

THE WAVE



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PRESIDENTS MESSAGE

Facts, facts, facts... What do we mean when we say "facts"? After all, we hear a great deal today about "alternative facts". In an interesting article in National Geographic the geophysicist Marsha McNutt, who once headed the US geological survey, said, "Science is not of body of facts...Science is a way of deciding whether what we choose to believe has a basis in the laws of nature or not." Today, we take many things for granted as facts, for example, the existence of atoms and molecules. But that was not always so, as well illustrated in the National Geographic Channel's "Genius", a biopic of Albert Einstein. It was Einstein's work in 1905 on describing the theoretical and mathematical basis for Brownian movement that was then recognized as proving the existence of atoms and molecules. So facts, though malleable, are very important within science for our understanding of how the world works.

I recently read two publications that led me to think more about what facts are and what they are not. In an article published on May 15, 2017 in *Nature*, "Revamped "Anti-Science" Education Builds in US Find Success", the author, Erin Ross, describes what's going on in state and local legislatures in the United States, experimenting with new ways to target the topics taught in science classes. Some of these bills urged teachers to embrace "academic freedom" and present the full spectrum of views on evolution and climate change, giving educators license to treat well supported theories with alternative facts. The Florida legislation for example enables any taxpaying resident of a given County to file complaints

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IMPI Sets Sights on Miami Symposium

We are just under 4 weeks away from IMPI's [51st Annual Microwave Power Symposium \(IMPI 51\)](#) which will take place June 20-22, 2017 at the Sonesta Hotel Coconut Grove in Miami, Florida.

Over the course of the three days, attendees from across the globe will gather in Miami to take part in short courses, hear presentations from industry leaders in the fields of RF, Solid State, Food Safety, Agriculture, Microwave Chemistry, Standards and more.

The program kicks off the morning of Tuesday, June 20th with short courses focusing on Industrial RF/Mw Applications and the Fundamentals of Mw Heating.
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IMPI 51 Symposium Continued

Later that afternoon, attendees will take part in a Solid State Spotlight session which will include papers and a panel discussion. Tuesday will conclude with a Welcome Reception on the terrace overlooking the Biscayne Bay. Renowned UK cooking expert and head of the MTA-UK, Jennipher Marshall-Jenkinson, will offer a live cooking demonstration during the Welcome Reception.

Wednesday and Thursday, attendees will have the opportunity to hear from dozens of presenter via keynote addresses, oral presentation, poster presentations and panel discussions. Nine exhibitors (Ampleon, Ferrite Microwave Technologies, Graphic Packaging International, L3, MKS, Muegge GmbH, PSC/SAIREM, Richardson Electronics and Wattsine) will have booths set up for attendees to visit. Various networking opportunities will be available, including a Group Dinner Wednesday evening at a local restaurant. A current [list of Attendees](#) can be seen here.

A full registration for the Symposium is available to members for \$745 and includes all sessions, a hard copy and electronic copy of the conference Proceedings, the Welcome Reception on Tuesday evening and breakfast, lunch and coffee breaks on Wednesday and Thursday. [REGISTER HERE](#).

FALL SHORT COURSE TO BE HELD AT CONAGRA BRANDS IN OCTOBER

Save the date for IMPI's Fall Short Course which will be held October 24-26, 2017 on the Conagra Brands campus in Omaha, Nebraska. IMPI is in the process of developing the program for the Fall Short Course, which focuses on areas of interest to our food-centric members and community. Past Fall Short Courses have examined consumer trends and behavior, nutrition, research and development, packaging, food safety, FSMA and labeling instructions. If you have a topic, or speaker, you would like us to consider for the upcoming Short Course, please send your recommendations to molly.poisant@impi.org by June 10th.



about the curriculum in the schools in the district, and that would trigger a public hearing to determine if the material in question is "accurate, balanced, non-inflammatory, current, free of pornography... And suited to student's needs". I am not advocating any position on these topics, just commenting on the problems many of us face day-to-day in trying to answer questions regarding microwave energy and microwave ovens in particular. There is a website, Quora.com, to which members submit questions of all kinds, and other members attempt to answer them. In my case, I try answering the many questions relating to microwave ovens, microwave energy, and other areas of microwave heating. What is upsetting is that the same questions keep coming up over and over again: "Does microwaving food destroy the nutrients?"; "Does microwaving food cause cancer?" "Can I get cancer from the microwave energy leaking from my microwave oven?"; and more like this. Similar questions or statements appear on other websites. We, as professionals in this field, recognize that there is no validity to these ideas, and we may try to answer them with "facts", and yet, the persons asking the questions rarely believe us. What's going on?

What we are facing is a phenomenon known as groupthink, a term coined by the social psychologist Irving Janis (1972). It's a situation in which members of a group, all like-minded people, come to believe the same set of facts, whether correct or not, and because it is a group, the members of the group keep reinforcing each other in their view of "facts". So, there are all these ideas regarding the terrible things that are supposed to be happening because of heating your food with microwave energy, or that the microwave oven is radiating dangerous and damaging (sometimes radioactive) energy into your body and hurting you.. And, the worst problem we face is that these attitudes of the members of the group are almost impossible to sway. In fact, many psychological studies have shown that when you try to challenge a group's beliefs with what we consider to be the real facts, it generally only hardens their positions regarding their own set of beliefs, "alternative facts". What a dilemma. I often get frustrated by this problem, but every now and then, I'm gratified when I get a message, either personally or in the comment section, that I seem to have answered a person's question and have successfully challenged that belief, so, I keep going.

The major reason that IMPI holds its annual symposia and events such as the webinars and Fall Short Course, and publishes the Journal of Microwave Power and Electromagnetic Energy, is to provide our members and the greater world with the facts as we know them at that time. This year's IMPI 51 (June 20 – 21 in Miami) is filled with new research, updated information, and broad explanations of today's microwave related facts. We are excited by the program and hope to see all of you there. In the meanwhile, think about what I've been writing and contemplate your own position regarding the problems we face in getting across what we consider to be the real facts regarding microwave energy. How do you think we can improve our message?

Hope to see you in Miami,

Bob

Journal of Microwave Power and Electromagnetic Energy

As a reminder to all IMPI Members, online access to the Journal of Microwave Power and Electromagnetic Energy is available to all IMPI members at no additional cost, through our management partner, Taylor & Francis. If you have not yet activated your access through the Taylor and Francis portal, please send an email to info@impi.org titled JMPEE Access Needed and we will make sure the instructions are resent to you.

IMPI SPRING WEBINAR SERIES TO CONCLUDE NEXT WEEK

The third and final Webinar in IMPI's 3-Part Spring Webinar Series will take place next Thursday, June 1st at 11am. Webinars are offered FREE OF CHARGE to all IMPI members. REGISTER HERE.

Part III: Dielectric Properties of Foods and Bioproducts

Thursday, June 1st from 11am-12pm

Presenters: Pranjali Muley and Candice Ellison, Louisiana State University

Knowledge of dielectric properties of materials plays a major role in microwave design for any particular process. Dielectric properties provide information about how the material will interact in the presence of electromagnetic energy during microwave heating. As the application of microwave and RF heating in food industry is gaining momentum, significant work has been performed on measuring the dielectric properties of various foods and bioproducts. This webinar will focus on understanding the dielectric properties of different foods and bioproducts and their relationship with other material properties (temperature, density, moisture content, etc). This presentation will also give a brief overview of dielectric properties and measurement techniques. Application of dielectric properties in system design and numerical modeling will also be discussed.

Earlier this Spring, IMPI offered Parts I and II in the Dielectric Properties Series. If you missed out on the webinars and would like to view a recorded version of the webinars, please email info@impi.org and a link will be sent to you:

Part II: Material Characterization from DC to mm-wave and THz

Thursday, April 27th from 11am-1pm EDT

Presenter: Say Phommakesone, Keysight

From stealth materials to dielectric substrates, microwave food products to biofuels, accurate characterization of their electromagnetic properties from DC to THz frequencies provide engineers with critical information needed for material and circuit design, modeling, new material research, health and safety, manufacturing, quality control, and more. Many measurement methods exist, but which to choose is often a mystery. My intent with this seminar is to clear the air by providing an overview of measurement methods, with strengths, limitations and applications of each.

Part 1: Introduction to Dielectric Properties for Microwave Processing of Materials

Thursday, March 30th from 11am-12pm EDT

Presenter: Shawn M. Allan, Allan Materials

Abstract: Microwave and RF heating offer significant opportunities for cost savings in manufacturing, from food products to ceramics. The ability to generate heat within the product saves both time and energy. The manner in which products respond to microwaves can vary greatly from heating vigorously or barely at all, and from uniformity to localized hot spots. These variations are due in large part to the materials' dielectric properties. Dielectric properties determine the degree to which microwave power is transmitted, absorbed, and reflected by materials, and therefore also the degree and uniformity of heating.

Knowing the dielectric properties and how they change with frequency and temperature, allows process developers to create better microwave heating profiles. Property data is essential to enabling accurate microwave modeling efforts. This webinar will cover basics of dielectric properties and their relationship to physical material parameters and response. A few examples of measurement options will be shared. Case studies will be provided of the use of dielectric properties in understanding microwave processing results and development of heating strategies.

Did you know that the Dielectric Properties webinar series was designed after a member requested we cover this topic? Do you have an idea for our 2-part Fall Webinar Series? We want to hear from you – email info@impi.org with your suggestions!

CALENDAR OF EVENTS

IMPI Spring Webinar Series on Dielectric Properties, Part III: Dielectric Properties of Foods and Bioproducts

Thursday, June 1st from 11am-12pm

Presenters: Pranjali Muley and Candice Ellison, Louisiana State University <http://www.impi.org/events>

The 51st Annual Microwave Power Symposium (IMPI 51), June 20-22, 2017 at the Sonesta Hotel Coconut Grove, Miami, Florida, USA. Additional details can be found at <http://www.impi.org/>

AMPERE, September 18-21, Delft, The Netherlands. More details at <http://www.ampere2017.nl/>

IMPI Fall Short Course, October 24-26, 2017 More details will be added to www.impi.org this summer.

Do you have an upcoming event you would like added to our Calendar of Events? Please email to molly.poisant@impi.org

News from Around the Web....

[Global Smart Microwave Oven](#) Market 2017

A Microwave Helmet May Help [Diagnose Traumatic Brain Injury](#)

[Microwave Sterilization Equipment](#) Market Analysis, Recent Trends and Regional Growth Forecast

Recent research: United States' [microwave sintering furnace market](#) trends to 2021

Microwave-based emulsion technology [featured in scaleup of sucrose esters](#)



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