

THE WAVE



The newsletter publication of the International Microwave Power Institute

November 2023



IMPI Holds Fall Seminar Outside of Chicago; Features Mw Technology Fundamentals and Applications

Forty attendees took part in IMPI's Fall Seminar, held October 3-5, 2023, at Richardson Electronics and the Hotel Baker, in suburban Chicago. The event kicked off with a tour of Richardson's La Fox, Illinois headquarters and manufacturing facility, followed by a networking reception.

A Microwave Technology Fundamentals Workshop, presented by Prof. Ray Boxman of Tel Aviv University, John F. Gerling of Gerling Consulting, Inc., Dr. Ulrich Erle of Nestle and Marie Jirsa a Mw Consultant, explored the *Electromagnetic Field in Free Space, Interaction of Electromagnetic Fields and Matter, Mw Technology Equipment, Mw Food Processing Fundamentals* and *How to Develop Mw Cooking Instructions*.

Next, Dr. Pablo Coronel of CRB Engineers, Michael Druga of SinnovaTek and Adam Jones of Crescend Technologies took a deeper dive into Microwave Applications with presentations on *Validation of Food Products Processed Using Electrical Technologies, Methodologies for Mw Sterilization of Continuous Flow of Food Products*, and *Practical Real World Efficiency Comparison between L-Band Magnetron and SSPA Microwave Sources*. The Seminar concluded with a panel discussion moderated by John Mastela a Mw Consultant, and featuring Jerome Czajkowski of Richardson, Boxman, Jones and Gerling.

The attendees also took part in various networking functions including a Group Dinner at Alter Brewery and Kitchen. Many thanks to Richardson for hosting this great event! Additional photos can be found on page six of this newsletter. SAIREM will host IMPI's next Fall Seminar in late September/early October of 2024 at their facility in suburban Atlanta. The Fall 2024 Seminar will include hands-on demonstrations. [More details soon!](#)

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Cover Photo: Professor Ray Boxman, and volunteers from IMPI's Fall Seminar, demonstrate an electromagnetic wave.

PRESIDENT'S MESSAGE

This year continues to play out as one of IMPI's strongest in many ways. While the dust from IMPI 57 in Denver had barely settled, the IMPI Fall Seminar held last month just west of Chicago was another phenomenal success. Huge thanks go to Richardson Electronics, Ltd for both sponsoring the event and hosting a tour of its newly remodeled world-class magnetron manufacturing operation. Future Fall Seminars have a tough act to follow but are not to be missed!

Meanwhile, a brief history lesson:

IMPI has organized the Microwave Power Symposium, focusing on non-telecommunications applications of microwave and RF energy, each year (except one) since being formed in 1967. Over the years several other associations followed suit by organizing conferences on a similar theme, including AMPERE, ACerS, ACS, AIChE and MRS. By the early 1990s leaders within these groups and the microwave-RF community at large began to recognize a need to coordinate activities to minimize duplication and improve technology transfer throughout the community. To realize this goal, these individuals formed the Microwave Working Group (MWG) in 1993 with the mission to "bridge science, technology and applications." It fulfilled this mission by organizing the *First World Congress on Microwave Processing* held in 1997 at Walt Disney Village, USA. IMPI was the first to endorse 1WC along with every other prominent microwave power association at the time. With some 280 attendees from 23 countries, the success of 1WC clearly indicated a desire within our community for such events.

Three more World Congresses organized by the MWG were held every two years from 2000 through 2004. By then, the MWG had evolved to become a sort of sister association to those of its founders. In 2006, recognizing a need for a more global reach, the MWG along with AMPERE, the newly formed JEMEA (Japan Society of Electromagnetic Energy Application), IMPI and CAMPA (China Association of Microwave Power Applications) established a consortium with the name "MAJIC" to represent each of the five associations. MAJIC organized the *Global Congress on Microwave Energy Applications* to be held every four years, the first of which was hosted by JEMEA in 2008 at Lake Biwa, Japan. MWG and IMPI jointly hosted 2GCMEA in 2012 at Long Beach, USA. The recently announced 5GCMEA, again hosted by JEMEA, is now scheduled for 2024 in Fukuoka, Japan.

Arguably, Bernie Krieger was the driving force behind not only the formation of MWG but maintaining its momentum and ability to fulfill the "bridging science, technology and applications" mission during the tenure of World Congresses and establishment of the Global Congresses. Indeed, the representatives of MAJIC at its organizing meeting in 2006 appointed Bernie as honorary Co-Chair of the first CGMEA in recognition of his dedication and diligence in developing the event. Sadly, Bernie's recent passing, along with ever changing roles and hence dwindling involvement of the MWG founders, have left a huge void that makes continued MWG activities quite difficult if not impossible. Thankfully, MWG's most recent leadership headed by Ed Ripley reached out to the other MAJIC associations seeking a means to carry on the MWG mission. It seemed a natural fit that IMPI should step up to make that happen through ongoing activities in the form of focus sessions, workshops, short courses, seminars and webinars on topics making the science, technologies and applications connection. We look forward to soon making that a reality at IMPI 58 in May 2024.



John F. Gerling, IMPI President

IMPI 58 Call for Papers Deadline Approaches, John Bows of PepsiCo to Keynote



The [Call for Papers](#) for the **58th Annual Microwave Power Symposium (IMPI 58)** opened on September 1st and the deadline for [submissions](#) is January 19, 2024. IMPI 58 will take place May 29-31, 2024, at the Hyatt Regency Reston in suburban Washington, D.C., USA.

Dr. John Bows, R&D Director for PepsiCo, is the first confirmed Keynote Speaker. Bows will deliver an address on, “*Microwave & RF process solutions to deliver positive food choices for consumers.*” IMPI 58 will feature keynote addresses, invited papers, oral and poster presentations as well as panel discussions. Six Special Sessions dedicated to: *THz Technology & Applications, Food Technology, Modeling, Plasma, Accelerators & RF Heating* and short courses on *Mw Technology Fundamentals* and *Solid State Applications* will round out this year’s program. In addition to the robust content, IMPI 58 will include an Exhibitor Showcase, Welcome Reception, two continental breakfasts, two networking luncheons, coffee breaks, and a Group Dinner at a local restaurant. Electronic conference Proceedings are included in the registration fee.

[Registration is open](#) and the rates remain the same as last year. Early Bird pricing for IMPI Professional/Corporate Members is \$675 and Student IMPI Members may attend for \$445. Registration rates will increase, by \$100, to regular registration pricing, effective March 15th so register early for the best rate. Sleeping rooms are available at the Hyatt Regency Reston for a [special group rate of \\$239](#) plus applicable taxes, based on availability.

The Hyatt Regency Reston, located just six miles from Dulles International Airport (IAD), will be the ideal 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. The last time an IMPI Symposia took place near Washington, D.C. was 2009.

[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. They are supported by an outstanding Technical Program Committee:

Members

Eleanor Binner, University of Nottingham, UK
Erin Bobicki, Aurora Hydrogen, Canada
Graham Brodie, James Cook University, Australia
José Manuel Catalá-Civera, Instituto ITACA, Universitat Politècnica de València, Spain
Candice Ellison, USDA-ARS, USA
Ulrich Erle, Nestle R&D, USA
Yang Jiao, Shanghai Ocean University, China
Pranjali Muley, National Energy Technology Laboratory, USA
Marzena Olszewska-Placha, QWED, Poland
Marilena Radoiu, Microwave Technologies Consulting, France
Vaidhy Vaidhyanathan, Loughborough University, UK
Klaus Werner, pinkRF B.V., Netherlands
Vadim Yakovlev, Worcester Polytechnic Institute, USA

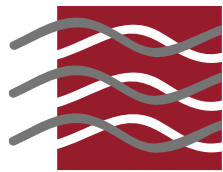
Organizers of Special Sessions

Raymond Boxman, Tel Aviv University, Israel
Eric Brown, Conagra Brands, USA
Jiajia Chen, University of Tennessee -Knoxville, USA
Zane Cohick, Air Force Research Laboratory, USA
Aniruddh Vashisth, University of Washington - Seattle, USA
Robert Welton, Oak Ridge National Laboratory, USA

Thank you to MUEGGE Gerling for serving as the Platinum Sponsor of IMPI 58! Details on [Sponsorship](#) and [Exhibitor Packages](#), and the latest updates on the [IMPI 58 Symposium updates are available here!](#)

WELCOME TO IMPI’S NEW CORPORATE MEMBER!





IMPI SOLID STATE RF ENERGY SECTION

The Solid State RF Energy Section held their Annual Business Meeting virtually on October 12, 2023. Following the meeting a Slate of Candidates for Section Leadership was put forth to the Section Membership. Congratulations to:

Chairman: Dr. Klaus Werner (pinkRF)

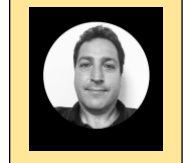
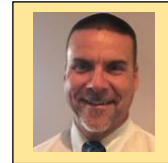
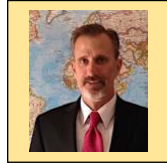
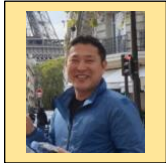
Deputy Chairman for APAC: Mr. Sanghun Lee (WavePIA)

Deputy Chairman for N. America: Mr. John Mastela (Mw Consultant)

Deputy Co-Chairmen for Europe: Mr. Coen Center/Mr. Patrick Valk (Ampleon)

Treasurer: Mr. Brian Blackwell (Odyssey Technical Solutions)

Secretary: Mr. Adam Jones (Crescend)



The Section is actively planning a Short Course to be held on May 29, 2024, in advance of the IMPI 58 Symposium outside of Washington, D.C., and planning to have a presence at various industry-wide events over the next year. They also continue to work on the Microwave Markup Language (MML).

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

WELCOME TO IMPI'S NEW CORPORATE MEMBER!



Help IMPI Continue to Grow: Special Membership Offer!

Do you have friends, colleagues or customers who could benefit from becoming a Member of IMPI? Help us to continue to grow our Mw/RF community by encouraging them to join! New Corporate, Professional or Student Members who join IMPI by December 1st will have their annual membership extended through the end of December 2024. Please consider [sharing this link with your contacts](#) and encouraging them to join our vibrant community!

Journal of Microwave Power & Electromagnetic Energy News

Volume 57, Issue 4 of JMPEE is now available. If you would like to retain your subscription to JMPEE in 2024, [please use this form](#) to “opt in” by January 15, 2024! There is no cost for IMPI Members to retain JMPEE access but you must sign up. If you require a new subscription to JMPEE, or have misplaced your log-in details, please contact alicia.standridge@impi.org, and she will reach out to our publisher, Taylor & Francis, on your behalf!



The latest issue includes the following papers:

Editor’s message: Writing and refereeing review papers, by Juan Antonio Aguilar Garib.

D Scanned Oven Geometry Improves the Modeling Accuracy of the Solid-State Microwave Heating Process, by Jiajia Chen; Kartik Verma; Jarrod Nachtrab; Jake Dvorak; Peter Alley; Ran Yang; Hao Gan.

Graphene induced carbon-based fibre composite as microwave absorber for X- band frequency application, by Ganeswar Nath; Akshita Yadav; Priyanka Priyadarsini Singh.

Dielectric properties of Tobacco and Tomato plant leaves over a broad frequency range, by Deepak Gadani; Pratipalsinh Chuahan; Vipinchandra Rana.

Experimental investigation of radio frequency heating uniformity of wheat flour surrounded by deionized water and NaCl solution, by Tunc Koray Palazoglu; Welat Miran.

Effect of microwave treatment on the alkaline extraction of proteins and phenolics from perilla seed meal in varying pH conditions: An optimization study using multi-component analysis, by Rakhi Singh; Rahul Kumar; Aniket Kamboj; Rajni Chopra.

Fall 2023 Webinar Recap: Understanding Microwave Material Interaction

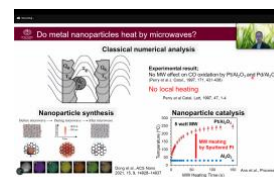
Thank you to Dr. Pranjali Muley of the National Energy Technology Laboratory (NETL) for organizing IMPI’s 3-Part Fall Webinar Series and to our amazing speakers. If you missed the live versions, the links are below!

Part I: How to obtain good XAFS spectrum under microwave heating?

In situ and operando spectroscopy for understanding microwave material interaction

Instructor: Dr. Shuntaro Tsubaki, Associate Professor, Department of Bioscience and Biotechnology, Faculty of Agriculture, Kyushu University Japan

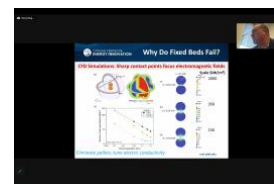
[\[VIDEO LINK\]](#) Password: M0Y.9OE\$



Part II: Electromagnetic Field Driven Catalysis: New Physical Phenomena for Performance-advantaged Electrification

Instructor: Dr. Dionisios G. Vlachos, Unidel Dan Rich Chair in Energy Professor of Chemical and Biomolecular Engineering, University of Delaware, Director, Catalysis Center for Energy Innovation (CCEI), Director, Delaware Energy Institute (DEI)

[\[VIDEO LINK\]](#) Password: CBpQR&h!



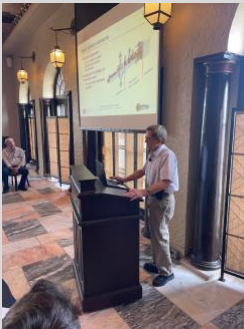
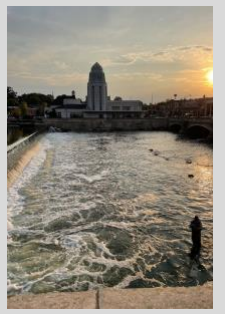
Part III: Coaxial cable-based microwave distributed temperature sensors

Instructor: Hai Xiao, Samuel Lewis Bell Distinguished Professor in Electrical and Computer Engineering, Department Chair, Clemson University

[\[VIDEO LINK\]](#) Password: \$UgY5LrD



Is there a topic or speaker you would like IMPI to consider for an upcoming Webinar? Please send your suggestions to info@impi.org



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

PARTNER NEWS & EVENTS

IMS 2024: June 16-21, 2024, in Washington, DC. [Call for Papers Deadline: 12/05/23!](#)

5GCMEA: July 22-25, 2024, at Kyushu University in Fukuoka, Japan. [Call for Abstracts Deadline: 1/15/24!](#)

Call for Volunteers: IMPI Needs You in 2024!

If you would like to have a more active role in IMPI in 2024, please reach out to IMPI's Executive Director, Molly Poisant at molly.poisant@impi.org or by phone at +1 804 836 7125.

There are a number of openings on various Committees and Working Groups. We would welcome your help!

The International Microwave Power Institute

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