

THE WAVE



The newsletter publication of the International Microwave Power Institute

January 2019



Last Call for Papers: IMPI 53 Symposium

This Friday, January 18th is the abstract deadline for the 53rd Annual Microwave Power Symposium. IMPI 53 will be held June 18-20, 2019 at Caesars Palace in Las Vegas, Nevada, USA.

The [Call for Papers 2019](#) and [Abstract Word Template](#) can be found here. Additionally, the [Student Travel Scholarship Application](#) is now available; all students are encouraged to take part in the IMPI 53 Student Paper Competition, which offers awards for Best Oral and Best Poster Presentation.

New this year, IMPI 53 will feature an Exhibitor Showcase. During the afternoon of Tuesday, June 18th, attendees will have the opportunity to visit booths for live demonstrations and presentations. A Welcome Reception will take place that evening.

Keynote speakers at IMPI 53 include Dr. Kenneth Foster, Professor of Bioengineering at the University of Pennsylvania, and a world-renowned expert in electromagnetic exposure, will share his perspective on **“What’s New in the Microwave Debate.”** Mr. Michael Wolf, Founder of the Smart Kitchen Summit and Publisher of The Spoon will explore the rapidly changing technology in both consumer and industrial kitchens, through his talk, **“The Intelligent Kitchen: The Digital Cooking Revolution.”**

Continued on Page 3

IN THIS ISSUE...

President’s Message.....	2
RFEA Members Join IMPI.....	3
IMPI 53 Symposium Continued.....	3
Meet the Member: Odyssey Technical Solutions	4-5
Trial Corporate Membership.....	5
From the IMPI Archive.....	6
JMPEE.....	6
Calendar of Events.....	7
Executive Director’s Corner.....	7
News from Around the Web.....	8
Connect with IMPI.....	8

Cover Photo: Las Vegas at Night.

President's Message

How did it begin and why? When Percy Spencer, in 1945, recognized that it's possible to heat food with microwave energy and ended up inventing the microwave oven, its future was obscure. Initially Percy and the folks at Raytheon were looking at the commercial food market, largely because microwave ovens at that time weighed hundreds of pounds, and required water-cooled magnetrons, making them impractical for domestic use. At the same time, interest grew in other areas, as people realized that this strange, invisible, source of energy could heat a lot of things, not just food, but wood, paper, chemicals and more, out of which grew the technology of industrial processing of materials. One of Percy's earliest patents has to do with conveying materials through a microwave applicator, but its limitation was the inability to control leakage out of the ends of the applicator. It awaited a patent by Cryodry, describing water-loaded suppression chokes that made the continuous processing of materials practical. So, it was, during the 1960s, that companies began examining how microwaves could be used to heat all kinds of materials, and companies such as Litton and Varian set up microwave applications laboratories, inviting potential clients to test their ideas. In 1965 some of the people involved in these pursuits met to discuss their current interests, and then met again in 1966 when they decided to form an association, in this case IMPI, whose first president was John E. Gerling, and which was originally chartered in Canada. I joined IMPI in 1967 and was overwhelmed by the eclectic nature of the Institute and presentations I heard at the 1968 IMPI conference in Boston, which included a paper by Joel Elman, a Marketing VP at Litton, who gave a presentation on the future of microwave ovens, something none of us believed. You see, at that point the major focus of IMPI was upon industrial heating with microwave energy. However, at times IMPI's emphasis shifted into other areas. For example, there was a period in which the biological effects of microwave energy became the main focus of many of the papers delivered at IMPI symposia; as microwave oven engineering developed, so did the interest in these appliances, resulting in the formation of the Cooking Appliance Section In 1977, devoted to microwave ovens and its many uses.

What has been exciting all these years is how IMPI has been a forum for innovative technologies. For example, in 1969 Bill Brown of Raytheon presented his seminal work on developing non-polluting power from space by beaming sun-generated microwave energy to the earth. In 1979 Drs. A. Priou and M. Gautherie edited a special issue of the Journal of Microwave Power devoted to "Diagnosis and Therapy Using Microwaves"; a period in which such world renown scientists such as Drs. Herman Schwan and Bill Guy were active in many IMPI events. And here we are again, in 2019, once again seizing the future. As you will learn elsewhere in this newsletter, the RF Energy Alliance, a consortium of major organizations devoted to the development and application of solid-state power technology, has dissolved, but at the same time, has shifted much of its membership to IMPI, where we will be hosting these companies and aiding in their search for this advancing technology. You probably know that I've been working with microwave energy since 1961, and while there have been numerous technological advances, we've always been tied down to vacuum tubes of one kind or another; but now, there's been a quantum leap into the area of power transistors and this opens up entire new opportunities, and I am proud that IMPI will continue to remain a leader in the field.

Let me wish all of you a very Happy & Healthy 2019.



Bob Schiffmann, IMPI President



International Microwave Power Institute Welcomes New RF Energy Alliance Members

January 9, 2019 – The International Microwave Power Institute (IMPI), the leading global scientific organization dedicated to non-communication microwave and RF energy applications, is pleased to announce the addition of four new corporate members: EGO, Huber+Suhner, pinkRF, and Rogers Corporation. These four companies bring the number of IMPI Corporate Members to twenty-two including: Ampleon, Campbell Soup Company, Conagra Brands, Ferrite Microwave Technologies, Graphic Packaging International, L-3 Electron Devices, MKS, Muegge GmbH, Nestle, NXP Semiconductors, Odyssey Technical Solutions, PepsiCo, PSC, Richardson Electronics, SAIREM, TurboChef, Tyson Foods and Wattsine. IMPI's total membership of 185 is comprised of corporate, professional and student members from 17 countries.

The addition of the four new corporate members comes after the RF Energy Alliance, a non-profit technical association comprised of companies dedicated to realizing solid-state RF energy's true potential as a clean, highly efficient and controllable heat and power source, decided to cease operation. In a letter from RFEA's Executive Director, Dr. Klaus Werner, to RFEA Members on December 31st, Werner wrote, *"Although the Alliance made significant progress on technical aspects... the Board of Directors of the RF Energy Alliance decided that it is in the best interests of the organization to have closed its doors on December 31, 2018."*

[Read the full press release here.](#)

IMPI 53 Symposium Continued...

IMPI 53 will kick off with a Short Course focusing on Solid State Technology the morning of Tuesday, June 18th

[Registration is open.](#) Similar to previous years, IMPI will offer student, professional and exhibitor registration via our Online Store. Hotel rooms at Caesars Palace are available at the special group rate of [\\$139 per night here.](#)

IMPI's Technical Program Committee, being led by Dr. Graham Brodie of the University of Melbourne and Mr. Roger Williams of Ampleon, will work with the Food Science and Technology Committee, chaired by Dr. Ulrich Erle of Nestle, to determine which papers will be selected for oral and/or poster presentation at IMPI 53. Authors will be notified by February 17th and the full program will be released by March 1, 2019.

At IMPI 53, our main ballroom, breakout room and exhibit hall will all be adjacent to one another. All companies interested in Sponsorship or Exhibition should secure their package as soon as possible. Contact molly.poisant@impi.org or visit <http://impi.org/symposium-short-courses/> for more details.

Meet the Member: Odyssey Technical Solutions



We would like to welcome one of our newest corporate members, **Odyssey Technical Solutions** of Round Rock, Texas. Odyssey was established in the year 2000 by two partners, in a 1500 sq. foot facility, who saw an underserved niche in the repairs of RF, DC, and microwave equipment within the semiconductor market. Jim and Eric met at Freescale (now NXP) in the Austin wafer fabrication facility; one doing electronic repairs and the other process engineering. After many years in their second location, their dream of a technology center built from the ground up, happened in 2016. Everything they had learned over the years regarding work flow, logistics and best electronic repair center practices were incorporated into the design of the new facility.

Odyssey now has 62 employees working in their 32,000 sq. ft. technology center in Round Rock (right outside Austin) as well as their sister facility in Singapore. Odyssey is now the largest dedicated RF, DC, MW repair facility in the world. With many successes within the semiconductor market space (over 50,000 repairs at last count) and many satisfied customers worldwide, Odyssey was ready to tackle the industrial market space.

The timing was right as some of the larger customers within that space were asking for the same level of quality repair and service that they provided within semiconductor. Customers were looking for a place to get repairs done with OEM quality, but with better turnaround and price. With the addition of Brian Blackwell (formerly Richardson Electronics) in mid-2018 they were well positioned to become not only a trusted repair company for industrial microwave users, but an equipment supplier and electronics integrator for microwave projects. Driving their core business strengths of repair, assembly, reverse engineering and distribution of hard to get components will surely benefit our member companies within IMPI.

Odyssey is ISO 9001:2015 and ANSI/ESD S20.20 certified and has IPC trainers on staff. Their processes and practices have been established over eighteen years, giving you a level of confidence that they will do it right the first time. Their warranty program is unsurpassed in the industry, with many repairs warranted for one year. You don't have to claim warranty because Odyssey screens every incoming unit for warranty evaluation as needed. In addition, Odyssey has a unique Customer Portal for you to see the progress of your repair online. You can follow it through their system and even get tracking numbers and test results after the unit is completed. Their repair inspection process is also unique, they call it the "layer cake" inspection as many of the repairs they do involved layers and layers of electronics.

Continued on Next Page

Meet the Member Continued

Odyssey President Jim Plourde states “from the very beginning we have sought out long term win/win relationships with customers, vendors and employees. We hope you will give us an opportunity to prove ourselves to you.”

At the IMPI symposium coming up in June, Odyssey plans to reveal some key partnerships and initiatives that will be of great interest to the IMPI community. They told me to pass on how much they are looking forward to seeing old friends and making some new ones.

Senior Director Larry Broome said “we are eager to engage with the IMPI members to solve problems within the microwave space for many years to come as we have done in semiconductor. Odyssey is dedicated to getting it right and exceeding your expectations every day.

We welcome any opportunity to show our industrial customers how leveraging our technical expertise can benefit their business, and prove once again one of our beliefs: “You're Not Just Another Customer, We're Not Just Another Repair Facility.”

Odyssey is located in Round Rock, Texas. Their website is www.odysseyrf.com
Toll free (877) 989-7007 Local (512) 989-7007 Email sales@odysseyrf.com

IMPI Launches Trial Corporate Membership Promotion

During the first quarter of 2019, IMPI is running a promotion whereby any company can receive Corporate Membership benefits. The promotion is open to both non-members and Professional members of IMPI. The Trial Corporate Members receive:

- 5 professional member designations
- complimentary access to the Spring Webinar Series as well as recorded links to the 2018 webinars
- discounted member pricing on the IMPI 53 Symposium
- a subscription to “The Wave” newsletter

At the conclusion of the Trial Membership period (March 31, 2019), any company wishing to retain their Corporate Membership would pay the \$2500 annual dues; following dues payments, the following additional benefits will be issued:

- a complimentary 10' x 10' Exhibition Booth at IMPI 53
- one full complimentary registration to either IMPI 53 or the Fall Short Course,
- online access to the current JMPEE Volume and archive
- companywide Webinar access throughout the year.

To take advantage of the Trial Corporate Membership Promotion, contact molly.poisant@impi.org

FROM THE IMPI ARCHIVE

Dear Reader:

During its 53-year history, IMPI has published more than just the Journal of Microwave Power (JMPEE); two of the major publications were Microwave Energy Applications Newsletter, and Microwave World – the latter was published for over 20 years. Both contain many interesting articles that contain information that is relevant today: all of them contained technical information pertinent to microwave ovens, microwavable food products and packaging, and applying science to debunk mythical hazards. We begin this series with a 1989 article from Microwave World, written by Leo R. Reynolds: "The History of the Microwave Oven." Leo R. Reynolds was an attorney at Raytheon involved in many of the patents described in the article. We plan to share, throughout the year, additional articles from the IMPI Archive. We hope you enjoy the first article in this series:

[The History of the Microwave Oven](#)

Journal of Microwave Power and Electromagnetic Energy (JMPEE)

On December 31, 2018, Volume 52, Issue 4 of IMPI's peer-reviewed scientific journal was published by Taylor and Francis. As a reminder, all IMPI members receive, as part of their membership benefits, complimentary online access to the current Volume of JMPEE as well as the full Archive. If you need assistance with your log in details, please contact Alicia Standridge at admin@impi.org

Volume 52, Issue 4 of JMPEE includes the following articles:

Title	Authors
Editor's message: Terms in Journal papers	Juan Aguilar
Research on Dielectric Characterization of Laterite Ores under Microwave Radiation	Weiquan Ma, Jie Wang, and Li Wu
A Reconfigurable High Q Epsilon Near Zero Tunnel for Material Characterization	Rosario Peñaloza-Delgado, Tejinder Kaur Kataria, José Roberto Reyes-Ayona, José Luis Olvera-Cervantes, and Alonso Corona-Chávez
Determination of electric field intensity during microwave heating of selected vegetables and fruits	Omid Mirzabeigi Kesbi, Ali Rajabipour, Mahmoud Omid, and Seyed Hossein Goldansaz
High Transmission of Negative Permittivity Materials Based on Strong Magnetic Field Coupling	Linyan Guo, Helin Yang, Qisheng Zhang, and Ming Deng
Microwave drying of amaranth and quinoa seeds: Effects of the power density on the drying time, germination rate and seedling vigour	Rafael Hernández Maqueda, Isabel Ballesteros Redondo, Santiago Jiménez Jácome, and Ángel H. Moreno

Executive Director's Corner

Dear IMPI Members,

Happy New Year! 2018 was a record setting year for IMPI. We saw tremendous growth in our membership, the largest Symposium attendance in over a decade (130 attendees and 15 exhibitors) and the successful production of our Consumer Survey and Report. We also engaged a social media consultant to help us streamline our Facebook, Twitter and LinkedIn accounts.

In the first two weeks of 2019, we are continuing this trend with the addition of 4 new corporate members, bringing our membership to 185....and growing. This is such an exciting time for our Institute and we stand ready to help IMPI continue to grow, improve our reach, and provide outstanding service to our members.

Alicia Standridge and I look forward to continuing to serve you over this next year. If you have any suggestions or concerns, we are only a phone call, or email, away. Please let us know if we can be of any assistance to you.

Warm regards,

Molly Poisant
Executive Director, IMPI
Email: molly.poisant@impi.org

Alicia Standridge
Administrator, IMPI
Email: admin@impi.org

CALENDAR OF EVENTS

CALL FOR PAPERS DEADLINE IMPI 53: JANUARY 18, 2019

IMPI Spring Webinar Series: February & March 2019 More details to be added as they become available www.impi.org/events

53RD Annual Microwave Power Symposium (IMPI 53), June 18-20, 2019 at Caesars Palace, Las Vegas, Nevada, USA www.impi.org/symposium-short-course

AMPERE Conference, September 9-12, 2019 in Valencia, Spain. Call for Papers and event info at: www.ampere2019.com

IMPI's Fall 2019 Short Course: This just in, TurboChef, headquartered in Carrollton, Texas, USA has agreed to host next year's Fall Course. Exact dates are TBD but Short Course will take place in late October or early November. More details to be added to www.impi.org in the coming months.

NEWS FROM AROUND THE WEB

[Microwave Imaging](#) for Breast Cancer: Procedure

Submitted Microwave, [Able to Identify Dishes](#)

Microhammer: how microwave energy could [transform the mining industry](#)

CONNECT WITH IMPI: LINKEDIN, FACEBOOK AND TWITTER

There is no need to wait for this newsletter to stay connected with IMPI. We post several times a week and you can follow us on:

Facebook: <https://www.facebook.com/InternationalMicrowavePowerInstitute/>

Twitter: <https://twitter.com/IntlMwPowerInst>

Linkedin: <https://www.linkedin.com/company/international-microwave-power-institute>

IMPI sends best wishes for a speedy recovery to our longtime member, Ken Eke, who is recovering from surgery.

The International Microwave Power Institute

PO Box 1140

Mechanicsville, VA 23111 USA

www.impi.org

Email Us: info@impi.org

Call Us:+1 804 559 6667