

# THE WAVE



**The newsletter publication of the International Microwave Power Institute**

April 2024



## **IMPI 58 Symposium to be Held in Suburban Washington, D.C.**

The **58<sup>th</sup> Annual Microwave Power Symposium** (IMPI 58) is less than one month away! At present, 105 attendees are registered to participate, May 29-31, 2024, at the Hyatt Regency Reston in suburban Washington, D.C., USA. Registration is still available.

IMPI will feature two keynote addresses: “*Microwaves in Chemical Industry: Scale up Challenges and Modeling Approaches*,” by Pranjali Muley of the National Energy Technology Laboratory and “*Microwave & RF Process Solutions to Deliver Positive Food Choices for Consumers*,” by John Bows of PepsiCo. Invited Papers will be given by Roger Ruan of the University of Minnesota, Morgan Chen of Carnegie Mellon University and Cesar Nieves of the Air Force Research Laboratory. Special Sessions include the *Industrial Applications/Microwave Working Group* Session as well as *Terahertz Technology*. The event will conclude with a panel discussion on “*Opportunities for Young Professionals*” and the Student Awards for Best Oral and Best Poster Presentation. The full Schedule of Events is available [here](#).

Several attendees have already registered for Short Course I: MW 101: Mw/RF Technology and Short Course II: Solid-State, RF Energy & Machine Learning: Case Studies & Demonstration.

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*Cover: Aerial view of the Hyatt Regency Reston in suburban Washington, D.C.*

## **PRESIDENT'S MESSAGE**

What is “microwave-safe?” Most readers of this newsletter will agree that the answer can be quite complicated. To some it is a no-brainer, but to many others it is not so easy. We see many consumer cookware products intended for use in a microwave oven that are labeled microwave-safe. Indeed, most are perfectly safe and have been demonstrated to be safe by rigorous testing. European Standard EN 15284:2007 is a test method for determining the suitability for use in a microwave oven of ceramic, glass, and glass-ceramic materials and articles in contact with foodstuffs. The requirements for suitability are a) no damage to the article itself, and b) no heating beyond safe limits for handling as specified by ISO 13732-1 (Part 1). Quite likely most cookware labeled microwave-safe have been tested according to this standard and meet its requirements.

This question is at the center of recent discussions about so-called “microwave-safe” stainless steel food storage containers that are currently available for retail sale to consumers. I was surprised to learn only recently that these products have been available for years. A quick search at popular online marketplaces will reveal several. Imagine yourself using one of these products as intended. Ignoring how poorly the food might be heated (due mainly to shielding from microwaves), I have no doubt you will be able to safely use a stainless steel dish without causing damage to the dish or your microwave oven. Now imagine a typical consumer doing the same. Will the consumer know to be sure the stainless steel dish does not come in contact with the cavity wall as the turntable rotates? Will the consumer know to not put two stainless steel dishes on the turntable close enough to each other to cause arcing? Maybe. Maybe not.

To see for myself I bought a set of “microwave-safe” stainless steel food storage containers listed at an online marketplace. The description on the listing includes a warning that “...it cannot be put into a microwave oven with a power of more than 800W, and the heating time should not exceed 5 minutes.” Is that all a consumer needs to know to safely use this product in a microwave oven? Expecting to find more detailed instructions provided with the actual product, I found no instructions whatsoever other than a similar warning on the product wrapper.

The next question that quickly comes to mind is, how is “microwave-safe” validated for a product like this? TÜV Rheinland is one of the world's leading testing service providers, both well-known and well-respected. A manufacturer of stainless steel food storage containers that describes their products as microwave-safe recently shared TÜV Rheinland Test Reports for two of its products tested under EN 15284:2007. The test procedure calls for placing a single article at the center of the turntable and operating the oven at a specified minimum power level for a specified period of time. Not surprisingly, test results indicate the products meet the requirements (i.e. not damaged or overheated) to be deemed “microwave-safe” under this EN standard.

Is EN 15284:2007 a valid method to verify that a product is microwave-safe? In the context of ceramic, glass, and glass-ceramic materials it may well be, but I will argue that in a broader, more comprehensive context that includes metals it is not. I believe IMPI has a responsibility to address this issue in the interests of consumer safety and the microwave cooking industry. Discussions with representatives of the microwave cooking and stainless steel industries are ongoing and I am confident they will lead to a satisfactory and workable solution.



*John F. Gerling, IMPI President*

## IMPI 58 Symposium *Continued*



*From left: Pranjali Muley, John Bows, Roger Ruan, Morgan Chen & Cesar Nieves*

In addition to the robust content, IMPI 58 will provide excellent networking opportunities, beginning with the Exhibitor Showcase, where nineteen (19) companies will provide booth-side demonstrations. Exhibition space at IMPI 58 is sold out! Thank you to: Muegge-Gerling, SAIREM, Richardson Electronics, QWED, Stellant Systems, Microwave Techniques, Symphony Microwave, Ampleon, pinkRF, Odyssey Technical Solutions, IMPI's Solid State RF Energy Section, WavePIA, TRUMPF Hüttinger, MKS, 3DRFE, Mini-Circuits, RFHIC, Microwave Amps Limited and Communication Power Corporation

The Group Dinner, at Fogo de Chao (a Brazilian steakhouse) has seventy-five (75) registrants thus far, including several guests who will take part in the [Spouse/Guest program](#).

[Registration for IMPI 58 opened](#) in the Fall of 2023 and the rates remain the same as last year. Early Bird pricing for IMPI Professional/Corporate Members is \$775 and Student IMPI Members may attend for \$495. A limited number of sleeping rooms are available at the Hyatt Regency Reston for a [special group rate of \\$239](#) plus applicable taxes, through May 6<sup>th</sup>.

Thank you to Muegge-Gerling for serving as the Platinum Sponsor of IMPI 58. If your company is interested in exploring a [Sponsorship](#) please review the packages ASAP and reach out to [molly.poisant@impi.org](mailto:molly.poisant@impi.org)

The Hyatt Regency Reston, located just six miles from Dulles International Airport (IAD), is the perfect setting for IMPI's growing Symposium. Anchored twenty miles west of Washington, D.C., the Hyatt sits on a recently completed metro rail line that runs from IAD to D.C., and is part of the acclaimed Reston Town Center, a walkable town square which boasts over 35 retailers, 50 restaurants, a cinema and plentiful outdoor spaces.

[IMPI 58 is led by](#) Technical Program Chair, Dr. Reeja Jayan of Carnegie Mellon University (CMU) and Technical Program Vice Chair, Dr. Ralph W. Bruce, of RWBruce Associates, LLC, and formerly of Vanderbilt University. We extend our gratitude to Dr. Jayan, Dr. Bruce and the entire Technical Program Committee for the tireless work they have put into IMPI 58 over the past eleven months! We look forward to seeing everyone the end of next month!

### **SAVE THE DATE: IMPI FALL 2024 SEMINAR**

IMPI's Fall Seminar will take place October 8-10, 2024, at SAIREM, in suburban Atlanta. The event will take place at their facility and include live demonstrations on a wide variety of Mw/RF processes. Registration will open in July. Program updates, hotel and registration details will be added to the [Fall Seminar webpage](#) in the coming months.





## VOTING OPENED FOR BOARD OF GOVERNOR ELECTIONS



Further to the email the IMPI Membership received on April 15, 2024, [voting is now open](#) for the Board of Governors election. In accordance with the Institute's Bylaws, the term for the elected Voting Board Members shall be three years. Voting Board Member's terms are staggered, with a subset of the Board running each year. Candidate Statements are available [here](#) and all IMPI Members should cast their electronic ballot as soon as possible, but no later than May 30<sup>th</sup> at 3pm ET. The Board will be sat during the Annual IMPI Business Meeting, Thursday, May 30<sup>th</sup> from 5:15pm-5:45pm at the Hyatt Regency Reston.

The five nominees for terms commencing on June 1, 2024, are: Mr. Brian Blackwell of Odyssey Technical Solutions; Dr. Graham Brodie of James Cook University, Dr. Candice Ellison of USDA-ARS, Mr. John Mastela of JFM Technical Corporation; and Dr. Vadim Yakovlev of Worcester Polytechnic Institute.

IMPI's Secretary, Dr. Sean McKeown, chaired the Nominating Committee. "The IMPI Board of Governors election candidates embody the Institute's mission by bringing diverse expertise in science, engineering, technology, and practical development to the table. Their background aligns seamlessly with IMPI's goal of connecting the global microwave/RF community and driving innovation in the laboratory, industrial processing, and the marketplace. The participation of IMPI membership in the upcoming election is crucial as it ensures that the voices of the global microwave/RF community are represented in selecting leaders who will steer the Institute toward continued growth and advancement in the field," McKeown stated.

A directory of current IMPI Board Members, including terms, can be found [here](#). The new Board will convene post-election to elect their Executive Committee for the year ahead. **Thank you in advance for taking one-minute [to cast your electronic ballot!](#)**



## IMPI SOLID STATE RF ENERGY SECTION

The SSRFE Section provides the following update:

SSRFE is looking forward to IMPI 58, contributing with a relevant workshop about solid state technology, demos and the application of machine learning in appliances.

The Section is also working on more structure insight into the current market conditions and volumes for solid state and tube-based system deployment.

No SSRFE business meeting will be held during IMPI 58. The next business meeting will be held in September /October timeframe (possibly during the IMPI Fall Seminar).

The Section will also have a role in the Smart Kitchen Summit (SKS 2024), June 4-5, 2024, in Seattle, WA.

Membership in IMPI's Solid State RF Energy Section is open to all current IMPI Members; there are no additional Section fees at this time. If you are interested in joining the Section, please reach out to [Alicia.standridge@impi.org](mailto:Alicia.standridge@impi.org)

# Journal of Microwave Power & Electromagnetic Energy News

Volume 58, Issue 2 of JMPEE will be available by the end of June 2024.

If you require a new subscription to JMPEE, or have misplaced your log-in details, please contact [alicia.standridge@impi.org](mailto:alicia.standridge@impi.org), and she will reach out to Taylor & Francis, on your behalf!



The latest issue includes the following papers:

## **Editor's message, Attempts to place communication applications as ISM ones**

Juan Aguilar

## **Comparison of modified temperature controlled microwave assisted foam-mat drying on thermo-physical and physico-chemical of orange powder**

Muhammed TAŞOVA.

## **Standing wave-moving and sample-rotating effect of microwave heating on ceramic in a single-model cavity**

Yang Yang, Chen Haoming, Gu Hao, and Zhu Huacheng.

## **Design and Simulation of a Novel THz Patch Antenna for Early Detection of Malignant Neoplasms**

Ved Agrawal, Piyush Mishra, and Bhupendra Pratap Singh.

## **A Green Approach for synthesizing high pure Gadolinium Zirconate nano-particles using Microwave Energy**

Deependra Singh, Bignaraj Mishra, BHIMA RAO RAGHUPATRUNI, and SATYA SAI SRIKANT.

## **Identification of lyophilized avocado powder adulteration using the cavity perturbation technique at microwave frequencies**

Alonso Corona-Chavez, Tejinder Kaur, Jose Luis Olvera, and Benjamin Carrion-Schafer.

## **Experimental Study of an Enhanced Water-Cooling Technique for Interstitial Microwave Cancer Ablation System**

Ashraf M Said, Ashraf M. Abdelhakeem, Emad Tammam, Ahmed A. Ibrahim, and Ahmed I. Galal.

## **New IMPI Membership Portal to Launch in July**

**your**membership  
by **community**brands

Further to our message in February's newsletter, IMPI is in the process of migrating to a new-and-improved customer relationship management (CRM) system! In July of 2024, IMPI will complete our move from Netforum, where we have been for 14 years, to our "new home" at YourMembership.

Please look for an email from IMPI Staff ([info@impi.org](mailto:info@impi.org)) in June with details on how to access the new system and update your profile. IMPI Staff will be available throughout the summer to ensure everyone is comfortable accessing the new membership portal.

If you have any questions, please reach out to Alicia Standridge, IMPI Administrator, at [Alicia.standridge@impi.org](mailto:Alicia.standridge@impi.org)

## My Morning Oatmeal

by Eric F. Brown

For a quick bowl of oatmeal  
A microwave holds great appeal  
Ponder instructions but follow the line  
Halve the power and double the time

In my oven the standard process  
Would sometimes make a gloppy mess  
To avoid filling the cage with grime  
I halve the power and double the time

This way succeeds without a fault  
Unless I add too much salt  
It works out just fine  
If I halve the power and double the time

Thanks for hearing my rhyming spiel  
On how I microwave oatmeal  
To achieve results that are sublime  
I halve the power and double the time!

*Reference: Monroe, R (2014, February 27). Microwaves.  
XKCD What If? #131 <https://what-if.xkcd.com/131/>*

## Schiffmann Memorial Scholarship Drive; Award to be Presented on May 30<sup>th</sup>



The second Robert F. Schiffmann Memorial Scholarship will be presented on Thursday, May 30<sup>th</sup> during the IMPI Annual Business Meeting. The scholarship was unveiled in 2022 to honor the legacy of IMPI's long-serving President.

Those wishing to make a tax-deductible donation are encouraged to do so by May 15<sup>th</sup>. The Schiffmann family has graciously agreed to match all donations for the first five years!

[Donate today](#) electronically, or send a check by May 15<sup>th</sup> to: IMPI, PO Box 1140, Mechanicsville, VA 23111 with Schiffmann scholarship in the subject line!

Thank you in advance for helping us to honor Bob's legacy.

## CALENDAR OF EVENTS

Stay up to date with IMPI Events by visiting our [Calendar of Events page](#). If you have an event you would like to add to the Calendar, please contact [molly.poisant@impi.org](mailto:molly.poisant@impi.org)

## PARTNER NEWS & EVENTS

**Smart Kitchen Summit 2024:** June 4-5, 2024. Seattle, Washington. [Learn more here](#).

**IMS 2024:** June 16-21, 2024, in Washington, DC. [Learn more!](#)

**5GCMEA:** July 22-25, 2024, at Kyushu University in Fukuoka, Japan. The 5GCMEA is seeking additional attendee and exhibitor participation from IMPI Members. [More details here](#).

**UIE 2024 Conference:** October 8-11, 2024, Nice, France, [Learn More](#).

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