



# IMPI's

## 51<sup>ST</sup> ANNUAL MICROWAVE POWER SYMPOSIUM (IMPI 51)

June 20-22, 2017

**Sonesta Hotel, Coconut Grove  
Miami, FL, USA**

Register today at [www.IMPI.org](http://www.IMPI.org)



Presented by the  
**INTERNATIONAL MICROWAVE POWER INSTITUTE**

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IMPI 51 is your opportunity to connect to and learn from the premier microwave power experts from around the world!

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## THE SYMPOSIUM

Join us and be part of the IMPI 51 experience: where knowledge is shared, networking is prolific, and the program offers topics for everyone interested in learning about the latest developments in microwave power science and technology. Each year, IMPI brings together researchers, technologists and engineers from across the globe to share the latest findings on microwave and radio frequency power systems for non-communication applications, including food technology, solid state, chemical and material processing, and new emerging technologies.

## VENUE & ACCOMODATIONS

IMPI 51 will be held at the beautiful Sonesta Hotel Coconut Grove overlooking the Biscayne Bay. The property offers a full range of hotel rooms and one bedroom suites, on site dining options, an expansive rooftop pool and fitness room as well as a spa and other amenities. The property is located 2 city blocks from CocoWalk, an up-scale lifestyle center in the Coconut Grove neighborhood of Miami, Florida. The center houses over thirty stores and services, including a movie theater, shops, and multiple restaurants.

IMPI has secured a special group rate of \$119-\$169 per night (depending on room type), which includes complimentary in-suite internet access. There is a \$5 per day room housekeeping/amenity fee. Reservations must be made by May 17th by calling: 1-305-529-2828 and using reservation code 0618INTMIC or [by clicking here](#).

## SPECIAL EVENTS

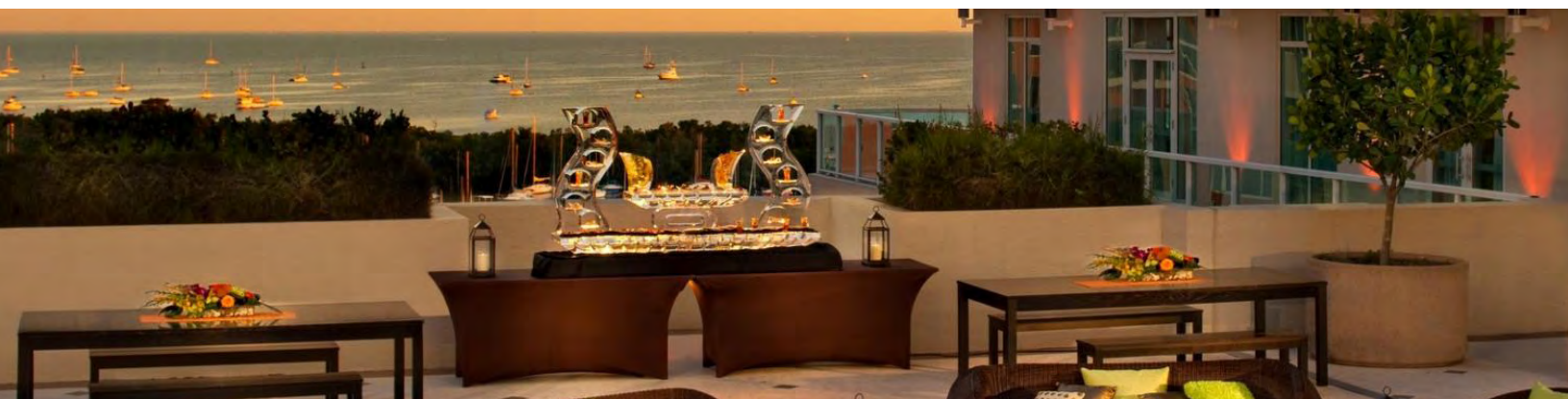
There are several optional special events that registrants can add on during the registration process:

Short Course: Microwave 101, The Fundamentals of Microwave Heating Short Course

Short Course: Industrial Microwave & RF Applications

Group Dinner at a Local Restaurant

Spouse/Guest Program





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# SCHEDULE OF EVENTS

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### TUESDAY, JUNE 20, 2017

8:00am-12:30pm

**SHORT COURSE** (*Optional- Additional Fee Applies*)

**Microwaves 101: The Fundamentals of Microwave Heating**

Instructor: Bob Schiffmann, R.F. Schiffmann Associates, Inc., NY

This course will examine the fundamental principles of microwave heating including microwave heating and microwave oven fundamentals, microwavable foods and packaging. Attendees will leave the course with a better knowledge of:

- What are microwave ovens?
- What are their properties?
- How do they interact with materials?

The course will also discuss requirements and methods for developing microwavable food products, and packaging and how they can be integrated into product development.

#### Fundamentals of Microwave & RF heating

- What are microwave & RF energy?
- How do they heat materials?
- What distinguishes one from another?
- Rate of heating, penetration depth, dielectric properties

#### Microwave Oven Technology

- What is a microwave oven, i.e. what are its components?
- What are the performance characteristics of microwave ovens
  - How are they measured?
  - How do microwave ovens differ?

#### Developing Microwavable Products

- Developing food products: what do you need to know?
- The "Window of Success"
- Tolerance to high heating rates
- The salt dilemma
- Selecting the package:
  - Active vs. passive packaging
  - Size, shape & materials



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8:00am-12:30pm

**SHORT COURSE** (*Optional- Additional Fee Applies*)

### **Industrial Microwave & RF Applications**

Instructors: John F. Gerling, Muegge-Gerling and Glenn Blaker, PSC, Inc.

This course will cover the fundamentals of using Microwave and RF heating in processing foods & non-food materials. Processes such as these have advantages of:

- Faster processing time
- Less destructive processing, e.g. drying heat sensitive materials
- Better process control
- Manpower & plant space efficiencies
- and More

Fundamentals of Microwave & RF heating

- What are microwave & RF energy?
- How do they heat materials
- What distinguishes one from another
- Rate of heating, penetration depth, dielectric properties

Industrial Microwave Processing

- Microwave processing equipment & how applied
- Single mode vs. Multimode systems
- Microwave power delivery configurations
- In-depth discussion of applications

Industrial RF Processing

- Industrial RF equipment & how applied
- Solid state vs. Triode systems
- In-depth discussion of applications

Who should attend? Engineers, scientists & technologists interested in applying Microwave or RF heating to industrial processing, either to assist or replace existing systems, or for the development of new systems.

1:30pm-1:45pm

**WELCOME AND INTRODUCTIONS**

1:45pm-5:00pm

**SOLID STATE SPOTLIGHT**

Session Chair/Moderator: Klaus Werner, RF Energy Alliance

***"Solid-State RF Energy: Applicator and Software Considerations for Industrial Applications"***

Klaus Werner, RF Energy Alliance, The Netherlands

***"How to Approach a Solid State RF Design from a Simulation Perspective"***

Vadim Yakovlev, Worcester Polytechnic Institute, USA



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## SCHEDULE OF EVENTS

***"A New Solid State RF Defrosting System"***

Jason Ji, Wattsine Electronics, China

***"Compact 2.45 GHz Solid-state Plasma Sources for Industrial and Laboratory Applications"***

Kostiantyn Achkasov, SAIREM, France

***"New RF Connectivity Concepts for RF Energy Applications in Mass Manufacturing"***

Hannes Grubinger, Ph.D., HUBER+SUHNER AG, Switzerland

**Solid State Panel Discussion**

5:00pm-7:00pm

**WELCOME RECEPTION**

*Hor d'oeuvres and cocktails on the terrace overlooking the Biscayne Bay*

**Live Cooking Demonstration**

Jennifer Marshall-Jenkinson, MTA, United Kingdom

### WEDNESDAY, JUNE 21, 2017

8:15am-8:30am

**WELCOME & INTRODUCTIONS**

Graham Brodie, University of Melbourne & Ric Gonzalez, Conagra Brands, Technical Program Committee Co-Chairmen

8:30am-9:15am

**KEYNOTE PRESENTATION**

***"Radiofrequency and Microwave Ablation in Cancer Care: Current State of the Art"***

Mehul Doshi, University of Miami Miller School of Medicine, USA

9:15am-9:20am

**BREAK TO MOVE BETWEEN CONCURRENT SESSIONS**

9:20am-11:55am

**CONCURRENT SESSIONS**

**SESSION A: MATERIALS PROCESSING & APPLICATOR DESIGN**

***"Efficient High-Resolution Numerical Simulation of Microwave Based Thermal Processes in Thin-multilayered Domains by using the PGD"***

Francisco Chinesta, Ecole Centrale Nantes, France

***"Comparison of Conventional, Induction and Microwave Based Thermo-catalytic Upgrading of Pyrolysis Vapors"***

Pranjali Muley, University of Louisiana, USA

***"Microwave Processing of a Laminated Part: Application to Glass Fiber Reinforced Polymers (GFRP)"***

Hermine Tertrais, GeM - Ecole Centrale Nantes, France

***"High Efficiency Waveguide Applicators for Frequency Effect Studies"***

Clayton Decamillis, Lambda Technologies, USA



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## SCHEDULE OF EVENTS

### SESSION B: FOOD & AGRICULTURE AND FOOD PROCESSING

***"The Response of Silver Beet to Microwave Generated Biochar"***

Graham Brodie, University of Melbourne, Australia

***"Residual Effect of Microwave Soil Treatment on Growth and Development of Wheat"***

Jamal Khan, University of Melbourne, Australia

***"Benefitting of Plants using Microwave Genetic Activation Method and its Applications"***

Satoshi Horikoshi, Sophia University, Japan

***"Novel Microwave System for Uniform Processing of Food"***

Piotr Swiergon, CSIRO Agriculture and Food, Australia

***"Food Processing with Microwave for Industrial Applications"***

Klaus Baumgaertner, Muegge GmbH, Germany

12:00pm-1:00pm

### NETWORKING LUNCHEON (Posters & Exhibits Open)

1:00pm-2:00pm

### POSTER & EXHIBITOR SESSION

2:00pm-4:50pm

### CONCURRENT SESSIONS

### SESSION A: SOLID STATE AND COMPUTER MODELING

***"Comparison of High Power Magnetron and Solid State Microwave Sources for Compact Ultra High Q Applications"***

John F. Gerling, Gerling-Muegge, USA

***"Magnetic Characteristics of LTCC Ferrites based Frequency Tunable Y-Junction Microstrip Circulator"***

Punit Ravi Raj, Centre for Applied Research in Electronics, Indian Institute of Technology, India

***"Development of Precise and Energy Saving Microwave Reactors with Solid State Microwave Source and their Application to High Speed Synthesis of Valuable Functional Materials"***

Takeko Matsumura, Minerva Light Laboratory L.L.C., Japan

***"A Software Intensive Architecture for Solid-State Microwave Generators"***

Ken Kaplan, Cellencor, Inc., USA

***"Numerical Simulation of the Electric Field and Temperature Distribution within a Low Loss Material in a Travelling Wave Applicator"***

Candice Ellison, University of Louisiana, USA

***"Switched Parasitic Antennas for Microwave Mode Stirring"***

Greg Durnan, NXP Semiconductors, USA



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## SCHEDULE OF EVENTS

### SESSION B: FOOD PROCESSING II and MICROWAVE CHEMISTRY

***"Application of Radio Frequency Drying on Soybean Residue"***

Sur-Der Chen, National Ilan University, Taiwan

***"Microwave Modelling Applied at Continuous In-flow Microwave Preservation of Foods and Combined Microwave Bread Baking"***

B. Wäppling Raaholt, RISE Research Institutes of Sweden

***"Radio Frequency (RF) Thawing of Irregular Shape Frozen Beef — A Computational Simulation and Study"***

Yang Jiao, Shanghai Ocean University, China

***"Development of an Advanced Microwave Calorimeter for Monitoring of Chemical Reactions"***

Vasileios Ramopoulos, Karlsruhe Institute of Technology, Germany

***"PtCo Electrocatalyst prepared by Microwave-Assisted Polyol modified method for the Oxygen Reduction Reaction"***

Miguel Contreras, Instituto Nacional de Investigaciones Nucleares, Mexico

4:50pm-5:40pm

### IMPI BUSINESS MEETING

6:30pm-9:00pm

### GROUP DINNER IN COCONUT GROVE (Optional: additional fee applies)

## THURSDAY, JUNE 22, 2017

8:00am-8:15am

### ANNOUNCEMENTS

8:15am-9:00am

### KEYNOTE ADDRESS

***"Microbial Control Measures for Microwaveable Ready-to-Cook and Eat Foods"***

Mike Davidson, University of Tennessee, USA

9:00am-11:15am

### FOOD SAFETY SESSION

***"The Role of Microwave Pasteurization on Improving the Microbial Safety of Ready-to-Cook and Eat Foods"***

Juming Tang, Washington State University, USA

***"Use of Natural Antimicrobial in Food as a Part of Hurdle Continuum"***

Jairus David, Conagra Brands, USA

***"New Times, New Tools. DNA Sequencing is a New Tool in our Microbiologist's Tool Kit to Monitor and Understand Behaviors in RTC Foods"***

Greg Siragusa, Eurofins Lab, USA

***"Developing and Validating Microwave Heating Instructions – Art or Science?"***

Harshavardhan Thippareddi, University of Georgia, USA



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# SCHEDULE OF EVENTS

- 11:15am-12:00pm **Food Safety Session Panel Discussion**
- 12:00pm-12:45pm **NETWORKING LUNCHEON** (Posters & Exhibits Open)
- 12:45pm-1:45pm **POSTER & EXHIBITOR SESSION**
- 1:45pm-2:10pm ***"Expert Cooking Intelligence 2017 Update - The Death of the Microwave"***  
Steve Drucker, Droaster Laboratories, LLC, USA
- 2:10pm-3:00pm **Standards Panel: Microwave Oven Standards and Food Safety: A Dilemma for Industry & Consumers**  
Moderator: Bob Schiffmann, R.F. Schiffmann Associates Inc.  
Panelists: Jennipher Marshall-Jenkinson, MTA, United Kingdom  
Ric Gonzalez, Conagra Brands, USA  
John F. Gerling, Muegge-Gerling, USA
- 3:00pm-3:15pm **AWARDS & CLOSING REMARKS**

*\*Coffee Breaks will take place midway through each morning and afternoon session, Tuesday, Wednesday and Thursday*







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## KEYNOTE SPEAKERS

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**Mehul H. Doshi, MD**

Assistant Professor – Department of Interventional Radiology, University of Miami, Miller School of Medicine

***Radiofrequency and Microwave Ablation in Cancer Care: Current State of the Art***

This keynote will cover the concepts of thermal ablation in cancer treatment, applicator designs, a brief overview of the ablation procedure, advantages and limitations and other thermal and non-thermal ablation platforms.



**P. Michael Davidson**

Institute Professor Emeritus, Department of Food Science, University of Tennessee

***Microbial Control Measures for Microwaveable Ready-to-Cook and Eat Foods***

Many frozen food products are marketed for heating in microwave ovens prior to consumption. Among these are Ready to Cook (RTC) products requiring, in order to eliminate foodborne pathogenic bacteria, being microwaved by consumers to minimum temperatures and times. This overview reviews the problems associated with RTC foods and some of the potential solutions that could help reduce or eliminate the problems.



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### **Special thanks to the IMPI 51 Technical Program Committee for their dedication to this Symposium:**

#### **Chairmen**

Graham Brodie, University of Melbourne, Australia  
Ric Gonzalez, Conagra Brands, Inc., USA

#### **Members**

Vladimir Bilik, S-TEAM Lab, The Slovak Republic  
Raymond Boxman, Tel Aviv University, Israel  
Georgios Dimitrakis, University of Nottingham, UK  
John F. Gerling, GAE, Inc., USA  
Satoshi Horikoshi, Sophia University, Japan  
Marilena Radoiu, Independent Consultant, France  
Klaus Werner, RF Energy Alliance, The Netherlands  
Roger Williams, AMPLEON, USA  
Vadim V. Yakovlev, Worcester Polytechnic Institute, USA

### **We would also like to express our gratitude to the Food Science & Technology Committee for their diligent work on this Symposium:**

#### **Chairman**

Bob Schiffmann, R.F. Schiffmann Associates Inc., USA

#### **Members**

Gordon Andrews, Gama Consulting, UK  
John Bows, Pepsico, United Kingdom  
Sumeet Dhawan, Nestle R & D, USA  
Ulrich Erle, Nestle R & D, USA  
Marie Jirsa, Tyson Foods, USA  
Nigel McCulloch, Cucina Sano, Italy  
Jeyamkondan Subbiah, University of Nebraska- Lincoln, USA  
Juming Tang, Washington State University, USA  
Mark Watts, Campbell Soup Company, USA



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## REGISTRATION

Please mail this completed form with payment to:

International Microwave Power Institute

PO Box 1140, Mechanicsville, VA 23111

Or register online at [www.IMPI.org](http://www.IMPI.org)

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State/Prov.: \_\_\_\_\_ Postal Code: \_\_\_\_\_

Country: \_\_\_\_\_ Phone: \_\_\_\_\_ Email: \_\_\_\_\_

### SYMPOSIUM (Circle one)

	REG Full Day	REG One Day
Professional Member	\$745	\$500
Non-Member	\$845	\$600
Student Member	\$475	\$375
Student Non-Member	\$575	\$425

### SHORT COURSES + DINNER (Optional)

#### Mw 101 Short Course:

Member: \$275    Non-Member: \$325

#### Industrial Microwave & RF Processing Short Course:

Member \$275    Non-Member \$325

\*Note Short Courses take place at the same time so only choose one

Group Dinner at local restaurant: \$50

Registration fee: \$ \_\_\_\_\_

Short Course fee: \$ \_\_\_\_\_

Dinner fee: \$ \_\_\_\_\_

Membership fee: \$ \_\_\_\_\_

**TOTAL DUE:** \$ \_\_\_\_\_

### MEMBERSHIP

Not a member? Join IMPI now and save significantly on registration:

Professional Membership: \$195

Student Membership (Copy of ID required): \$50

Corporate Membership: \$2,000

### PAYMENT

Check enclosed (Make check payable to IMPI)

Credit card payment:    Visa    Mastercard    Discover    AMEX

Charge amount: \$ \_\_\_\_\_ Card Number: \_\_\_\_\_

Exp. Date: \_\_\_\_\_ Security Code: \_\_\_\_\_ Name of Cardholder: \_\_\_\_\_

Billing Address (if different from above): \_\_\_\_\_

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*Microwave power researchers and experts—in one place, at one time.*

## IMPI 51 SPONSORS



IMPI 51 offers a unique opportunity to promote your microwave-related equipment, products and services. Through sponsorship and/or exhibition, your company will have an opportunity to showcase its products and technologies before a unique audience of industry specialists, technologists and manufacturers, saving your company the time and expense of multiple sales visits. There is no better way to meet new potential clients, reaffirm relationships with current customers and become more visible to the microwave power technology community. We offer a range of sponsorship and exhibition packages that can be tailored to fit your specific needs. [Click here to view Sponsorship Packages.](#) [Click here to view Exhibition Packages.](#) Space is limited, and available on a first-come, first-served basis, with preference given to previous exhibitors and corporate members of IMPI. For more information, please contact Molly Poisant at +1 (804) 559-6667 or [Molly.Poisant@IMPI.org](mailto:Molly.Poisant@IMPI.org).



**REGISTER TODAY AT [WWW.IMPI.ORG](http://WWW.IMPI.ORG)  
SEE YOU IN MIAMI!**

**Questions or Comments?**

**Please contact the IMPI office at:**

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