

THE WAVE



The newsletter publication of the International Microwave Power Institute

Special Symposium Edition – July 2016



PRESIDENT'S MESSAGE

Well, IMPI 50 was here and now is gone, and what a great symposium it was. Molly will go into the statistics elsewhere in this Newsletter, while I make some personal comments. If you weren't there you missed not only a great symposium but an opportunity, not just of information transfer, but meeting up with old friends, making new ones and networking. I was delighted to see and hear the many representatives of other microwave societies from Japan, Europe, the UK and China. And then there were the two outstanding keynote speakers, Dr. Augustine Y. Cheung, President & CEO of Medifocus, Inc. whose gave an eye-opening presentation on his company's earliest and latest developments in microwave applications for cancer therapy, and James Pool III, President of TurboChef Technologies, Inc., speaking on the commercial microwave oven industry, an area of great innovation.

Among the many sessions at the conference was one on Food Safety and Standards, in which three of our colleagues from the UK, Gordon Andrews, Greg Hooper, and Nigel McCulloch, presented via WebEx (hosted by ConAgra) on the food safety effects due to the non-uniform distribution of microwave energy in ovens, followed by a panel, also including Steve Vlock (ConAgra) and Dr. Per Risman (Mälardén University), dealing with the crisis in standards being faced in the UK due to the IEC's rejection of the British 350 ml microwave output procedure that characterizes microwave ovens and provides heating instructions on food packs.

Photo on top: Dr. Klaus Werner of the RF Energy Alliance addresses the crowd.

Fall Short Course in Philadelphia, PA, Sponsored by Campbell Soup Company

IMPI's Fall 2016 Short Course will be held at the Penn View Hotel in downtown Philadelphia, PA from October 25-27, 2016. Hosted by IMPI and sponsored by Campbell Soup Company, this 2 day event will examine topics such as Consumer Behavior, Nutritional Considerations for Microwavable Foods, Product Development and much more.

Darren Siefer of the NPD Group will serve as the keynote speaker. Bob Schiffmann will offer a Microwave 101 Pre-Short Course the afternoon of October 25th. The program is currently being finalized. Registration will open on July 25. Visit www.impi.org for program updates and additional details.

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PRESIDENT'S MESSAGE CONTINUED

I'd like to take this opportunity to thank all of the presenters and participants at IMPI 50 with a special shout out to our Technical Program Chairs Drs. Ulrich Erle and Kadir Aslan, and the always-outstanding organizational work of IMPI's Executive Director Molly Poisant and Administrative Assistant Alicia Standridge, who as usual, made sure everything ran smoothly.

Changing direction completely, I want to address something that I read recently in the Courthouse News Service issue of June 30, 2016. It described the ruling of a California Appeals Court judge that the movie "American Hustle" did not defame Paul Brodeur, author of "The Zapping of America" and other publications. Brodeur sued Atlas Entertainment, Columbia Pictures and Annapurna Pictures because of a scene in the film in which Jennifer Lawrence's character Rosalyn has a fire in a "science oven" (a microwave oven) and responds to her husbands complaints, "You know, I read that it takes all of the nutrition out your food ... I read it in an article, look: by Paul Brodeur." Brodeur claims not only that he never said that, but also cited an article in People magazine (1978) in which he stated that there was no danger in eating food cooked a microwave oven.

I won't comment on the legal reasons Justice Elizabeth Grimes, Second District California Court of Appeals, used to reach her decision, but I do want to comment on something she said: "The general tenor of 'American Hustle', the entire farcical nature of the 'science oven' scene, and the ditsy nature of the character uttering the allegedly defamatory statement, all indicate that an audience would not expect anything Rosalyn says to reflect objective fact," Here I have to tell the Judge that she needs to get out more, especially reading consumers concerns on the Internet. The site Quora receives all types of questions that others try to answer. The two most common questions asked about microwave ovens relate to the perceived danger of radiation from the ovens, and whether microwaving can damage the nutrients in foods. For example, a recent post inquired whether it was safe to microwave milk and wouldn't it destroy the proteins. So, Justice Grimes you are wrong when you believe that the public won't listen to Rosalyn. "America Hustle" won three Golden Globe Awards and was nominated for 10 Oscars, so it certainly wasn't an obscure rarely seen film, but rather one that broadly broadcast misinformation about microwave ovens and that, along with the nonsense that constantly appears on the Internet, promulgates false information to a public, many of whom believe that microwave ovens are dangerous and their unwarranted fears are supported by ignorant statements all over the Web.

Arthur C. Clarke said in 1961 "Any sufficiently advanced technology is indistinguishable from magic". I guess that's our problem, people using microwave ovens think there is something magical happening, and not all magic is good.

And that's why IMPI holds its symposia and short courses and publishes JMPEE, etc., and that's still not enough. We need broader outreach and are trying to expand it – we'd appreciate your suggestions.

Best wishes,

Bob



Did You Know...

- Over 100 attendees from 16 countries and 26 states took part in the 3-day event.
- The Spotlight Session featured presentations from the heads of four of the major international microwave associations and other pioneers in our field.
- **Sponsorships** made it all possible. Thanks to our Gold Sponsor: Muegge GmbH; Silver Sponsors: Richardson Electronics and Ampleon; Bronze Sponsors: Ferrite Microwave Technologies, Liverpool John Moore's University and BEST Research.
- Individual and Corporate donations played a HUGE role in making this event so successful. Many thanks to the following "**Friends of IMPI**": R.F. Schiffmann Associates Inc., Juan Aguilar and Dora Saucedo de Aguilar, Geoffrey and Carole Voss, Ken Eke of Apollo, Washington State University, Bob and Marilyn Schiffmann, Dr. Ulrich Erle, John M. Osepchuk, John F. Gerling, PAC Advantage Consulting, LLC, Dr. and Mrs. Vadim Yakovlev and SAIREM.
- Save the Date for IMPI 51: June 20-22, 2017 at the Sonesta Coconut Grove in Miami, FL, USA!

IMPI 50 SYMPOSIUM



Several attendees gather on the stairs of the Caribe Royale for a photo before departing for the Group Dinner on Wednesday, June 22nd.



From left to right: Drs. Ulrich Erle, Vadim Yakovlev and Kadir Aslan; Keynote Speaker Dr. Augustine Cheung receives an award from Technical Program Chairman Dr. Ulrich Erle; Tunjar Asgarli of Muegge GmbH presents his paper.



IMPI 50 was a great place to catch up with old friends and make new ones. From left to right: Dr. Auggie Cheung and Prof. Tian-Ren Ji; Prof. Ray Boxman, Jennipher Marshall-Jenkinson and Dr. Graham Brodie visit Orlando area sites.



From left to right: Bernie Krieger of Cober Electronics, Dr. Cristina Leonelli of AMPERE, Bob Schiffmann, Dr. Satoshi Horikoshi of Sophia University.

Journal of Microwave Power and Electromagnetic Energy

Composition of Issue 2, Volume 50, 2016, published June 30, 2016. Full access to these articles is available to all IMPI Members as part of their annual dues. Contact molly.poisant@impi.org if you need log in details or are interested in membership.

TITLE	AUTHOR(S)
Editor's Message: ISM Band Applications	Juan Antonio Aguilar-Garib
Effect of Load on the Heating Efficiency and Temperature Uniformity in Multi-Mode Cavity Applicators	Idris Ahmed Ali
Optimization of Preparation of Co_3O_4 by Microwave Calcination from Basic Cobalt Carbonate	Bingguo Liu, Jinhui Peng, Libo Zhang, Junwen Zhou, Hongying Xia, and Shenhui Guo
Iron Grain Growth Kinetics during Carbothermic Reduction of Ilmenite Concentrates with Microwaves	Wei Li, Yubo Xing, Binfang Meng, Xinying Wang, Yuqi Liu, and Jinhui Peng
Dielectric Properties-Based Method for Rapid and Nondestructive Moisture Sensing in Almonds	Samir Trabelsi, Murat S. Mckeown, and Stuart O. Nelson
Microwave and conventional comparison of vanadium oxidation in stone coal	Yizhong Yuan, Yimin Zhang, Tao Liu, Tiejun Chen, and Jing Huang

Ask The Expert

Response by Dr. John M. Osepchuk, Full Spectrum Consulting and IMPI Fellow

Question: Recently, a young woman published a YouTube video in which she claimed you can determine whether a microwave oven leaks by putting a cell phone inside the oven and calling it. She demonstrated that and the cell phone rang. Is her premise correct? Is it a way of determine microwave oven leakage?

Response: The Physics Girl did a fair job but she doesn't know the whole story:

Firstly--that the doors of most microwave ovens are designed to reject 2.45 GHz via a choke, and not gasketed, but allows most frequencies--especially the lower ones like 700 MHz to pass. Clearly if the door were gasketed all frequencies would be rejected or contained--i.e. a Faraday cage. Secondly the location of the cell phone in the oven is also a factor. One can find positions with reception and other positions with no reception.

Note also that the cell phone signal must first go to a distant cell tower and then back into the house where the oven is--a very complicated path that may or may not be a strong transmission to the oven location.

Thus the bottom line is: Because of all these complexities, it is not true that if the cell phone rings then that indicates that the oven is leaking at 2.45 GHz. The test proves nothing.

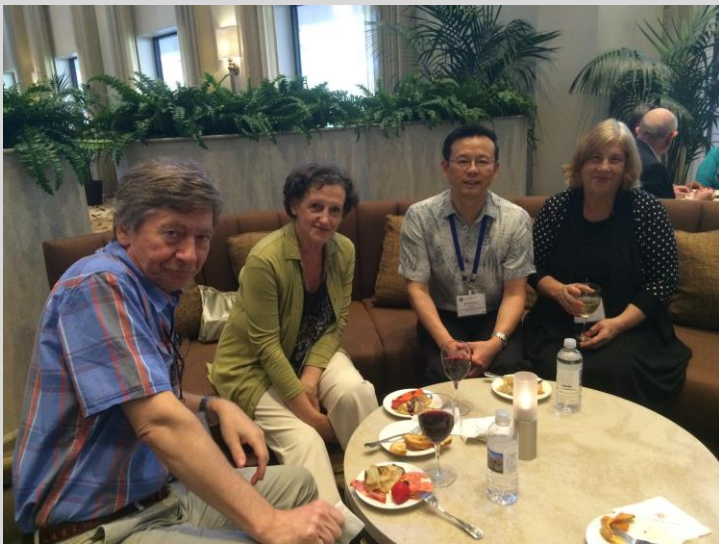
It is gratifying that the surrounding discussion at the web site shows a rational discussion of microwave leakage with no fears often triggered by the subject of "radiation" etc.

Do you have a question you would like to Ask Our Experts? Please send inquiries to info@impi.org



From Top: Sponsors signage; Networking luncheon at the Caribe Royale. Dr. AC (Ricky) Metaxas receiving an Honorary Fellow Award from IMPI's President. Margaret Metaxas, Bernie and Susan Krieger, Dr. Juan Aguilar, Dora Saucedo and Dr. Ulrich Erle.

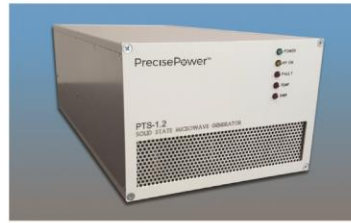
Special thanks to Dr. Ray Boxman for taking many of these photos at the IMPI 50 Symposium and to Dr. Ulrich Erle also contributed the photo on the stairs prior to the Group Dinner.



Clockwise from top left: Keynote Speaker James Pool of Turbochef; Keynote Speaker Augustine Cheung of Medifocus; John F. Gerling with Prof. and Mrs. Ji and Bob Schiffmann; Reception; Exhibitor Signage; Dr. and Mrs. Vadim Yakovlev with Dr. Juming Tang and Edith Boxman.

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RF Power Transistors	LDMOS	LDMOS
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Not A Member of IMPI? We think you should be. IMPI Membership includes the following benefits:

- Special Member pricing to all Symposia and Short Courses (typically \$100 savings per event)
- Complimentary access to five Webinars per year
- Complimentary online access to our peer reviewed Journal of Microwave Power & Electromagnetic Energy (JMPEE) and our newsletter “The Wave” published 6 times per year
- Unprecedented networking with the leaders in our industry and MUCH more!

We offer corporate, professional and student memberships. Visit www.impi.org for more info and to join today!



From left to right: Dr. Ulrich Erle presents Best Student Paper, Oral Presentation to Deepali Jain of WSU; Paul Alton and Fraser Tibbets at the Ferrite booth; Tatiana Zona-Ortiz presents her paper.



From left to right: Brittney Gordon of Morgan State University, winner of Best Student Paper, Poster Presentation; Exhibitor Spotlight session.



From left to right: Dr. Satoshi Horikoshi presents a gift to IMPI President Bob Schiffmann from the JEMEA; Jennipher Marshall-Jenkinson, President of MTA-UK; Prof. Stuart Nelson, USDA-ARS (Retired).

Calendar of Events

3GCMEA, July 25-29, 2016, Cartegana, Spain. <http://cpcd.upct.es/3gcmea/>

IMPI Fall Webinar Series: Part I: Food Safety Effects due to the Non-Uniformity of Heat in Microwave Ovens
September 2016 (exact date TBD)

IMPI's Fall Short Course, October 25-27, 2016, The Penn View Hotel, Philadelphia, PA, USA

IMPI Fall Webinar Series: Part II: Microwave Processing of Foods – Combining Heat Sources
November 2016 (exact date TBD)

Do you have an upcoming event for us to list here? Email molly.poisant@impi.org for inclusion.

NEWS FROM AROUND THE WEB

Students in the Washington State University “Food Engineering Club” are doing their part to debunk myths about microwaves on the Internet. Check out these videos they have prepared:

1. Microwave ovens: how do they work? <https://www.youtube.com/watch?v=44mEhdd8KuM>
2. Microwave ovens: Is there a risk of Cancer? <https://www.youtube.com/watch?v=OE0SPStqjIQ>

Scientist break [microwave detection record](#)

[RF Energy/heating applications boosted](#) by 300W GaN transistor



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