

THE WAVE



The newsletter publication of the International Microwave Power Institute

January/February 2016



Site of the IMPI 50
Symposium in Orlando,
Florida, USA

ABSTRACTS DUE FOR IMPI 50 on MONDAY, JANUARY 25, 2016

The deadline for the [Call for Papers for the 50th Annual Microwave Power Symposium](#) (IMPI 50) is quickly approaching. Abstracts (2/3 of a page in length) are to be emailed to info@impi.org by this Monday, January 25th for consideration in the program. Extended abstracts will be due later this Spring. Author instructions, registration and hotel information can be [found here](#).

Continued on Page 2

PRESIDENT'S MESSAGE

When I'm not working on IMPI matters, most of my professional life is spent working with attorneys as a microwave expert and/or expert witness. To date I have served in these capacities in 37 different cases, ranging from patent infringement and breach of contract to industrial fires, medical malpractice and injuries. The latter is the type of case that I've worked on most frequently and here are a few instructive things I'd like to pass on.

Microwave oven-related injuries are never caused by the ovens themselves (although I read recently about someone who beat another person about the head with a microwave oven), but rather by the products heated in them that may be overheated, erupt or otherwise injure the user. Let me separate these out into two broad classes:

Microwavable food products: The most common injuries result from products being overheated or erupting, or "exploding" (the term most frequently used by consumers) and causing injuries of all sorts.

Continued on Page 3

2016 MARKS 50th ANNIVERSARY OF JMPEE – BIG CHANGES

Did you know that this year marks two significant milestones for our Institute? In addition to the 50th anniversary of our Symposium, 2016 is the 50th year the Journal of Microwave Power & Electromagnetic Energy is being published. Nearly 1,000 peer reviewed papers have appeared in the Journal since our first edition in 1966!

United Kingdom-based publisher, Taylor & Francis (T&F), officially took over management of JMPEE, on January 1, 2016. IMPI members will retain their complimentary online access to the Journal under this new arrangement. Members can expect to be contacted by T&F in February or March with instructions on how to access Volume 50 and the JMPEE archive. In the interim, members should continue to access JMPEE.org as they have in the past.

"This new partnership will propel JMPEE's prestige, increase readership and sales, and provide a streamlined process for authors and reviewers," said Molly Poisant, Executive Director of IMPI. *Cont on Page 2*

IMPI 50 SYMPOSIUM CONTINUED

IMPI's 50th Symposium will be held June 21-23, 2016 at the luxurious Caribe Royale All-Suite Hotel and Convention Center in Orlando, Florida, USA. Located just 1 mile from Walt Disney World, Caribe Royale is situated on 53 lush, tropical acres and boasts a pool, onsite dining options, a fitness center and much more.

New this year, IMPI 50 will kick off the early afternoon of June 21st with a series of invited lectures preceding the Welcome Reception that evening. Attendees will be able to choose from two optional short courses the morning of June 21st: Microwave 101 will be taught by Bob Schiffmann and Dr. Vadim Yakovlev will offer a short course on Modeling. Once again, we will offer an optional Group Dinner on the evening of June 22nd. The conference will conclude late the afternoon of the 23rd. The full program for IMPI 50 will be released in mid-February.

Confirmed exhibitors to date include: Richardson Electronics, Graphic Packaging International, Ferrite Microwave Technologies, L-3 Electron Devices, Muegge GmbH and PSC Inc. We have a limited number of exhibition booths available for purchase; please contact molly.poisant@impi.org if you would like more details about exhibit or sponsorship opportunities.

IMPI Welcomes New Corporate Members!

Pepsico and Muegge GmbH are the latest additions to a growing list of IMPI Corporate Members. They join ConAgra Foods, Nestle, Tyson Foods, The Kraft Heinz Company, Campbell Soup Company, PSC Inc., Graphic Packaging International, L-3 Electron Devices, Richardson Electronics and Ferrite Microwave Technologies. Corporate membership in IMPI is \$2,000 per year and includes many benefits, including a complimentary exhibit space at our annual Symposia, designation of five professional memberships, complimentary company-wide access to all IMPI Webinars and much more. Contact molly.poisant@impi.org if you are interested in more information.

JMPEE 50th ANNIVERSARY *Continued*

Under this new arrangement, Dr. Juan Aguilar-Garib will remain Editor-In-Chief and IMPI will retain full editorial control of the Journal; T&F will manage, publish and sell the Journal.

IMPI members are encouraged to submit papers for consideration in the Journal. Author instructions are available at www.jmpee.org

Volume 49, Issue 4 was published online in late December 2015, and the copies of Volume 49 are available for sale now at the special member price of \$100 for domestic mailing and \$125 for international mailing. If you would like to purchase a copy of Volume 49, please contact molly.poisant@impi.org by January 31st.

Here are the papers that appear in Volume 49, Issue 4:

A Novel Technique to Measure Small Dielectric Losses Using Cylindrical Cavity Resonator at X Band
Sanjay Mondal and Salil Kumar Biswas

Study on a Glucose Concentration Measurement System Based on Microwave Perturbation Technique
Hao Fu, Xia Xiao, Jiantong Li, and Yong Zong

Comparison of Microwave and Radio-Frequency Heating of Dealuminated Zeolites and Al₂O₃
Markus Kraus, Frank-Dieter Kopinke, and Ulf Roland

Optimized Antenna for Asphalt Mixture Recycling based on Microwave Heating
Tongsheng Sun

Effect of Graphite on the Microwave Susceptibility of Cement Foam Concrete
Juan Xin and Xingwen Jia

President Message Continued

There have been numerous steam burns caused by containers that are too tightly sealed that burn the user when she/he opens the container. A very common injury of this sort comes about from microwavable popcorn bags causing steam burns, especially to the eyelids.

All these injuries could be avoided by proper testing of the products during manufacture or immediately thereafter, and certainly before the products reach retail distribution. Any time any change is made to a product, its formulation, packaging, shipping container, etc., the product must be tested in a variety of microwave ovens to be sure the change hasn't affected safety. It's possible for a single production run to have a problem, not otherwise encountered, that would be uncovered by proper tests.

Non-food microwavable products: Let me say first that I don't believe that any non-food product, even if it's labeled "microwavable", will always be heated safely in a microwave oven. The reason is that foods generally contain large amounts of water, and water boils at 100° C, so the temperature can't climb above that until all the water is gone. However, non-food products, such as wax depilatories, contain active ingredients whose boiling points often exceed 300° C. Couple this with the positional sensitivity of small containers to hot and cold spots in microwave ovens and the stage is set for the product to be overheated, causing burn injuries.

Another thing I've learned is that consumers often don't pay attention to heating instructions, even if the manufacturer puts warning statements on the label. In a recent case, the consumer was told to heat the product for 90 seconds at 50% of full power, and also warned about the hazards associated with overheating the product. However the consumer didn't do that, rather heating it at 100% power for 90 seconds. Was that because the consumer didn't know how to set 50% power on that microwave oven; or to long-time use; or what? Recommending lower powers in heating instructions is not a good idea since: 1. many consumers don't know how to set the oven to a lower power level; 2. lower power levels differ from oven-to-oven since they depend upon the duty cycles of the ovens and they differ over a large range. Also, if a consumer has been using a product for a long time, she/he might not look at the heating instructions at all, and if the heating instructions have changed, this can lead to a dangerous situation. It's important that manufacturers make sure to alert consumers of such changes.

All of this leads me to believe that microwave oven manufacturers should redesign the faceplates of their microwave ovens to make them less confusing. In November I testified in a case that involved a microwave oven that had 24 buttons on the face of the microwave oven, while I just checked two ovens in my lab that have 20 & 23 buttons respectively (they all also have many options associated with some of the buttons, so the consumer may have over 30 decisions to make if she/he makes full use of all the options). I looked at many of the microwave ovens in my laboratory (I have about 30 in this lab) and on some ovens the "Start" button is on the lower right, in others it's on the lower left, and one has it about midway between the top and bottom on the right. Why can't they always be in the same place? Also, I believe that the digital input is confusing to many consumers. Remember that functional illiteracy in the United States is above 20%, meaning a large portion of the population cannot read and understand a newspaper; couple that with persons whose English-speaking ability is not very good. How many consumers do you think know how to input 50% of power into their microwave ovens; or know that 1:30 minutes is the same as 90 seconds? Do we really need all those buttons for soups & entrées when most consumers use their ovens as re-heaters for coffee or tea, to pop popcorn or to heat frozen prepared foods? Why not have a simple dial to input the time – you could even have a digital display-window showing the minutes or seconds as the dial is turned and, if you insist on having 50% power then why not a button that says 50% power? The bottom line of what I'm saying is that I believe manufacturers are making their microwave ovens too difficult for many consumers.

President Message *Continued*

We have to face the fact that, despite what manufacturers in the 1970s & 80s believed would happen, very few consumers actually cook in their microwave ovens, so why not offer simple to use microwave ovens along with those with all the bells & whistles? Also, there are a lot of products on the market that should never be there because they are too dangerous.

So what is IMPI's role in all of this? Well, I think that it's educating the consumer. We have a blog that isn't being used adequately and we've had some discussion within the Executive of making the blog more consumer-friendly. Consumers really don't understand microwave ovens. If you'd like to see that for yourself go to the website www.quora.com and search for the questions that consumers ask about microwave ovens, and you, as a professional, may be surprised:

How do you toast bread in a microwave oven?

How do you clean a microwave oven?

Can you get cancer eating foods heated in a microwave oven?

So, what do you think? I'd love to hear your comments on my rant.

All the best, Bob



JOB ANNOUNCEMENT: Mid-west manufacturer of commercial food preparation equipment is searching for a microwave engineer or food technologist with hands-on experience developing microwave solutions to food preparation, who will be integral to the development of a next generation food-service. Experience with food preparation, food packaging, and rethermalization are preferred. We are an EEO company, offering a competitive compensation package, and will provide relocation assistance to the right candidate. If you feel you have the right background, would like to participate in developing new technologies, and become a technical leader within our company, please contact Molly Poisant at 1.804.559.6667, or e-mail your resume to her at molly.poisant@impi.org.

News from Around the Web

Microwave Oven Market [Worth \\$12.70 Billion By 2022](#): Grand View Research, Inc.

Biggest Food Story of 2015: [Did Someone Say Breakfast?](#)

[Microwave electromagnetic properties](#) of single bacterial cells measured for the first time

AdvancePierre Foods [Opens Innovation & Research Center](#)

Disintegration of Carbon Dioxide Molecules in a [Microwave Plasma Torch](#)

Microwaves May [Improve Purification Technique](#)

Calendar of Events

TRAVELING WAVE TUBES, January 26-28, 2016. Please see www.gilmour-twts.com for more info.

MAGNETRONS AND CROSSED-FIELD AMPLIFIERS, February 16-18, 2016. Please see www.gilmour-cfas.com for information.

IMPI SPRING WEBINAR SERIES, "Focus of Food Safety: An Update on Regulatory Developments, Microbiology Considerations & Validation Techniques" Feb, March & April 2016. Free for IMPI Members. Details will be emailed to IMPI Members shortly.

50th Annual Microwave Power Symposium, June 21-23, 2016, Caribe Royale Suites, Orlando, FL, USA: **Call for Papers now available** online at www.impi.org

3GCMEA, July 25-29, 2016, Cartegana, Spain. **Call for Papers now available** online at <http://cpcd.upct.es/3gcmea/>

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

CALL FOR EARLY IMPI PHOTOS, MEMENTOS, STORIES

Did you take part in one of IMPI's early Symposia? Do you have photos, mementos or stories you would be willing to share with us? Please contact molly.poisant@impi.org if you are willing to share your memories with us. We have some special plans in place to showcase IMPI's remarkable history at the IMPI 50 Symposium in June!



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