

# THE WAVE



*The newsletter publication of the International Microwave Power Institute*

March/April 2015



Kona Kai Resort & Marina

## IMPI 49 SYMPOSIUM PROGRAM RELEASED, REGISTRATION OPEN

We are less than 12 weeks away from the 49<sup>th</sup> Annual Microwave Power Symposium (IMPI 49), to be held June 16-18, 2015 at the beautiful Kona Kai Resort & Marina in San Diego, California, USA. The full [Schedule of Events](#) is online. [Registration is open](#) and the early bird registration rates are valid until April 15th. A limited number of rooms at the Kona Kai are available at the group rate of \$149 – these rooms will likely sell out by the end of this week, so [make your reservation today!](#) We have added an overflow hotel next door to the Kona Kai, please [click here](#) for more details.

IMPI 49 will feature 2 short courses, 2 keynote addresses, 50 oral and poster presentations, panel discussions, 6 exhibitors and a host of networking opportunities, including a Welcome Reception and Group Dinner at the Bali Hai Restaurant. The Spouse/Guest program will be posted online by the end of this week.

The keynote on Wednesday, June 17<sup>th</sup>, “**Microwave induced plasmas and their applications in the food industry**” will be given by K.D. Weltmann of Leibniz-Institut for Plasma Science and Technology e.V. and Thursday’s keynote address will be given by Joe Wheeler of Virginia Tech who will talk about “**The Kitchen of the Future.**”

The following Invited Papers will also be featured at IMPI 49:

**Plant Growth and Yield of Wheat and Canola in Microwave Treated Soil**

Graham Brodie, The University of Melbourne

**Development of Microwave Pasteurization Processes for Packaged Foods**

Frank Liu, Washington State University

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## President’s Message

With February having been the third coldest month on record here in New York City, I’m happy that it is over 50° today as I dictate this memo. Can Spring be far behind?

The power of the Internet has been much on my mind this month. Early in February I attended several lectures at the American Museum Of Natural History on the topic “Digital Darwin” – the celebration of the digitization of all, or nearly all, of Charles Darwin’s writings: his notes, memos, letters, drafts, etc., all of which is to be made available free, to anyone, on the Internet. It was also the celebration of a historic relationship between Cambridge University, which holds the majority of the Darwin archive, and the Museum’s digitization services. Just think of what it would have taken before this if you wanted to research anything related to Darwin and his writings – needing to travel to Cambridge and other libraries around the world, and here we are, able to sit at our desks and call up all these documents at our leisure.

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## *President's Message Continued*

I learned another major thing from an article titled "The Cobweb" written by Jill Lepore for The New Yorker's January 26, 2015 issue. She refers to something called the Wayback Machine that archives Web pages. According to Lepore, the average life of a Web page is about 100 days and the Wayback Machine archives them so they may be maintained and searched. She states "Web pages don't have to be deliberately deleted to disappear. Sites hosted by corporations tend to die with their hosts." The Wayback Machine is a Web archive, a collection of old Web pages, the biggest of all such collections that currently has archived about 456 billion Web pages. (The address of the Internet Archive is [archive.org](http://archive.org)) Think of the ability this gives one to search the Web, both old and new. As a graduate student at Purdue University I took a first semester course in "Library Science" in which I spent hours in the library searching texts such as "Beilstein" looking for means of synthesizing particular organic compounds. Now most of that information is at our fingertips, at our desktops and laptops.

All of this relates to information transfer and that certainly is a major function of IMPI, what with our webinars, symposia, Journal of Microwave Power and Electromagnetic Energy, etc. As scientists, researchers, technologists, engineers, etc., what a great opportunity IMPI and the Internet offers us to fulfill our needs. We at iMPI strive to bring you the most up-to-date and accurate information for your various activities. Please let us know how you think we're doing and what else you would like to see.

In the meanwhile, it's only a few more days to Spring and for me that means that it's not long until I be back on the trout streams.

All the best,

Bob



## ***IMPI 49 Symposium Continued***

### **Market Trends in High Power Microwave Technology for Industrial Microwave Heating and Industrial Plasma Applications**

Klaus Baumgaertner, Muegge GmbH

### **Dielectric Properties and Heating Rate of Broccoli Powder as Related to Radio Frequency Heating**

Samet Ozturk, University of Georgia

### **Optimization of Thicknesses of Microwaveable Products in Multi-compartment Meals using Dielectric, Thermal, and Physical Properties**

Jeyam Subbiah, University of Nebraska-Lincoln

### **Automotive Microwave Plasma Ignition Comes of Age**

Roger Williams, NXP Corporation

### **Non-thermal Factors in Field-Assisted Powder Consolidation**

Eugene A. Olevsky, San Diego State University

### **Industrial Usage of PCVD Process to Manufacture Optical Glass Fibers**

Mathe van Stralen, Prysmain Group

Additionally, the IMPI 49 program will include a Food Safety Panel and two short courses: **Scientific Writing in English** and **Microwaves 101: Fundamentals of Microwave Heating**. More details can be found at [www.impi.org](http://www.impi.org)

## The Journal of Microwave Power and Electromagnetic Energy

Volume 49, Issue 1 was published in March 2015. The following papers appear in this Issue of JMPEE:

### Quarter-Wavelength Microstrip Coupler

*Maheswari Shanmugam and Jayanthi Thankappan*

### Ultra Wide Band Based Quantitative and Qualitative Method for Bacterial Endotoxin Detection

*Muhammad Elsayeh and Ahmed H. Kandil*

### Study on Terahertz Spectroscopic of Energetic Ion Salt and Oxidizer

*Huang Ping, Qiu Rui, and Tang Yuxiang*

### Migrating Temperature "Thermo-Chromatographic" Pulses (TCP) in Different Zeolites and Other Microporous Materials

*Markus Kraus and Ulf Roland*

### Temperature Control Using Hybrid Control with MRAC and ECS into a MIMO Microwave Heating Process

*Yupeng Yuan, Shan Liang, Qingyu Xiong, Jiaqi Zhong, Yuzhe Zhang, and Jiannan Li*

IMPI Members are encouraged to submit manuscripts for the Journal of Microwave Power & Electromagnetic Energy.

Additional details on the submission process can be seen [here](#).

Your IMPI membership entitles you to complimentary online access to the Journal; contact [molly.poisant@impi.org](mailto:molly.poisant@impi.org) if you need assistance registering with the JMPEE website. It is not too late to order a hard copy of JMPEE Vol 48 for the special member price of \$100 domestic/\$125 international (including shipping). Please contact the office ASAP if you want a hard copy; they are in and can ship immediately.

### An Infrared controlled Microwave oven

A recent article on Slate.com "The Microwave Gets Its First (and Possibly Best) New Feature in Decades", and elsewhere under different titles, described work done by an engineer Mark Rober who put an infrared sensor in the top of a microwave oven and installed the screen in the oven-door claiming that it provides a "heat map" which can be used to control a microwave oven and prevent non-uniform heating, i.e. cold spots, in the microwaved products. Mr. Rober has applied for a patent for his device and is putting it on a crowd-funding site.

I have several comments, historical, technological, and commercial: **Historical:** this is not a new idea, as anyone involved in the food industry knows. Many large food companies have used this technique mapping hot and cold spots on products such as pizza. Also, years ago I used an IR sensor coupled to a controller circuit to operate prototype microwave oven for the sterilization of dental instruments, thereby preventing overheating of special components. What is new about Mr. Rober's idea is linking it to a mapping screen in the door of the oven so the user can see a temperature map of what's cooking.

**To read this full Blog Post, [click here](#)**



***The Bali Hai Restaurant, also located on Shelter Island in San Diego, will be the site of the IMPI 49 Group Dinner. \$50 per person includes a Luau inspired menu, non-alcoholic beverages, dessert, tax and gratuity.***



***Shelter Island, San Diego, CA, USA***

## Meet the New Corporate Member: Campbell Soup Company

Campbell is driven and inspired by our Purpose, “Real food that matters for life’s moments.” The Company makes a range of products from high-quality soups and simple meals to snacks and healthy beverages. For generations, people have trusted Campbell to provide authentic, flavorful and readily available foods and beverages that connect them to each other, to warm memories, and to what’s important today. Led by its iconic Campbell’s brand, the company’s portfolio includes Pepperidge Farm, Goldfish, Bolthouse Farms, V8, Swanson, Prego, Pace, Plum Organics, Arnott’s, Tim Tam, Royal Dansk and Kjeldsens. Founded in 1869 and headquartered in Camden, NJ with manufacturing locations worldwide, Campbell has a heritage of giving back and acting as a good steward of the planet’s natural resources.

Microwave packaged products have been in the Campbell portfolio since the 1980s beginning with “Cookbook Classics,” followed by the first retail ready plastic retort bowl with a peelable lid, Microwave Chunky Soup in trays and Super Combo Soup & Cheeseburger meals. Today there is still a strong presence in shelf stable microwave products with Slow Kettle & Chunky Soup bowls and Soup On The Go microwave drinking soups. In our baked products, microwave-enhanced packaging solutions have been used on frozen Pot Pies and most recently Pepperidge Farm Garlic breads to improve product performance. Microwave technology also plays a part in Campbell’s manufacturing processes, enabling optimization of processing and unique product characteristics.



Campbell Soup Company is one of IMPI's 8 Corporate Members. They join ConAgra Foods, Nestle, Heinz, Hillshire Brands, PSC Inc., Graphic Packaging and Richardson Electronics.

***Have you thought about a Corporate Membership for your company? More information on the benefits of Corporate Membership is available on the [IMPI.org website](http://IMPI.org).***

### **Professional Dues Rates to Increase May 1, 2015**

For the first time in over 6 years, the IMPI Board of Governors has voted to increase the Professional Membership dues rate from \$170 to \$195 per year. The rates for Corporate Members (\$1800), Student Members (\$50) and Fellows (\$25) will remain the same. Membership in IMPI includes: special Member pricing to all Symposia and Short Courses, complimentary access to all IMPI Webinars (5 in 2015), complimentary online access to JMPEE, a subscription to this newsletter and access to the Members Only section of the IMPI website and unprecedented networking with the best and brightest in the Mw community. Contact [molly.poisant@impi.org](mailto:molly.poisant@impi.org) with any questions.

## **INTERACTIVE IMPI** *Direct links to Microwave News on the Web*

Researchers Demonstrate Graphene's Ability to Provide [Effective Microwave Shielding](#)

Microwave Packaging To Be [Worth €11.9 Billion](#) In 2020

Which? reveals the [microwave ovens with staying power](#)

Microwaving snails could be [key to pest control](#)

New study points to [most common foodborne illness](#) sources

## Calendar of Events

**IMPI Webinar: Validation Using the IEC Method**, April 21, 2015, [FREE for IMPI Members](#) Registration required.

**49<sup>th</sup> Annual Microwave Power Symposium**, June 16-18, 2015, Kona Kai Resort, San Diego, California, USA [www.impi.org](http://www.impi.org)

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

**Fall 2015 Short Course**, October 27-29, 2015, Doubletree Downtown, Pittsburgh, PA, 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.*

### IMPI to Prepare Strategic Plan: We Need Your Feedback!

With 2016 being a landmark year for the Institute, with both our 50th Symposium and the 50th Volume of JMPEE being published, IMPI is in the process of preparing a new Strategic Plan. A committee comprised of 6 members from all sectors of our organization will meet for 1 ½ days in June to discuss the current strengths and weaknesses of our Institute and talk about our short term and long term goals for the Institute. In the months leading up to this meeting, members are encouraged to provide feedback to better help us prepare. This is after all, your organization. Let us know what we are doing well and what we could be doing better. Specifically, we would like each member to answer these 2 questions: Why do I belong to IMPI? What do I get from IMPI I don't get anywhere else? All feedback can be anonymously emailed to our outside consultant, Bob Ramsey, at [bob@vacep.org](mailto:bob@vacep.org) Thanks for assisting us in this effort. We look forward to sharing the Strategic Plan with you when it is completed.



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