of Nikola Tesla, Thomas Edison, Lord Rayleigh (John William Strutt), Max Planck, William H. Bragg, Albert Einstein, Sir Chandrasekhara Venkata Raman, Sergei A. Schelkunoff, John Bardeen, Ali Javan, Theodore H. Maiman, Arthur L. Schawlow, Zhores I. Alferov, Paul Baran, and Lotfi A. Zadeh. Notably, Drexel University has recently celebrated Nick Holonyak (2017 Franklin Medal), Kenichi Iga (Bower Award 2013), and Drexel University's own Paul Baran (Bower Award in 2001) to name just a few.

It's taking off! Can you handle 5G?
Register for the 5G Summit at IMS2018

The 5G Summit on Tuesday, 12 June 2018 at the Pennsylvania Convention Center in Philadelphia is an IEEE event that is organized by two of IEEE's largest societies – MTT-S and ComSoc. This special collaboration, for the second year running, complements MTT-S' "hardware and systems" focus with ComSoc's "networking and services" focus. The one-day Summit features talks from experts from industry, academia, and government on various aspects of 5G services and applications. It's further complemented by the 5G Pavilion at the IMS2018 exhibition where table top demonstrations and "fire-side" chats are presented at the 5G theater.

5G Summit Speakers:

"Bringing the World Closer Together"
Jin Bains
Head of Connectivity, SCL, Facebook

"AT&T Perspectives on 5G Services"
David Lu
Vice President, AT&T

Other featured presentations from Huawei, GM, Keysight, NI, Global Foundries, MACOM as well as academia will include following topics:

- Spectrum/Regulatory
- Infrastructure/Trials, Applications
- Technologies, Circuits, Systems
- Design, Test & Measurement Challenges
- Test-bed Services for 5G

Lunchtime Panel session on, "mmWave Radios in Smartphones: What they will look like in 2, 5, and 10 years"

Industry Co-Sponsors: KEYSIGHT TECHNOLOGIES, NATIONAL INSTRUMENTS

Media Sponsor: microwave Journal

For more information visit: https://ims2018.org/5g-summit

PENNSYLVANIA CONVENTION CENTER • PHILADELPHIA, PENNSYLVANIA, USA
Exhibition Dates: 12–14 June 2018 • Symposium Dates: 10–15 June 2018

IEEE

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