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### U.S. Burning Plasma Organization eNews

#### Aug 10, 2017 (Issue 122)

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**USBPO Mission Statement:** *Advance the scientific understanding of burning plasmas and ensure the greatest benefit from a burning plasma experiment by coordinating relevant U.S. fusion research with broad community participation.*

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C.M. Greenfield

## Announcements

### Call for Community Input

*The National Academies Committee for A Strategic Plan for U.S. Burning Plasma Research invites you to submit comments and documents relevant to the Committee's task to provide guidance on the long-term strategy for magnetic confinement-based fusion research.*

*Comments and documents should be sent using the [Community Input Form on the Committee's online location](#). Input will be accepted in most common formats, e.g. PDF. Please note that all community input received will be posted on the Committee's web site and made available through the Committee's public access file as required by the Federal Advisory Committee Act.*

### Office of Science Graduate Students Research Program

*Starting with the 2017 Solicitation 2 cycle (expected to open later this month), DOE's Office of Science Graduate Students Research (SCGSR) program will accept applications for graduate thesis research, with the DIII-D National Fusion Facility now included as an approved host site. The DIII-D tokamak is an Office of Science national scientific user facility sponsored by the Office of Fusion Energy Sciences and operated by General Atomics in San Diego, CA. For more information on the SCGSR program, please visit <https://science.energy.gov/wdts/scgsr/>.*

### By C.M. Greenfield

#### Farewell to Ed Synakowski

Dr. Edmund Synakowski, who led the US Fusion Energy Sciences program since 2009 as Associate Director for the Office of Fusion Energy Science (FES), has departed to join the University of Wyoming as its new Vice President for Research and Economic Development. Many of us have known and worked with Ed during and before his tenure at DOE. In my case, this goes back to collaborative work on transport barriers carried out between the TFTR and DIII-D Teams in the 1990s. We wish Ed all the best in his new "life after fusion."

Following Ed's departure, Jim Van Dam has assumed responsibility as acting Associate Director for FES, with John Mandrekas taking over as acting director of the FES Research Division.

#### Progress at ITER

Work on the ITER site is progressing at a rapid pace. The most recent issue of ITER Newline, at <http://www.iter.org/whatsnew/2017/07/17>, includes several "postcards from the ITER worksite." Among the most striking features in the 2017 photographs are the large Tokamak Assembly Building (with the mural on the front), and the bioshield that will house the ITER tokamak that now protrudes well above ground level. Also striking is the fact that it is becoming increasingly difficult to find bare ground on the site. Follow the link above to see more pictures.



*Aerial views of the ITER worksite, in August 2015 (left) and this month (right). Photos © ITER Organization.*

#### US Magnetic Fusion Research Strategic Directions Workshop

Along with many of you, I attended the recent community workshop in Madison, Wisconsin, held July 24-28. If you weren't able to attend (or even if you were!), I urge you to take a look at the website at <https://sites.google.com/site/usmfrstrategicdirections/>. There you can find the talks that were given during the workshop and reports on breakout discussions. The discussions focused on questions that are important to most of us – what should our goals be, and what are the best approaches to achieve them. This was only the first of two planned workshops, with the second planned in Austin, Texas, December 11-15.

I believe these workshops could play a critical role in building a community consensus. There are parallels here with the Burning Plasma workshop held in Madison in 1998, followed by two Snowmass meetings in 1999 and 2002, which in turn led to such a consensus supporting the US joining the ITER effort. The value of a community that can speak with one voice was demonstrated after the 2002 Snowmass meeting, as well as by other communities (e.g. High Energy Physics).

Of course it won't surprise any of our readers that I strongly believe in the importance of research aimed at producing a burning plasma, and that a successful ITER research program is the best way to achieve that. My talk from the workshop, available at <https://drive.google.com/open?id=0B-OTJcxoAAQFWVfFdFVRdVNxcHM>, describes my reasoning.

*Disclaimer: I am not one of the organizers of the workshops – just a participant.*

### **USBPO activities during the APS-DPP Conference in Milwaukee, Wisconsin**

The US Burning Plasma Organization has once again organized two events during the upcoming 59<sup>th</sup> Annual Meeting of the APS Division of Plasma Physics, which will take place in Milwaukee, Wisconsin, October 23-27.

#### ***Contributed oral session on “Research in Support of ITER”***

The tenth annual contributed oral session on “Research in Support of ITER” will include an excellent slate of 15 talks selected by a committee made up of Francesca Turco (Columbia University), John Canik (ORNL), and Xueqiao Xu (LLNL) from your submissions. I have not yet been informed of a day, time, or room assignment.



#### ***Town Meeting on ITER***

*Speaker: Dr. Bernard Bigot, ITER Organization Director-General*

*The US Burning Plasma Organization is pleased to welcome Dr. Bernard Bigot, who will give an update on progress in the ITER Project. Dr. Bigot took over as Director General of the ITER Organization in early 2015 following a distinguished career that included serving as Chairman and CEO of the French Alternative Energies and Atomic Energy Commission and as High Commissioner for ITER in France. During his tenure at ITER the project has moved into high gear, with rapid progress evident on the construction site and preparation of a staged schedule and a research plan leading from where we are today through all the way to full DT operation.*

*ITER (the Latin word for "The Way") is a large-scale scientific experiment intended to prove the viability of fusion as an energy source. ITER is currently under construction in the south of France. In an unprecedented international effort, seven partners—China, the European Union, India, Japan, Korea, Russia and the United States—have pooled their financial and scientific resources to build the biggest fusion reactor in history. ITER will not produce electricity, but it will resolve critical scientific and technical issues in order to take fusion to the point where industrial applications can be designed. By producing 500 MW of power from an input of 50 MW—a "gain factor" of 10—ITER will open the way to the next step: a demonstration fusion power plant.*

### **US Burning Plasma Organization leadership changes**

With the advent of summer comes the end of terms for several USBPO Council members and Topical Group leaders. The process of filling these positions has now begun. The full Council membership is shown at <https://www.burningplasma.org/organization/?article=Council>. Terms are ending for David Brower (UCLA), Juergen Rapp (ORNL), Jim Terry (MIT), and François Waelbroeck (Texas). Regular members of the US Burning Plasma Organization should have received an invitation in the last few days to vote for two new USBPO Council members. The candidates are Boris Breizman (U. Texas), George McKee (U. Wisconsin), Vlad Soukhanovskii (LLNL), and Paul Terry (U. Wisconsin). Voting will close on August 18, with the two winners joining the Council. As per the USBPO bylaws, following the Council election, the Director, in consultation with OFES and the continuing or incoming Council Chair and Vice-Chair, will appoint two additional Council members.

As you vote, please remember that the link in your invitation to vote is yours and yours alone and can only be used once. Please do not share it – it won't work. If you or a colleague did not receive an invitation to vote and feel you should have please contact USBPO Communications Coordinator Mark London [mrl@psfc.mit.edu](mailto:mrl@psfc.mit.edu).

Following the end of the Council selection process, we will turn to replacing topical group leaders whose terms are ending. The present topical group leadership is:

Topical Group	Leader	Deputy
Energetic Particles	Nikolai Gorelenkov (PPPL)	Eric Bass (UCSD)
Fusion Engineering Science	David Rasmussen (ORNL)	Jean Paul Allain (Illinois)
Modeling and Simulation	Lang Lao (GA)	Xueqiao Xu (LLNL)
Operations and Control	Jim Irby (MIT)	Eugenio Schuster (Lehigh)
Plasma-Wave Interactions	Robert Pinsky (GA)	Greg Wallace (MIT)
Confinement and Transport	Saskia Mordijck (William & Mary)	Walter Guttenfelder (PPPL)
Diagnostics	Max Austin (Texas)	Luis Delgado-Aparicio (PPPL)
Integrated Scenarios	Francesca Poli (PPPL)	Francesca Turco (Columbia)
MHD, Macroscopic Plasma Physics	Steve Sabbagh (Columbia)	Carlos Paz-Soldan (GA)
Pedestal and Divertor/SOL	John Canik (ORNL)	Mike Jaworski (PPPL)

Terms are ending this summer for the five leaders shown in red: Nikolai Gorelenkov, David Rasmussen, Lang Lao, Jim Irby, and Bob Pinsky. The terms are also ending for their deputies, but many of them will continue on to become topical group leaders (those discussions have not been

held yet). Members of these topical groups should contact the outgoing leader or deputy to nominate people (yes, you can nominate yourself) for these leadership positions. Leadership of the other five topical groups will roll over in 2018.

## ITPA Topical Group Reports

### Diagnostics Topical Group

#### *Max Austin, Leader, USBPO Diagnostics Topical Group*

The 32<sup>nd</sup> meeting of the ITPA Diagnostics Topical Group was held in Chengdu, China, on May 9-12. Topics of discussion included:

- Progress reports from each of the 9 Specialist Working Groups in Diagnostics
- A recommendation was made regarding potential application of Fast Wave Reflectometry for fuel ratio measurement in ITER
- Luis F. Delgado-Aparicio presented a talk on the “Xenon option for ion temperature and flow velocity measurements in ITER”
- San Gon Lee gave a Joint Experiment report on the action item to develop strategy/options for in-situ wavelength calibration. This relates to the calibration of x-ray spectrometers and is most likely addressed by cross-calibration against charge-exchange measurements.
- Several high priority tasks were reported and discussed:
  1. Plasma Control System measurement requirements
  2. Development of methods of measuring the energy and density distribution of escaping  $\alpha$ -particles
  3. Determination of the life-time of plasma facing mirrors used in optical system
  4. Assessment of impact of microwaves on diagnostics
  5. Development of diagnostic calibration techniques/strategies compatible with the burning plasma environment –new task
- Dates and locations for the next two ITPA-Diagnostics meetings were discussed:
  - 33<sup>rd</sup> meeting: ITER Headquarters, likely October 16-20, 2017
  - 34<sup>th</sup> meeting: San Diego, California, Spring 2018

## Calendar of Burning Plasma Events

USBPO Public Calendar:

### 2017

September 5-8	<a href="#">2nd Asia-Pacific Symposium on Tritium Science (APSOT-2)</a>	Livermore Valley, California, USA
September 11-13	ITPA EP Topical Group meeting	Princeton, USA
September 18-20	ITPA PEP Topical Group meeting	Helsinki, Finland
September 18-20	ITPA TC Topical Group meeting	Helsinki, Finland
September 18-22	<a href="#">1st Asia-Pacific Conference on Plasma Physics (AAPPS-DPP)</a>	Chengdu, China
September 27-29	<a href="#">Plasma Edge Theory in Fusion Devices (PET16)</a>	Marseille, France
October 9-11	ITPA MHD Topical Group meeting	Barcelona, Spain
October 9-12	ITPA IOS Topical Group meeting	Lisbon, Portugal
October 16-20	ITPA Diagnostics Topical Group meeting	ITER Headquarters
October 23-27	<a href="#">59th Annual Meeting of the APS Division of Plasma Physics</a>	Milwaukee, Wisconsin
October 30- November 1	<a href="#">22<sup>nd</sup> Workshop on MHD Stability Control</a>	Madison, Wisconsin
November 7-9	ITPA Coordinating Committee	ITER Headquarters, St. Paul-lez-Durance, France
December 6-7	<a href="#">Fusion Power Associates Annual Meeting</a>	Washington, DC, USA
December 11-15	<a href="#">U.S. Magnetic Fusion Research Strategic Directions Community Workshop</a>	Austin, Texas, USA

### 2018

January 30- February 2	ITPA DSOL Topical Group meeting	Chengdu, China
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June 24-28	2018 IEEE International Conference on Plasma Science (ICOPS)	Denver, Colorado, USA
October 22-27	<a href="#">IAEA Fusion Energy Conference</a>	Gandhinagar, Gujarat, India
November 5-9	60 <sup>th</sup> Annual Meeting of the APS Division of Plasma Physics	Portland, Oregon, USA

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**2019****JET DT-campaign and JT60-SA First Plasma**

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October 21-25	61 <sup>st</sup> Annual Meeting of the APS Division of Plasma Physics	Fort Lauderdale, Florida, USA
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## Contact and Contribution Information

This newsletter provides a monthly update on U.S. Burning Plasma Organization activities. The USBPO operates under the auspices of the [U.S. Department of Energy, Fusion Energy Sciences \(FES\)](#) division. All comments, including suggestions for content, may be sent to the Editor. Correspondence may also be submitted through the USBPO Website Feedback Form.

Become a member of the U.S. Burning Plasma Organization by [signing up for a topical group](#).

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