

# THE WAVE



*The newsletter publication of the International Microwave Power Institute*

**March/April 2013**



## **Letter from the President** *by Bob Schiffmann*

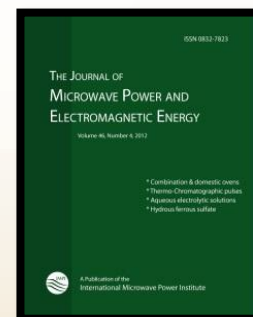
Because of some project work, I am deeply immersed in the problems of Myth vs. Reality as they relate to microwave ovens. I am continuously astonished by the misperceptions that float around the Internet about microwave ovens, nearly all of them touting dangers such as: eating microwave foods can cause cancer; the radiation from microwave ovens can kill you; microwave cooking destroys all nutrients in the food; and more. All of us involved in this field know that all these claims are nonsense, and several of us continue to battle these misconceptions by directly addressing them in the various blogs in which these misstatements occur. This again brings me back to the importance of IMPI and its various products in defining and disseminating information on the latest advances in science and technology involving microwave heating.

The jewel in the crown of IMPI is undoubtedly the Journal of Microwave Power and Electromagnetic Engineering (JMPEE), now entering its 47th year of publication, and for the last several years under the excellent management of our Editor-In-Chief Juan Aguilar.

It is a unique product – while there are other microwave societies around the world, none has as prestigious a publication. But there is a misconception about the availability of the Journal to IMPI members. Several years ago, the IMPI Board decided that members receive electronic versions of JMPEE instead of the hardbound copies. This was decided for two reasons: first, this is what is the trend throughout the scientific world, especially for universities whose requirements are for numerous different journals has resulted in a shortage of shelf and storage space, while electronic versions may be searchable; secondly, in order to avoid having to raise membership dues since they no longer covered the costs of printing, shipping and other associated costs. However, it is still possible for any IMPI member to obtain hardbound copies of all issues of the Journal for an additional fee (see sidebar for additional information). I know that many of you prefer to keep your libraries of JMPEE complete with hardbound copies, I certainly do. So to those of you who prefer reading the hardbound copy instead of reading online, I urge you to take advantage of the availability of these copies through the IMPI office, which has back issues as well as the current issues available.

*(continued on page 2)*

**JMPEE Volume 46 (2012)  
Released!**



This is a reminder that hard copies of Volume 46 (2012) of the Journal of Microwave Power and Electromagnetic Energy are now available for purchase. IMPI Members have complimentary access to the online version, but print copies may be purchased for the reduced rate of \$100 for domestic orders and \$125 for international orders. Please contact [molly.poisant@impi.org](mailto:molly.poisant@impi.org) if you would like to reserve a copy.

Is your personal library missing past printed editions of the Journal? We have several copies of previous years' Journals available for purchase at a reduced rate. Please send your requirements to [molly.poisant@impi.org](mailto:molly.poisant@impi.org) prior to April 1<sup>st</sup> for a quote; first come, first served.

## Ask the Expert: YOUR Questions, Answered.

In the previous edition of "Ask the Expert," we asked the FSIS/USDA about the best practices for validating cooking instructions. In this edition, we posed the same question to ConAgra Foods' Steve Vlock for a food company's perspective as well.

### QUESTION:

What are best practices for validating cooking instructions [testing and confirming the heating requirements] of NRTE products?

### ANSWER:

The IEC 705 and IEC 60705 output tests are internationally accepted protocols that are relatively similar but do have some differences in microwave output testing. Both tests involve heating 1000g of potable water in a specific borosilicate glass container from 10°C to 20°C at maximum power for a certain period of time based on the wattage output of the microwave oven. The IEC 705 test was the standard for microwave energy output measurements but was declared obsolete and replaced by IEC 60705. Here are the differences between the two methods:

- IEC 705 specifies ambient room temperature as 20°C +/- 2°C and IEC 60705 specifies ambient room temperature as 20°C +/- 5°C.
- The final load temperature (of the water at the end of the test) for IEC 705 is 20°C +/- 1°C whereas IEC 60705 is 20°C +/- 2°C.
- IEC 60705 requires rounding to the nearest 50 watts while IEC 705 does not involve rounding.
- IEC 705 requires temperature measurements to be accurate within .25°C and time measurements to be within .25 seconds. IEC 60705 has no stipulations on time or temperature accuracy.
- IEC 705 neglects the magnetron heat up time whereas IEC 60705 accounts for this.

- IEC 60705 is testing for overall microwave efficiency while IEC 705 is testing more for cooking efficiency.

According to the United States Department of Energy (US DOE), testing between IEC 705 to IEC 60705 results in a fairly uniform 1% – 2% decrease in efficiency across all microwave ovens. The reason for this is that IEC 60705 factors in higher energy consumption to the calculation than does the IEC 705 test. IEC 60705 does result in a variation of 0% – 5% while IEC 705 had a test variation of 0% – 1.5%, the larger variation being due to the 50 watt rounding employed in the IEC 60705 test. The 50 watt rounding does help to smooth out the statistical "noise" that can result from performing fewer rather than more tests.

Overall, the IEC 705 test has tighter tolerances, but may not be as achievable (i.e. .25°C temperature accuracy, +/-1°C water temperature rise); the IEC 60705 test accounts for magnetron heating which gives a more accurate picture of microwave efficiency but does have a wider test variation. While obsolete and not recognized as an international standard, the IEC 705 test may be useful in certain applications, depending on what factors of performance are being examined.

To submit your question to our experts, please email us at [info@IMPI.org](mailto:info@IMPI.org) with "Ask the Expert" in the subject line.



### Letter from the President *cont.*

Speaking of myth versus reality, there is a lovely monthly magazine "Skeptic" that you can read online at <http://www.skeptic.calm/eskeptic>, or receive portions of Skeptic in your e-mail box: <mailto:eskeptic@skeptic.com>. In a recent issue there was an article "More Physics of UFOs" which succinctly described the difference between myths, or in this case "belief systems", and science. I find it fascinating when reading the comments on the various blogs that have to do with the supposedly terrible things microwave ovens do to foods and to humans, which many of the writers really believe what they're saying and no amount of evidence to the contrary will change these beliefs. It's a very scary situation. But every now and then, I will write a correction to some misinformation and actually get a response from the blogger apologizing for spreading falsehoods and promising to contact me in the future should he or she ever wish to write about microwaves ovens again. (One woman wrote to me recently, after I took her YouTube video to task for defaming microwave ovens, that she never knew there is such a thing as a microwave scientist – I think she is now a convert!) It may only be one out of every thousand that comes to recognize the falsehood of what he or she has written - a small number but at least it's something.

Finally, IMPI member Steve Drucker shared [this link that provides microwave ovens sales & shipments in 2009 for many countries](#)

*Best wishes,*

*Bob*





## Member News

“Cober moves up” is the story from Bernie Krieger, CEO of Cober Inc. Last month Cober had its 47<sup>th</sup> birthday. That's a long time and a lot of experience but Bernie says, “like the marching song about old soldiers fading away, industrial microwave people don't fade away they just radiate.” I am pleased to tell you that two weeks ago Cober moved to a new facility in Stratford Connecticut, about 20 miles north of their previous location in Norwalk Connecticut. More important, we have reinforced our strong capability in our industrial areas of focus.

“We have also changed our name from Cober Electronics Inc., to Cober Inc. That sounds like a small change but indeed it is a significant one because it shows the broader market objectives of the company. We manufacture systems to help our industry be more productive. We focus on solving problems and providing solutions through the application of advanced heating technologies. The new plant is modern and beautiful but what makes it effective is the people. Business development is run by Matthew Krieger, Bernie's son. Assisting him is an engineering specialist in processing system development, a senior engineer in automotive component engineering, and a senior engineer in microwave system design. Plus our operations department, purchasing, contracts, field services and engineering departments operate together with management as an effective team.”

Cober also houses CoberMuegge, a 15 year joint venture with Muegge Electronic of Germany. CoberMuegge manufactures

microwave generators ranging in power of 800 Watts up to 100 kW at 2450 and at 915 MHz. All equipment is available with switch mode power supplies. The CoberMuegge product line, in addition, features microwave plasma systems for semiconductor and high-value markets.

Bernie Krieger is also the president of the Microwave Working Group which last year produced the second global Congress on microwave and RF applications in Long Beach California. Bernie is a fellow of IMPI and a previous president of IMPI.

*Cober's new address is 30 Moffitt Street St., Stratford, CT, 06615. Our telephone number remains the same, 203-855-8755 as does our fax, 203-855-7511. You can find us on the web at [www.cober.com](http://www.cober.com) and CoberMuegge at [www.cobermuegge.com](http://www.cobermuegge.com)*

## Meet the Member

Lori Ann Kuserk

Project Lead - The Consumer Test Kitchen  
Campbell Soup Company



Lori graduated from Rowan University with a B.S. in Environmental Sciences and a concentration in Geography. She worked for environmental consulting firms and an oil refinery developing a specialization in soil remediation strategy development and planning.

After a few years, Lori decided to take her passion for food and home entertaining and turn it into a career; enrolling in the Restaurant School at Walnut Hill College culinary program and then eventually starting work for Campbell Soup and taking on the roll she currently holds as Project Lead of the Consumer Test Kitchen.

Lori supports recipe development across Campbell's brands; but her primary focus is writing preparation directions for product labels and performing microwave product tests from a consumer perspective. Lori joined IMPI in October 2011.

Outside of work Lori belongs to the New Jersey Beekeepers Association and has been a beekeeper for two years. She is also a Kansas City BBQ Society certified judge and has earned multiple certificates from the Philadelphia Wine School.

## INTERACTIVEIMPI *Direct links to Microwave News on the Web*

**Online, Milne Fruit Products Sign Collaboration Agreement *Food Product Design, January 29, 2013***  
VANCOUVER—[EnWave Corp.](http://EnWave Corp) announced Jan. 29 that it signed an additional collaboration agreement with [Milne Fruit Products, Inc.](http://Milne Fruit Products, Inc.), to include the right to test and develop dried peas and corn using the company's Radiant Energy Vacuum ("REV™") technology. Click [HERE](#) to read more.

### **New Food Facts Video Released: Food Thermometers**

In a new IFT Food Facts video, Bob Gravani, Ph.D., Professor of Food Science at Cornell University and an IFT Food Science Communicator, explains why it's important to use a food thermometer when cooking. The video and a fact sheet are provided to consumers and members of the media through our website: [www.IFTFoodFacts.org](http://www.IFTFoodFacts.org)

### **Piamo Single-Serve Espresso Maker for Microwaves *Gizmag, February 5, 2013***

By Bridget Borgobello

Christoph Meyl was faced with a dilemma that many espresso-lovers would relate to. His office was too far from the nearest café, the communal kitchen was shared with 600 other employees and there was no coffee machine, just a microwave. All Christoph wanted was to enjoy a good coffee at work, so with the help of brother Hendrik he invented a solution – the Piamo single-serve espresso maker.

Read More [HERE](#)





## UPCOMING EVENTS

### HES13

#### May 2013, Padova, Italy

International Conference on Heating by Electromagnetic Sources (HES13) will be in Padova (Italy), May 2013. In particular, there is an interesting session dedicated to Microwave Heating Processes. Please visit their website for more information: [www.hes-13.com](http://www.hes-13.com) Paper deadline may be extended until Mar 15, 2013.

### IMPI 47

#### June 2013, Providence, Rhode Island

Planning for the 47<sup>th</sup> Annual Microwave Power Symposium (IMPI 47), to be held June 25-27, 2013 at The Biltmore Hotel in Providence, Rhode Island, is well underway. Over 50 technical paper submissions were submitted for review. The Technical Program Committee, under the leadership of Dr. Vadim Yakovlev, is reviewing the selections and acceptance notices will be sent out the first week of March.

In addition to a strong technical program, this year's Symposia will feature a full 2-day Food Track, being led by IMPI President, Bob Schiffmann. The Food Track will combine technical papers, plenary talks and panel discussions on topics such as Food Safety, Food Service, Warnings and Liability, Validation. We'll be joined by two eminent speakers: Bill Shaw, Director, Risk, Innovations and Management Division, USDA/FSIS/OPPD, who will join the Food Safety Panel; and Dr. Gerry Goldhaber - one of the world's authorities on warnings labels who will address microwavable foods labeling issues. In addition we are planning an "Ask the Expert Panel" that will answer many of the audience's questions regarding microwave ovens, foods, safety and more.

Registration is scheduled to open on March 15<sup>th</sup>. Attendees are encouraged to book their hotel room as soon as possible at The Biltmore Hotel (+1.401.271.0700) as a limited number of rooms at the \$129 group rate are available; ask for the IMPI 47 block of rooms when making your reservation.

### Rustum Roy Memorial Symposium

#### October 2013, Montreal, Quebec, Canada

The "Rustum Roy Memorial Symposium: Processing and Performance of Materials using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work" at Materials Science & Technology Conference and Exhibition (MS&T '13) will take place on October 27-31, 2013, Montreal, Quebec, Canada.

<http://www.matscitech.org/> See sidebar to the right for more information.

### Rustum Roy

#### Memorial Symposium

This symposium focuses on the discovery of novel processing methods, manufacturing, and performance of materials systems under the influence of microwaves, electric and magnetic fields, laser, ultrasound and mechanical energy. The symposium explores the fundamental science underlying these processing methods. Phenomena where electric and magnetic driving forces are coupled with mechanical and chemical effects will be emphasized especially at the system level, as for example in sintering and superplastic deformation of ceramics, failure mechanisms in batteries and fuel cells, microwave and laser assisted processes, and biological applications. The influence and the interactions of these forces on microstructure evolution and phase transformations are of interest. The symposium encompasses various classes of materials, including metals, ceramics, semiconductors, polymers, biomolecules, and liquids.

Materials Science & Technology Conference and Exhibition (MS&T '13) is the most comprehensive forum for materials science and engineering technologies. MS&T attracts over 3,200 people each year. There is no better way for companies and universities to target those audiences.

Abstracts Due: **15 March 2013**

Click [HERE](#) for the Abstract submission link

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