

THE WAVE



The newsletter publication of the International Microwave Power Institute

March 2021



IMPI 55 Symposium Program Released

The program for the 55th Annual Microwave Power Symposium (IMPI 55) has just been released. IMPI 55 will take place virtually from June 28-July 1, 2021.

Over twenty-five presenters will take part in the four-day program, which includes a Short Course, keynote presentation, invited papers, oral presentations, master class, panel discussions and Poster and Exhibitor sessions. This year, we will also have a virtual Welcome Reception on Monday evening EDT as well as virtual coffee breaks over the four days. All sessions will be recorded and available to attendees; electronic conference Proceedings are also included in the registration fee.

Registration is \$150 for Corporate and Professional IMPI Members and \$75 for student members. Additionally, IMPI Members may register as a virtual Exhibitor (includes one full conference registration) for \$200 USD. Register today!

Dr. Graham Brodie, of the University of Melbourne (Australia), serves as the Chairman of the Technical Program Committee and Dr. Candice Ellison, Leidos/NETL, will chair the Student Competition.

The IMPI 56 Symposium has already been booked for June 14-16, 2022 at the DeSoto Hotel in Savannah, Georgia, USA.

IN THIS EDITION OF *THE WAVE*

IMPI 55 Virtual Symposium.....	1
President's Message	2
Member News.....	3
Welcome to Times Mw Systems....	3
Spring Webinar Series.....	4
Fall Seminar: Save the Dates.....	4
News from Around the Web.....	4
Partners News: AMPERE.....	4
Solid State RF Energy Section.....	5
JMPEE Vol 55, Issue 1.....	5
Calendar of Events.....	6
Connect with IMPI.....	6

PRESIDENT'S MESSAGE

Any sufficiently advanced technology is indistinguishable from magic. (Arthur C. Clarke)

Technology has a way of biting you in the ass! (Bob Schiffmann)

I love magic shows. Ricky Jay was one of my favorite conjurers, and for a while, my wife and I were addicted to watching Penn and Teller on YouTube. I'm sure some of you also have a love of magic shows. But, while we all wonder how the "magic" was achieved, most, if not all of us, are disappointed when we find out. In fact, while we profess to want to know, we really don't.

Having read the Harry Potter books, my favorite phenomena were the portraits along the walls of the Hogwart's house, in which the characters moved, i.e. their eyes followed you, the heads turned, and occasionally one would walk out of the frame. It was wonderful to be enchanted by these magical phenomena. A while ago, a friend sent me a link to a site in which a portrait of Queen Anne turned her head, blinked her eyes, and smiled – Harry Potter come to life! How disappointing to find out that this is easily done with computers, and I feel somewhat diminished, since I loved the magic in Harry Potter books. Now, the My Heritage genealogical website has created a tool, Deep Nostalgia, that will digitally animate old photographs of loved ones, creating short looping videos in which people can be seen moving their heads and even smiling; you can upload your own old family photos (<https://www.myheritage.com/deep-nostalgia>). While I find it creepy, it leads me to raise questions about Reality. How do we deal with such intimate animations? Are they "real" as in Reality? And then whose Reality are we talking about? These are deep philosophical questions, but we can also look at these various technologies as to their implications on daily life.

We are turning more and more tasks over to computers; for example, evaluating resumes for the task of hiring new personnel. In a brilliant article, "The limits of statistics", by Hannah Fry, (New Yorker: March 29, 2021), the author discusses the limitations of algorithms used by computers, many of which have their own built-in biases. For example, some resume-evaluating algorithms, were designed to turn down certain applicants, such as women, people of color, etc. All these algorithms are initially designed by humans, and so are subject to the biases of the programmers. As you are aware, your identity is being tracked constantly, every time you use your social media, mobile phone, and other online devices. As a result, our privacy is slowly disappearing, shades of Orwell's "1984". To understand how far this is going, watch the PBS documentary "Coded Bias", in which computer & data scientists, watchdog groups, and others, "fight to expose the discrimination within facial recognition algorithms"

Hannah Fry goes on in her article to discuss how tiny biases or artifacts creep into experiments, sometimes leading to results no one anticipated. She describes the results of such effects leading to scientists being "perplexed by variations that they could neither explain nor predict." Even the tiniest fluctuations, invisible to science, can magnify over time to yield a world of difference. "Nature is built on unavoidable randomness, limiting what a data-driven view of reality can offer." As one who recently lectured on the need to remove all artifacts when conducting experiments, I was blown away by her comments. I urge you to read her article.

So, on the one hand we have scientists who, through electronic means, are trying to listen in on the life of plants and trying to influence their actions - one type of Reality, and on the other, conspiracy theorists who present a totally alternate universe of Reality. All of this is perplexing to me, and I'm sure to many of you. But I go on in my deep faith in science to keep me on the course of what I consider to be Reality.

Spring is finally here, and even though I won't be able to enjoy the opening of the trout season on April 1, I still hope to enjoy good weather, and hope you are experiencing it as well.

Cheers,

Bob Schiffmann, IMPI President



MEMBER NEWS

Tang Elected to Prestigious US National Academy of Engineering

Congratulations to IMPI Fellow, Dr. Juming Tang of Washington State University, for being elected to the US National Academy of Engineering! Dr. Tang shared, “My association with IMPI and my research activities related to microwave and RF in food applications have played a major role in getting this honor. For that I am thankful to IMPI, for the friendship and the support from IMPI leader and members to my research and my students.” Read more about the [US National Academy of Engineering here](#).

Acquisition of Muegge GmbH

We are pleased to announce that effective August 7th, 2020, HQ EQUITA, a member of the “Harald Quandt Group” in Bad Homburg, Germany, acquired the majority of MUEGGE GmbH from Meyer Burger Technology AG. As part of the transformation of Meyer Burger into a solar cell and module manufacturer, Meyer Burger decided to sell all non-strategic divisions.

HQ Equita acquires all corporate divisions of MUEGGE GmbH including its subsidiary Gerling Applied Engineering Inc., based in Modesto CA, USA. The transfer includes all about 120 employees. [Read more here](#).

IMPI Presence at European Microwave Week

Dr. Vadim Yakovlev, of Worcester Polytechnic University, and Dr. Klaus Werner, of pinkRF, were among the presenters at European Microwave Week 2020, earlier this year. The keystone forum of the European microwave community, the European Microwave Week 2020 (EuMW2020) (www.eumweek.com/) was virtually held on 10-15 January 2021. For the first time in the European Microwave Week series since 1969, the 2020 conference featured a special event dedicated to high-power microwave technologies. The Workshop “High-Power Microwave Industrial Applications” was proposed to the EuMW2020 and organized by Zoya Popovic of the University of Colorado at Boulder and Vadim Yakovlev of Worcester Polytechnic Institute. [Read more here](#).

Brodie Book Review

Many thanks to Dr. Cristina Leonelli, Universita degli Studi di Modena e Reggion Emilia, for allowing IMPI to publish the [following book review](#) (originally published in the AMPERE newsletter) on Dr. Graham Brodie’s book, “**Microwave Based Weed Control and Soil Treatment.**”

Do you have member news you would like to share? Email molly.poisant@impi.org

IMPI Welcomes Our Newest Corporate Member!



IMPI Kicks Off 2-Part Spring Webinar Series on Microwave Food Processing

On Tuesday, March 30th, IMPI kicked off their Spring Webinar Series with a presentation by IMPI President Bob Schiffmann entitled, “**Where Are They Now? Food Industry Opportunities in Microwave Processing.**” Part II of the series will be focus on “**Control of bacterial and viral pathogens in pre-packaged meals using microwaves: our experiences and future vision**” as presented by Dr. Juming Tang of Washington State University, and will take place on April 29th at 11am EDT. [Register for Dr. Tang’s Webinar here](#). These webinars are free of charge to IMPI members and are recorded and posted on the IMPI Member Only Page (for those who can not attend in real time).

Many thanks to Conagra Brands for sponsoring the Spring Webinar Series, to Dr. Eric Brown of Conagra for serving as the technical host and to Dr. Sean McKeown of Graphic Packaging International for chairing the Webinars. If you have a topic or speaker to propose for the Fall, please email molly.poisant@impi.org

SAVE THE DATE: IMPI FALL 2021 SEMINAR

IMPI is thrilled to announce the dates for our first in-person event since 2019! IMPI’s Fall 2021 Seminar will take place at the Protein Innovation Center outside of Chicago, IL from October 19-21, 2021. The event will be a hybrid (with limited in-person participation as well as a virtual attendance option). Corporate Member, Middleby Corporation, will sponsor this event. Stay tuned for program and registration updates. If you have a topic you would like explored or wish to serve on the program committee for this event, please contact molly.poisant@impi.org

NEWS FROM AROUND THE WEB

British firm unveils ‘world’s first’ [microwave-powered boiler](#)

Mintel Announces [US Foodservice Trends](#) for 2021

Health Beat: [Microwave ablation](#) burns away liver tumors

[Microwave Processing](#) Isolates Red Ginseng Compounds That Suppress Lung Cancer Metastasis

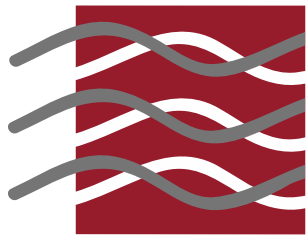
FDA approves Medtronic's diamond-laden [heart ablation catheter](#)

PARTNER EVENTS

The 18th International Conference on Microwave and High-Frequency Applications AMPERE 2021 will be held on September 13-16th, 2021, at Chalmers University of Technology, Göteborg, Sweden co-organized by RISE and Chalmers. More than 110 abstracts have been submitted and the review process has started. Several sponsors and exhibitors are already confirmed.

Important dates regarding the conference are found at: [Important dates – AMPERE 2021](#) More information on the upcoming conference will follow.

On behalf of the AMPERE scientific committee and the organizing team, we would like to wish you most welcome to participate and looking forward to seeing you next September in Göteborg, Sweden.



IMPI SOLID STATE RF ENERGY SECTION

Webinar: Solid State Generator Technologies as well as Relevant Plasma-based Applications

April 8, 2021 from 10:00am-11:30am EDT

Instructors: Mohammad Kamarehi, Francesco Braghiroli, Maurizio Nerbano & Francesco Garuti, MKS Instruments

Course Outline

Cost: \$49 IMPI Members; \$99 for Non-Members (all proceeds from this webinar are retained by the Solid State RF Energy Section)

REGISTRATION IS OPEN

Membership in the Section is open to all IMPI members; there is no additional fee to join. Those interested in more details should contact alicia.standridge@impi.org

JMPEE Volume 55, Issue 1 Now Available to Members!

Editor's message: Microwave imaging advances

Juan Antonio Aguilar-Garib

Calculation of electric field and temperature distribution within a microwave oven with realistic geometric features using numeric simulations

Zhengkai Yi, Weiqiang Qiu, Yang Jiao, Kyung Ho Row, Yu-dong Cheng, and Yinzhe jin.

Study on Microwave-Assisted Grinding and Liberation Characteristics for Ludwigite

Weijun Huang and Yajing Liu

Comparison of Heating Performance between Inverter and Cycled Microwave Heating of Foods Using a Coupled Multiphysics-Kinetic Model

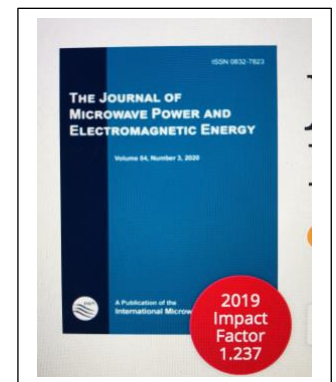
Ran Yang, Qianyi Chen, and Jiajia Chen

Dielectric properties and Electromagnetic Wave Absorbing Performance of Granular Polysilicon during 2450 MHz Microwave Smelting

Jin Lin, Fucheng Zhang, Yongzhen Bai, Xiaobiao Shang, and Ruogu Kang

Modelling the Very Broad Band Dielectric Properties of Water

G. Brodie



Please contact alicia.standridge@impi.org if you need assistance with your JMPEE account.

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

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