

THE WAVE



The newsletter publication of the International Microwave Power Institute

September 2018



Fall Short Course: The Fundamentals, Features & Future of the Microwavable Food Marketplace

IMPI's Fall Short Course will take place October 24-26, 2018 at Campbell's Soup World Headquarters in Camden, NJ, USA. [Early bird registration](#) for the event expires on September 24, 2018.

The afternoon of Wednesday, October 24th, we will offer an optional 4-hour pre-short course entitled Microwave 101: Microwave Oven Technology & Product Testing. IMPI President, Bob Schiffmann, will teach the course. A Welcome Reception at the Penn's View Hotel in downtown Philadelphia will be held that evening.

Keynote speakers include Mr. James Pool, President of TurboChef, who will explore, "*The Evolution & Revolution of Microwave Technology in the Commercial Kitchen*" and Mr. Dirk Sappok, Head of Product Development, Miele USA, will present on "*Reimagining the Home Cooking Experience with RF Technology.*"

On October 25th and 26th ten additional presenters will examine topics such as advancements and innovation in microwave packaging, consumer behavior and trends, safe preparation instructions, dielectric property testing, opportunities in microwave processing, solid state and future interfaces of microwave ovens. The full program is [available here](#). *Continued on next page*

PRESIDENT'S MESSAGE

There is a well-known psychological phenomenon known as the "Halo Effect". Among its various definitions are:

- **The halo effect** is a type of immediate judgment discrepancy, or cognitive bias, where a person making an initial assessment of another person, place, or thing will assume ambiguous information (or opinion) based upon concrete information. (Wikipedia)
- "**Halo effect**, (an) error in reasoning in which an impression formed from a single trait or characteristic is allowed to influence multiple judgments or ratings of unrelated factors." (Encyclopedia Britannica)

Continued on Page 3

Fall Short Course Continued

IMPI will provide a complimentary shuttle bus for attendees between the Penn's View Hotel, where rooms are available for \$159 a night, and the Campbell's campus, located just across the river in Camden, NJ. To reserve your hotel room, please call the Penn's View Hotel at 215-992-7600 and ask for the IMPI group rate. Rooms must be booked by October 2nd to be eligible for the group rate.

In addition to the optional Microwave 101 pre-short course, attendees may choose to add the Group Dinner when they register. The Group Dinner will be held the evening of Thursday, October 25th at a local Philadelphia restaurant and includes the meal, non-alcoholic beverages, tax and gratuity. There will be various networking opportunities for attendees via continental breakfasts, coffee breaks and luncheons and these are included in your registration fee. Additionally, all attendees will receive a link to download PDF copies of the presentations. The registration fee for members is \$645, and this will increase to \$745 after the 24th of September. [REGISTER HERE](#).

The Fall Short Course is a must-attend event for anyone working with microwavable foods. Don't miss out on this opportunity!

Call for Papers 2019 Released for the 53rd Annual Microwave Power Symposium (IMPI 53)

On September 1st, IMPI released the [Call for Papers for the 53rd Annual Microwave Power Symposium](#). IMPI 53 will take place June 18-20, 2019 at the iconic Caesars Palace Hotel and Casino in Las Vegas, Nevada, USA.

The deadline for abstract submission is: January 18, 2019.

The Technical Program Chairmen for IMPI 53 are Dr. Graham Brodie of the University of Melbourne and Roger Williams of Ampleon. Dr. Ulrich Erle of Nestle will chair the Food Science & Technology Program Committee.

Hotel rooms at Caesar's Palace are available at the IMPI group rate of \$139 per night. [Follow this link to book your hotel room](#).

Keynote speaker and Spotlight Session announcements are expected within the next month. Please visit <http://impi.org/symposium-short-courses/> for regular updates.

FALL 2018 WEBINAR SERIES: Microwave Plasma and Applications

Free of charge to all IMPI Members! Dates will be announced shortly!

This 2-part Webinar series, to be held in October and November, will be presented by Muegge GmbH. They will examine: what is plasma, excitation frequencies, types of plasma source, pros and cons of Mw vs. RF plasma as well as scientific, medical and industrial applications.

PRESIDENTS MESSAGE CONTINUED

It can be considered as a kind of bias that results from an interpretation of information to fit one's own preconceived notions or concerns. This week I was reminded of the halo effect as a result of a number of items that crossed my desk, all relating to the military use of microwaves:

- The August 18 issue of Military and Aerospace Electronic magazine published the article, "Army asks Lockheed Martin to develop UAV (unmanned aerial vehicle) high power microwave weapons to destroy or disable enemy drones", in which the author stated "High-power microwaves represent a class of non-lethal weapons designed to destroy or disable enemy electronic systems with jolts of powerful electrical energy. It can fry electronics in much the same way as the electromagnetic pulse (EMP) from a nuclear detonation can disrupt electronics."
- On September 2nd, the New York Times had a front-page article, "Invisible Strike May Be Cause of Envoy's Ills ... Suspecting Microwave Beams at Embassy". The article described mysterious effects upon diplomats in Cuba, and possibly earlier in China: "Diplomats and their families recounted high-pitched sounds in homes and hotel rooms at times intense enough to incapacitate. Long-term, the symptoms included nausea, crushing headaches, fatigue, dizziness, sleep problems and hearing loss." This article and its claims have been picked up by the press around the world. I have asked IMPI's and IEEE's Distinguished Fellow Dr. John Osepchuk to summarize and comment on this article. John has passed on to me a number of comments from his colleagues who are expert in the area of the effects of microwave exposure upon humans and I see that there is quite a controversy.
- DOD's active denial technology: this uses focused beams of microwave energy at 95 GHz for nonlethal crowd or individual control under various military and nonmilitary situations. This intense beam has a wavelength of approximately 3.2 mm (0.12") and can cause intense skin pain, causing the recipient(s) to move away quickly.

I've read other similar articles, but want to concentrate on the "halo effect" of such articles. Now, none of these technologies has anything to do with microwave ovens, but in the minds of many consumers that may not be so. My concern, and that of other IMPI members who have contacted me, is that all this information about the military applications of microwave energy, and especially the New York Times article on the possible weaponizing of microwave energy to cause negative physical effects upon diplomats, will feed into the negative microwave oven biases of many consumers, and may also raise questions in the minds of other consumers, specifically those who lack the scientific knowledge to recognize that there is no relationship between these military-microwave applications and microwave ovens. Consumers generally look upon microwave ovens as some kind of magical black boxes, and are concerned about leakage from the ovens, which today is usually so small and it's almost immeasurable; yet, many consumers are concerned about the leakage causing cancer or other physical effects.

What are we to do? These misunderstandings of basic microwave oven facts, and the nonsense spread on the Internet, are things I deal with on a daily basis. An encouraging development for IMPI is that we are pro-actively working to disseminate factual information to overcome consumer fears and misunderstandings., We have entered into a relationship with a marketing and PR firm, True Change Marketing, that will help us get the word out, as well as building IMPI in many other ways. There will be much more about this new partnership in next month's newsletter.

Finally, if you haven't yet registered for the IMPI Fall Short Course at the Campbell Soup campus, October 24 – 26, I urge you to do so. Hope to see you there.



Bob Schiffmann, IMPI President

NY Times Publishes Extensive Speculation that Microwaves May Be Cause of Embassy Employee Ills in Cuba and Elsewhere

Editor's Note: After the September 2nd New York Times article broke, we turned to IMPI Fellow, Dr. John M. Osepchuk, for his reaction to the piece. We are grateful for his write up below.

Abstract: The speculations are many and extraordinary but without scientific support; the many references are critically reviewed; recommendations for valid research and destruction of underlying electrophobia are made.

Description of Article: The article with the title: Microwave Weapons Are Prime Suspect in Ills of U. S. Embassy Workers: was published on-line on Sept. 1, 2018 with link:

<https://www.nytimes.com/2018/09/01/science/sonic-attack-cuba-microwave.html>

It was published in the print edition on Sept.2, with the headline: “Invisible Strike May Be Cause of Envoy Ills.” The article was authored by the well-known William J. Broad. Its breadth is extraordinary with ~210 lines of text, 52 references (links in on line version) and 5 photos or drawings.

Key references are the NY Times article on the embassy ills in Cuba (reference 1 by Gardiner) and the article in ScienceDaily headlining the speculations of the key proponent for a link to microwaves, a Dr. Golomb:

<https://www.sciencedaily.com/releases/2018/08/180829115456.htm>

which is entitled “Diplomats’ mystery illness linked to radiofrequency/microwave radiation, researcher says.”

Comments on references:

There is reference [2] to the Active Denial System which operates at mm-wave frequencies >>30 GHz and is designed to inflict skin pain on target people like terrorists—clearly unrelated to the auditory effect.

There is reference [3] to patents by an AF contractor which claim to allow intelligible speech to be conveyed through the microwave auditory effect—but years of research by the AF have conclusively shown no evidence of intelligence—merely weak “clicks”

There is much reference to the work of Allan Frey who is credited with the first discovery, in 1960, that pulsed microwaves can elicit a weak hearing of clicks etc. He is interviewed and he merely comments that the subject will remain a mystery—and offers no support to the current fears.

There is reference to a plaintiff’s lawyer who loosely claimed that the NSA recognizes that a foreign power might have built a weapon that might have injured his client—mere speculation

There is considerable reference [4] to the work of James C. Lin who concludes that if the microwave power is high enough, maybe, there could be adverse effects to humans---a clearly bald-faced speculation with no experimental evidence.

There is extensive coverage of an article in ProPublica [5] which describes somewhat the “sonic” aspects of the phenomena associated with the alleged attacks of embassy employees—which many suggested sounded like “cicadas” on the microwave auditory effect.

Continued on Next Page

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New York Times article, continued

The most prominent reference is given to the opinions and publications of Beatrice Colomb. especially to a forthcoming paper[6], which is extraordinary: 63 pages with 656 references. The paper is rambling over many disciplines—chemistry, medicine, sociology etc. but with little or no reference to the actual literature on the microwave auditory effect. Prominent in her discourse is the suggestion that literature funded by industry can be ignored because of likely bias. This accusation is more like that of malfeasance and is truly unacceptable to a reasonable observer.

Rebuttals:

A key rebuttal is the recent one by Foster [7]. Note that he is a key source of previous work on the microwave auditory effect and conversant with extensive review of the NY Times paper by scientists and engineers involved in IEEE committees that deal with microwave science and safety.

Other rebuttals include: lack of recognition of the weakness of the perceived sounds in the microwave auditory effect—which would imply the necessity of enormous incident microwave beams on the alleged victims.

Also, if there is high-level microwave energy present there should have been many reports of RFI and even damage to devices and equipment like cell phones etc.

Also, the literature indicates that a sizable part, e.g. 25%, of a tested group of 20 people could not hear the sounds in tests for the microwave auditory effect—is that seen in the alleged sonic attacks in Cuba?

One also can conclude that the allegations lack scientific support suggesting that the claim that industry supported research cannot be accepted is truly a reflection of desperation on the part of those alleging a microwave hazard.

Conclusions:

There is no scientific support for the thesis that microwaves caused sonic attacks on embassy people in Cuba and elsewhere.

Clearly there continues to be significant electrophobia. This should be countered by educational efforts directed toward the general public.

The microwave auditory effect [8,9] may be of medical interest. More studies should be done with localized excitation near the human head using monopoles as in [8,9]. Note that this work shows that the auditory effect shows resonance behavior at modulation frequencies between 700 and 1400 kHz. Furthermore, the resonance frequency decrease with age at around 50 Years—perhaps of medical interest.

References:

1. Gardiner Harris, “U.S. to Open Formal Inquiry on American Sickened in Cuba , NY Times, Jan. 9, 2018
2. David Hambling, “Microwave Ray Gun Controls Crowds with Noise, New Scientist, Daily News, 3 July 2018
3. Patents by James P. O’Laughlin, e.g. U.S. 6,470,214 B1, Oct.22,2000, “Methods and Device for Implementing for Radio frequency Hearing Effect,”

Continued on Next Page

NYT Times Article Continued

4. James C. Lin, “Strange Reports of Weaponized Sound in Cuba,” IEEE Microwave Magazine, pp. 18 – 19, Jan/Feb 2018
5. Tim Golden and Sebastian Rotella, “The Sound and the Fury; Inside the Mystery of The Havana Embassy,” proPublica; Feb 14, 2018
6. Beatrice Alexandra Golomb, M.D., Ph.D., “Diplomats’ Mystery Illness and Pulsed Radiofrequency/ Microwave Radiation” to be published in Oct. 2018 issue of Neural Computation, an MIT Press Journal.
7. Kenneth Foster; Sept. 7, 2018:
<https://blogs.scientificamerican.com/observations/cubas-sonic-attack-on-the-u-s-embassy-could-have-been-merely-sounds-emitted-by-a-listening-device>
8. J. M. Osepchuk, “A New View of the Microwave Auditory Effect,” Presented at the Annual Meeting of the Bioelectromagnetics Society; 1995.
9. J. M. Osepchuk, “A Review of Microwave Power Applications and Safety Issues; Facts and Myths,” 2014 Annual Symposium of IMPI

Happy 40th Anniversary Anniversary to the Microwave Technology Association of the United Kingdom!

As the President of IMPI, and on behalf of the Board of Governors, I send greetings and congratulations to our sister organization, the Microwave Technology Association of the UK. As a long-time Honorary Member of the MTA – UK I am aware of all the excellent work that you have done, and am pleased to have participated from time to time in your activities. While I have not been able to attend many of your meetings, I was there several times early on and formed some wonderful life-long friendships with many of your members, i.e. Jennipher, Jenny, Gordon, Greg, Ricky and many more; and, of course, my dear friend Lew Napleton. As IMPI enters its 53rd year, I have fond memories of the visits of many MTA Members crossing the pond to our IMPI Symposia. We were especially happy to have Jennipher at our 50th anniversary, and subsequently at IMPI 51 – she will be in attending and presenting at IMPI 53 in Las Vegas in June 2019.

So, MTA Members, enjoy champagne on your 40th anniversary and celebrate your wonderful achievements. I hope I can be with you to celebrate your 50th year.

Cheers,

Bob Schiffmann
IMPI President

Journal of Microwave Power and Electromagnetic Energy

JMPEE, Vol. 52, No. 3, is will be released by the end of September. All IMPI Members have free online access to the current Volume and all archives. If you need your username and password resent to you, please contact Alicia Standridge at admin@impi.org

Volume 52, Issue 3 will carry the following articles:

- Editor's message: Speculating from forced relationships
- An eco-friendly and alternative method of forced degradation of fluoroquinolone drugs by microwave irradiation: a new application for analytical Eco-scale, Gilberto Lucio Benedito de Aquino Lucas Danilo Dias Kairo Henrique E. Gonçalves Jaqueline Evangeista Queiroz Giuliana Muniz Vila Verde
- Detection of pregnancy using dielectric properties of urine, CHAO-ZHE ZHU, HUA-NONG TING, KWAN-HOONG NG
- Dielectric properties of chickpea, red and green lentil in the microwave frequency range as a function of temperature and moisture content, Saeedeh Taheri, Graham Brodie, Mohan V. Jacob, Elsa Antunes
- Thickness invariant parameter retrieval techniques for permittivity and permeability measurement, Harbinder Singh, Pursuing Balwinder, Singh Sohi, Amit Gupta
- New excitation scheme to excite higher-order radiating modes in rectangular dielectric resonator antenna for microwave applications, Anshul Gupta, Ravi Kumar Gangwar

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Please follow our [new LinkedIn page](#) or do a LinkedIn Search for "The International Microwave Power Institute" (be sure to use "the" in your search). The page will include the latests IMPI news, events and calls for papers. Follow us today. Thanks!

CALENDAR OF IMPI EVENTS

Fall 2018 Webinar Series on Plasma, Exact dates in October and November forthcoming. Visit www.impi.org for updates.

Fall Short Course, "Fundamentals, Features and the Future of the Microwavable Food Marketplace" October 24-26, 2018 at Campbell Soup World Headquarters in Camden, NJ.

[Register here.](#)

53rd Annual Microwave Power Symposium (IMPI 53), June 18-20, 2019 at Caesars Palace, Law Vegas, NV, USA. Call for Papers Deadline: January 18, 2019!

NEWS FROM AROUND THE WEB

Tel Aviv University researchers propose [low-cost microwave metal 3D printer](#)

[Microwave imaging method](#) may improve cancer screening, treatment monitoring

[Microwave technology](#) set to boost on-farm biogas production

Scientists and doctors [zap theory that microwave weapon injured Cuba diplomats](#)

Markov Issued Patents For A [Smarter Microwave Oven](#)

The American Kitchen is [Alive and Thriving](#)

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