

# THE WAVE



*The newsletter publication of the International Microwave Power Institute*

September/October 2015



*Downtown Pittsburgh Skyline; Site of the Fall Short Course.*

## Fall Short Course to be Held Next Month in Pittsburgh

The microwave community will gather in Pittsburgh, PA, USA from October 27-29<sup>th</sup> to take part in IMPI's Fall Short Course. Sponsored by the Kraft Heinz Company, the 2 ½ day event has an impressive list of speakers lined up:

### **KEYNOTE: What's Cookin' and Zappin' in America's Kitchens**

Sharon Franke, Kitchen Appliances & Technology Director, The Good Housekeeping Institute

*This keynote address will highlight the latest kitchen and food trends and how they relate to the microwave oven.*

### **KEYNOTE: Foodservice and Convenience Stores: What the Future Holds**

Joe Chiovera, XS Food Service & Marketing

*Over the past few years, foodservice has taken on a sense of urgency in the ever changing Convenience Store channel. With over 152,000 outlets comprised of Independents, Super Regionals, and Nationals the industry continues to grow it's foodservice presence. See how this highly exposed and visited channel deals with the challenges of the fastest growing category in the industry.*

### **Labeling Best Practices for Food Companies: The Five Stages of Grief**

Ronald J. Levine, Esq., Herrick, Feinstein LLP

*In recent years, food labeling has become a target of civil lawsuits, especially class actions, and regulatory action. Since food class actions are a relatively recent phenomenon, many food companies have had little experience with such claims. Executives faced with their first class action case often go through the five stages of grief, including denial, anger, bargaining, depression and acceptance. Many times, the final stage involves a settlement and some payment. Death and taxes may be inevitable, but companies can avoid lawsuits or government actions by following best practices when designing a label and promoting a product.*

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## President's Message

This is the 100th anniversary of Albert Einstein's Theory of General Relativity, in which he revealed that gravity is not a force so much as the byproduct of a curving universe. In other words, what we think we know about gravity from everyday experience is wrong. It replaced the Newtonian laws of gravitation with something more powerful, but also more abstract. If it wasn't for this theory, the GPS systems in our automobiles would not be possible—the error would simply be too large. Also, one of the reasons we are able to send space probes to the various planets and their moons is by using Einstein's theory for the planning the trajectories.

Well, IMPI is also celebrating this coming year: IMPI's 50th, and if microwave and RF power hasn't had as profound an effect as Einstein has had upon physics, mechanics, space travel, etc., domestic/commercial microwave ovens certainly have had an enormous societal influence. *Cont on Page 3*

## Fall Short Course Continued...

### Trends in Foods, Flavors, and Health

Jack Li, Managing Director, Dattassential

*A look at emerging food trends as well as consumers' attitudes towards health & wellness*

### Millennials and the Microwave Market

Razi Imam, Founder & CEO, 113 Industries

*We will present a Big Data analysis using over a million conversations with consumers using microwave ovens. We will provide the audience with a clear view of what the consumers are doing to compensate for their unarticulated needs as they relate to the use of microwave ovens and share with the audience the profiles of users and the changing behaviors of the millennial generation.*

### Tempering of Frozen Foods using Microwave and RF Technology

Glenn Blaker, Technical Director, PSC Inc.

*This talk will cover the theory and applications of Microwave and RF tempering, and give examples of current applications and future development.*

### Improving Food Processing with Microwaves

Bob Schiffmann, President, R.F. Schiffmann Associates Inc. and IMPI

*The most successful microwave food processing systems are hybrids - combinations of conventional heat forms with microwave energy. By combining conventional heat transfer with microwave energy, faster processing, greater throughput, increased product quality, and more are possible. Learn about the successful commercial examples of such systems.*

### Detecting the Invisible - (a new technology for increased food safety)

Sven-Gunnar Bodell, Food Radar Systems

*Food Radar Systems in Sweden is the inventor of a new microwave based in line detection technology that detects low density foreign bodies that traditional technologies do not capture. Soft and hard plastic, rubber, fruit stones, wood and extraneous vegetable matter are some of the foreign bodies that can be detected by the system as product is pumped through the systems in-line sensors.*

### Unique Microwave Packaging for Diverse Consumer & Product Needs

Corey Crooks, R&D Laboratory Manager, and Alicia Rivera, Business Development Manager, Graphic Packaging International

*Are you curious about microwave packaging for your product line? Come learn how consumer market trends drive package innovation and design. And, discover the process behind the use of susceptors to enhance cook performance for an array of microwaveable food products.*

Additionally, IMPI's Fall 2015 Short Course will offer an optional 4 1/2 hour Pre-Short Course on the afternoon of Tuesday, October 27th: **Microwaves 101: The Fundamentals of Microwave Heating**, which will be taught by Bob Schiffmann.

Registration fee includes: All course materials, a Welcome Reception on Tuesday evening, continental breakfasts, coffee breaks and networking luncheons on both Wednesday and Thursday. There is also an optional Group Dinner at a local restaurant (includes the meal, non-alcoholic beverages, tax and gratuity).

Registration Pricing: \$595 for IMPI Members/ \$695 for non-Members (early bird by September 26, 2015). The registration fee will go up to \$695 members/\$795 for non-members on September 27th. Optional Add-Ons: Microwave 101 Pre-Short Course is \$150. Group Dinner is \$50 inclusive per person.

**REGISTER TODAY!** HOTEL ACCOMODATIONS are available at the Doubletree, Downtown Pittsburgh for the special IMPI Group Rate of \$149 per night; [click here to reserve your room](#) today or call +1-412-281-5800 and ask for the International Microwave Power Institute rate.

## President's Message Continued

How else could the average soccer mom cope with the diverse mealtime requirements of junior sports players and budding artists? It is now practically a requirement, when sending our progeny to college, that they are equipped with a laptop computer and a microwave oven. (I attended college in the 50s, when my requirements were a slide rule, a ballpoint pen and a notebook.)

As IMPI enters its 50th year as the premier scientific society dealing with RF and microwave power and its science, technology and applications, we can look back upon the participation of many of our members in the innovations that led to the microwave oven as we know it today, including microwavable food products, packaging and accessories; and the development continues. At the same time, many of our members have been involved in industrial RF and microwave processing, areas that have shown slow but continuing growth over the decades. Also, earlier in its history, many members were involved in medical and biological applications employing microwave power, and that resulted in their spinning off and forming their own society, BEMS, the Bioelectromagnetics Society.

Earlier this year, a group of us met in San Diego, prior to IMPI 49, and spent a day developing IMPI's new Strategic Plan, and one of the Institute's major endeavors is education. To this end, besides its various short courses and annual symposium, the Journal and other publications, IMPI began a webinar series now entering its third year with two important webinars coming in the Fall:

" Microwave Component Configurations for Industrial Heating Systems", presented by John F. Gerling

" Magnetrons for Microwave Power Applications", presented by Dr. John Osepchuk.

In addition, IMPI's Journal of Microwave Power and Electromagnetic Energy (JMPEE) will be entering its 50th year of publication with publication management likely to be taken over by a major international scientific publications house.

So, you can see that we take our microwave science and technology seriously and do all we can to continue to educate ourselves and the public at large in the science, engineering and applications of microwave power. So, as we enter IMPI's 50th year, we will continue all of these activities, and possibly more, throughout this and the following years. While it's unlikely that I will be able to personally observe IMPI 75, it's my hope that many of you will and will report on all the great new things that have been going on with microwave power since IMPI 50.

With best wishes to all,

Bob



## ***IMPI's Fall 2015 Webinar Series Announced***

### **Microwave Component Configurations for Industrial Heating Systems**

September 29, 2015 from 11am-12pm EST.

Instructor: John F. Gerling, Gerling Applied Engineering

This webinar covers the basic configurations of microwave generators and waveguide components commonly used in industrial processing systems. The course content is primarily for process developers, system engineers and designers, maintenance technicians and plant managers who wish to gain more insight into the various microwave components and the purpose and importance of each for stable process performance and reliable system operation. Topics covered include:

- Microwave generators (magnetron vs. solid state, switch mode vs. linear vs. doubler)
- Applicators and cavities (multimode, single mode, batch, continuous)
- Waveguide components (isolators, tuners, power measurement)
- Impedance matching (stub/slug tuners, irises, manual vs. automatic)
- Power delivery configurations (cost vs. performance)

### **Magnetrons for Microwave Power Applications**

November 17, 2015 from 11am-12pm EST.

Instructor: John M. Osepchuk, Full Spectrum Consulting

Magnetrons are the accepted norm for microwave power applications (e.g. heating); the microwave oven, domestic and commercial: also for industrial applications at 915 MHz as well as industrial and specialized commercial applications at 2.45 GHz at power levels exceeding 2 kW. This webinar presents an overall review of these tubes, their history and their future. We will concentrate on the cooker magnetron at 2.45 GHz that is used in microwave ovens, but there will be brief reviews of the magnetrons at 915 MHz and 5800 MHz.

Course content will be of interest to product developers & engineers whose work relates to domestic and commercial microwave ovens, as well as process developers, systems engineers interested in industrial heating systems.

Topics include:

- History of magnetron development in USA, Far East & Russia.
- Overall view of key magnetron components: anode, cathode, pole pieces, etc.
- Theory and experiment about normal magnetron operation.
- A brief review of the theories related to abnormal phenomena i.e. damage to anodes triggering possible serious RFI problems near end of life.

Webinars are FREE for all IMPI Members. The cost for non-members is \$99 for one or \$179 for the two webinars.

**[REGISTER TODAY!](#)**

## Call for Papers: The 50<sup>th</sup> Annual Microwave Power Symposium (IMPI 50)

The Call for Papers for IMPI 50 will be posted to [www.impi.org](http://www.impi.org) in late September; abstracts will be due in late January 2016.

IMPI 50 will be held June 21-23, 2016 at the Caribe Royale in Orlando, Florida, USA. The Technical Program Co-Chairs for this landmark event are Dr. Ulrich Erle of Nestle and Dr. Kadir Aslan of Morgan State University.

## Perytons and PSN in Microwave Ovens

John M. Osepchuk, Full Spectrum Consulting

In April of this year, widespread global publicity—both print and electronic, including even NPR in the U. S.—was given to a report that an Australian radio astronomy (RA) facility had suffered some RFI, dubbed Perytons, because of its mysterious mimicking of sought-after distant extra-galactic signals (FRB—fast radio bursts) and ---(Roll of Drums!!!!)---the culprit was found to be nearby microwave ovens. We extend the report here because the Australian RA scientists have inadvertently discovered (or for the first time recognized) a “new” type of microwave-oven noise—which I dub PSN, for “post-shutdown noise”. [Click here to read full article on IMPI's Blog.](#)

## Hard Copies of JMPEE for Sale

The IMPI Office is running a sale on hard copies of the Journal of Microwave Power & Electromagnetic Energy. Volumes 44-49 are available at this special rate. Print copies of JMPEE are available through October 2015 at the cost of \$50 (shipped to the US) or \$75 (shipped Internationally).

Email [molly.poisant@impi.org](mailto:molly.poisant@impi.org) to place your order today!

## **INTERACTIVE** [IMPI Direct links to Microwave News on the Web](#)

[Microwave Oven Market Expected to Reach \\$25.4 Billion](#)

[Frito-Lay Files for European Patent on Microwavable Snack Pack](#)

[Samsung Launches New Smart Microwave](#)

## Calendar of Events

**AMPERE 2015**, September 14-17, 2015, Krakow, Poland, More info at <http://ampere.pk.edu.pl/>

**Webinar: Microwave Component Configurations for Industrial Heating Systems**, September 29, FREE for Members, [www.impi.org](http://www.impi.org)

**Fall 2015 Short Course**, October 27-29, 2015, Doubletree Downtown, Pittsburgh, PA, USA [www.impi.org](http://www.impi.org)

**Webinar: Magnetrons for Microwave Power Applications**, November 17, FREE for Members, [www.impi.org](http://www.impi.org)

**TRAVELING WAVE TUBES**, January 26-28, 2016. Please see [www.gilmour-twts.com](http://www.gilmour-twts.com) for more info.

**MAGNETRONS AND CROSSED-FIELD AMPLIFIERS**, February 16-18, 2016. Please see [www.gilmour-cfas.com](http://www.gilmour-cfas.com) for information.

**50th Annual Microwave Power Symposium**, June 21-23, 2016, Caribe Royale Suites, Orlando, FL, USA [www.impi.org](http://www.impi.org)

*Do you have an upcoming event for us to list here? Email [molly.poisant@impi.org](mailto:molly.poisant@impi.org) for inclusion.*



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