

## GENERAL INFORMATION

The 70th Gaseous Electronics Conference is 6-10 November 2017 in Pittsburgh, PA, hosted by West Virginia University, with Monday workshops and Tue-Fri scientific program. By car, the conference venue is 20 min from PIT airport, 15 min from city center, and 1 hr from WVU. Pittsburgh's multiple universities and established cultural institutions lie on the Allegheny Plateau, where Ohio, Allegheny, and Monongahela Rivers join, surrounded by wooded hills of the Appalachian Mountains.

GEC is a special meeting of the Atomic, Molecular and Optical Physics Division of the American Physical Society. GEC promotes the invaluable exchange of scientific information, viewpoints, and approaches (experimental, theoretical, modeling, and numerical simulation) regarding physical and chemical processes and dynamics taking place in partially ionized, collisional plasma and between the atoms, molecules, charged particles, photons, waves, and fields. In recent years, the GEC has also been a leading venue for reporting on emergent areas of plasma-biotechnology, plasma medicine, plasma-metal catalysis, & atmospheric-pressure plasma systems.

## TOPICS

### 1. Atomic and molecular processes

- 1.1 Electron and photon collisions with atoms and molecules: excitation
- 1.2 Electron and photon collisions with atoms and molecules: ionization
- 1.3 Heavy particle collisions
- 1.4 Dissociation, recombination and attachment
- 1.5 Distribution functions and transport coefficients for electrons and ions
- 1.6 Other atomic/molecular collision phenomena

### 2. Plasma science

- 2.1 Non-equilibrium kinetics of low temp plasmas
- 2.2 Basic phenomena in low-temp plasmas
- 2.3 Boundaries: sheaths, double layers, others
- 2.4 Gas phase plasma chemistry
- 2.5 Plasma-surface interactions
- 2.6 Plasma diagnostic techniques
- 2.7 Plasma modeling and simulation
- 2.8 Glows: DC, pulsed, microwave, others
- 2.9 Capacitively coupled plasmas
- 2.10 Inductively coupled plasmas
- 2.11 Magnetically-enhanced plasmas: ECR, helicon, magnetron, others
- 2.12 High pressure discharges: dielectric barrier discharges, coronas, breakdown, sparks
- 2.13 Microdischarges: DC, RF, microwave
- 2.14 Thermal plasmas: arcs, jets, switches, others
- 2.15 Plasmas in liquids
- 2.16 Negative-ion/dust particle-containing plasma
- 2.17 Other plasma science topics

### 3 Plasma applications

- 3.1 Plasmas for light production: laser media, glows, arcs, flat panels and novel sources
- 3.2 Plasma etching
- 3.3 Plasma deposition
- 3.4 Plasma ion implantation
- 3.5 Green plasma technologies: environmental and energy applications
- 3.6 Photovoltaic-application plasma processing
- 3.7 Biological/biomedical applications of plasma
- 3.8 Plasma propulsion and aerodynamics
- 3.9 Plasma nanotechnology, flexible electronics and other emerging applications

## PROGRAM

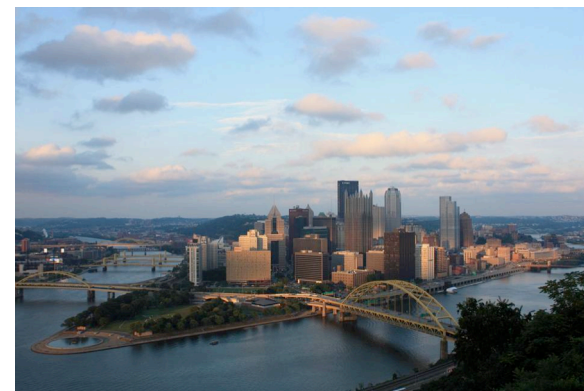
Consists of oral sessions (of both invited and contributed papers), poster sessions, Allis Prize Talk, Monday workshops on selected topics, and Wednesday discussions on the Plasma Data Exchange Project and LXCat platform.

## CONTRIBUTED PAPERS

Contributed papers will be presented as 15-min oral talks or in poster sessions. Authors are requested to submit GEC-style abstracts to APS's website by 2 June. Preference for oral or poster should be indicated. The final decision will be communicated to the corresponding author

## BOOK OF ABSTRACTS

Participants receive a copy of the APS Bulletin listing the conference program and abstracts of invited and contributed talks and posters.



<https://www.visitpittsburgh.com/>

Recently named one of the Best Places to Travel in 2016 by *Travel+Leisure*, rated the nation's "#1 Food City" by *Zagat* and named among the "Top Destinations on the Rise" by *TripAdvisor*, it's easy to see why everyone's talking about Pittsburgh.

## INVITED SPEAKERS

Igor Adamovich	Electric Field Measurements by Ps Four-Wave Mixing in Nanosecond Pulse Discharges in Atmospheric Air
Yuri Akishev	Surface streamers on dielectrics and liquids: similarity and difference
Marcelo Ambrosio	Double ionization of helium by electron and proton impact. A generalized Sturmian functions approach
Stephen J. Buckman	Gaseous Positronics – Cross sections, scattering dynamics and applications for low energy positron interactions with matter
Michael Campanell	Hot cathode current mode transitions
Michael Charlton	Fresh Insights and Initiatives in Low Energy Scattering Processes Involving Antiparticles
Xiangjun Chen	Fragmentation dynamics of simple molecules by electron collision
Remi Dussart	Microdischarge integration on silicon based devices
Denis Eremin	Particle-in-cell simulations of instabilities in magnetron plasmas
John Foster	Understanding the plasma-liquid interface: progress and challenges
Jim Franek	Single emission-line-ratio techniques for correlating E/N, EEDF, and metastable-atom density in a pulsed argon discharge
Dmitry Fursa	Adiabatic-nuclei calculations of electron and positron scattering from molecular hydrogen and its ion
Andrew Gibson	Tailoring charged particle distribution functions and chemical kinetics in non-thermal plasmas using multiple frequency excitation
Keizo Kinoshita	Etching for New Devices
Katsuhisa Kitano	Peroxynitric acid (HOONO <sub>2</sub> ) is the key chemical species of plasma-treated water for effective and safety disinfection
Hae June Lee	An advanced particle-in-cell simulation parallelized with GPUs for a capacitively coupled plasma reactor
Xinwen Ma	New type of asymmetries in two-center interferences observed in ion-molecular collisions.
Sergey Macheret	Plasmas for Reconfigurable Radio-Frequency Systems
Paul Maguire	Solvated electrons and plasma - liquid chemistry in plasma exposed microdroplets
N.L.S. Martin	Free-free scattering in Potassium: the search for dressed-atom effects
Ladislau Nagy	The effect of projectile wave packet width on the fully differential ionization cross sections
Sergey Pancheshnyi	Predictive modeling of air breakdown
Eric Robert	Plasma jets and electric fields delivery on targets relevant for biomedical applications
Ioan F. Schneider	Electron/molecular cation collisions in low-temperature plasmas: from mechanisms to rate coefficients
Nicholas Shuman	Mutual neutralization of atomic species
Svetlana Starikovskaia	Pulsed nanosecond discharges at high specific energy density
Francesco Taccogna	Multi-dimensional PIC modeling of crossed-fields low temperature plasma devices
Jannis Teunissen	Modeling streamer discharges in strong magnetic fields: from particle to fluid
Satoshi Uchida	Numerical investigation of interactions between reactive oxygen species and biological membrane in atmospheric nonequilibrium plasma with molecular dynamics
Mingmei Wang	Atomic Layer Etch: A Concurrent Plasma Modeling and Process Approach
Klaus-Dieter Weltmann	Decontamination, sterilization and therapy by plasma sources in different applications

## STUDENT AWARD FOR EXCELLENCE

Application deadline is **June 2, 2017**.

To encourage and recognize the important contributions students make to the Gaseous Electronics Conference, specifically, and to the GEC field, in general, the GEC Executive Committee will announce, on the meeting website before the meeting, the finalists competing for the **2017 GEC Student Award for Excellence**. Finalists will present their work between Tuesday, Nov 7 and Thursday, Nov 9. The results of the judging will be announced at the conference dinner Thursday evening. The award consists of cash (US\$1,000) and a certificate.

Only contributed talks are eligible for finalist selection. No more than one nomination/advisor. The one-page recommendation letter from the supervisor should describe the student's creative contribution to the project, the duration of the student's participation in the project, and unique project-related qualifications of the student.

The student application should contain:

- a copy of the student's abstract (plain text or .pdf when submitting via email, please do NOT send raw LaTeX files)
- a one-page supporting letter from the student, including a description of the motivation for doing the research, the relevance of the work to plasma-atomic-molecular optical science, a list of all collaborators on the project, and the scope of the student's contribution to the project
- a two-page-maximum curriculum vitae of the student, (including educational background, research experience, professional affiliations, publications, patents, presentations, and awards)

Nominations are to be emailed to Prof. Allison Harris (alharri@ilstu.edu), Student Awards Committee Chair before 11:59pm PDT, June 2nd.

The GEC Executive Committee will review nominations, select finalists, judge talks, and decide the winner for the Student Award for Excellence.

## STUDENT TRAVEL ASSISTANCE

Application deadline is **June 2, 2017**.

The GEC is committed to encouraging student participation and offers monetary assistance to student attendees who formally present their work. Student-research advisors (i.e., PhD supervisors) may request partial reimbursement of travel expenses for students attending and presenting papers at the GEC.

To request support, advisors must send:

- a letter of application and
- a copy of the student's abstract (plain text or .pdf when submitting via email, please do NOT send raw LaTeX files)

to Prof. Mark Koepke (mkoepke@wvu.edu) before 11:59pm (Pacific Daylight Time) 2 June 2017.

Note: A request for travel assistance is separate from a nomination for Student Award for Excellence. Students receiving travel assistance are expected to attend the entire conference.

## HOTEL ACCOMMODATIONS

The conference hotel is **DoubleTree by Hilton Pittsburgh - Green Tree** at 500 Mansfield Ave, Pittsburgh, Pennsylvania 15205 USA.  
pittsburghgreentree.doubletree.com  
TEL: +1-412-922-8400 FAX: +1-412-922-8981

Room rate is \$145 plus tax is valid until 20 October. Discount room-rate window is 4-11 November.

The rooms have two (2) queen beds.  
No rollaway beds are permitted at the hotel.

Parking at the conference hotel is free.

## ABSTRACT SUBMISSION

Abstract submission deadline is **June 2, 2017**.

**Here are instructions for abstract submission.**

Visit <http://abstracts.aps.org/Meeting.cfm>  
Clicking on 70th Gaseous Electronics Conference will take you to  
[www.aps.org/meetings/meeting.cfm?name=GEC17](http://www.aps.org/meetings/meeting.cfm?name=GEC17)

Before you start:

Know the number and the order of authors  
Proofread abstract  
Check abstract length  
Note sorting category or focus topic  
Choose RTF (MS Word) or LaTeX format  
Intend to present at the meeting

To withdraw a submitted abstract, you'll need:  
Abstract log number  
Email address

## PRE-REGISTRATION (deadline October 27)

**Pre-Registration fee\*** (thru October 27)  
or On-site Registration fee (28 Oct - 3 Nov or onsite)  
Regular Attendee = **\$600\*** or \$700  
Retired/Unemployed = **\$350\*** or \$400  
Student (Undergrad or Graduate) = **\$350\*** or \$400  
Retiree = **\$350\*** or \$400  
One-Day Attendee = **\$325\*** or \$375

**Here are the instructions for pre-registration.**

Visit [www.apsgec.org/gec2017/registration.php](http://www.apsgec.org/gec2017/registration.php) which will include the link to the online registration page that APS has set up:

[https://www.aps.org/memb-sec/meeting/startpage.cfm?event\\_id=1227](https://www.aps.org/memb-sec/meeting/startpage.cfm?event_id=1227)

You will choose between logging in as an APS member, becoming a member of APS and pre-registering at the same time, and pre-registering as a non-member of APS.



## Second Announcement

### ACCOMMODATION

*(please help fill our room block at DoubleTree)*

DoubleTree by Hilton Pittsburgh – Green Tree  
500 Mansfield Ave, Pittsburgh, PA 15205 USA  
[pittsburghgreentree.doubletree.com](http://pittsburghgreentree.doubletree.com)  
TEL: +1-412-922-8400 FAX: +1-412-922-8981  
Room rate (\$145 plus tax) valid until 20 Oct.

### WORKSHOPS

- (1) Linking theory & experiment
- (2) Linking academia and industry
- (3) Practical challenges for industry
- (4) Technical writing skills

### EXECUTIVE COMMITTEE

Chair: *T. Kirchner*, York University  
Secretary: *M. Koepke*, West Virginia Univ.  
Past Chair: *M. Vukovic*, TEL  
Secretary Elect: *D. Keil*, Lam Research  
Past Secretary: *U. Czarnetzki*, Ruhr-U Bochum  
Treasurer: *M. Schulz*, Missouri Univ Sci & Tech  
DAMOP: *T. Miller*, Boston College  
General Members:  
*K. Bera*, Applied Materials, Inc.  
*A. Bourdon*, Ecole Polytechnique  
*A. Harris*, Illinois State University  
*K. Sasaki*, Hokkaido University  
*D. Staack*, Texas A & M University



### GEC-70 OFFICE

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[vmbryant@mail.wvu.edu](mailto:vmbryant@mail.wvu.edu)

### CONFERENCE SERVICES

Ms. Saralyn Stewart  
[stewart@physics.utexas.edu](mailto:stewart@physics.utexas.edu)

*Hosted by WVU Plasma Physics Laboratory*



70<sup>th</sup> Annual GEC - Pittsburgh, Pennsylvania

DoubleTree by  
Hilton Pittsburgh – Green Tree  
[pittsburghgreentree.doubletree.com](http://pittsburghgreentree.doubletree.com)

**November 6 – 10, 2017**

[www.apsgec.org/gec2017](http://www.apsgec.org/gec2017)

### CALENDAR OF EVENTS

June 2

**GEC abstract deadline**

**Pre-registration opens; closes 27 October**  
**Student Excellence Award nominations**  
**and student-travel-grant applications due**

August 31	Bulletin late-abstract deadline
September	Finalized-program announced
October 20	Hotel reservation cut-off date
November 3	Last day to cancel registration

### ORGANIZING COMMITTEE

Mark Koepke ([mkoepke@wvu.edu](mailto:mkoepke@wvu.edu)) – Chair  
Saralyn Stewart – Conference Planner  
Earl Scime (WVU)  
Julian Schulze (WVU and RUB)  
Gottlieb Oehrlein (Univ Maryland)  
Costel Biloiu (Applied Materials)