



SCHEDULE OF EVENTS
50th Annual Microwave Power Symposium (IMPI 50)
The Caribe Royale All-Suite Hotel & Convention Center
Orlando, Florida, USA
June 21-23, 2016

Last updated: March 7, 2016
Schedule of Events is subject to change

Tuesday, June 21, 2016

- 8:00am-12:00pm:** **Short Course: Microwaves 101** (*Optional- Additional Fee Applies*)
Instructor: Bob Schiffmann, R.F. Schiffmann Associates, Inc.
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.
- 8:00am-12:00pm:** **Short Course: Introduction to Multiphysics Modeling in Microwave Power Engineering** (*Optional- Additional Fee Applies*)
Instructor: Vadim Yakovlev, Worcester Polytechnic Institute
The course reviews major issues and challenges in the development of processes and systems in microwave thermal processing of materials and shows how these difficulties could be addressed (as well as what problems could be resolved) with the use of computer modeling. Technical aspects of microwave heating and related physical phenomena are discussed in the context of their mathematical characterization; corresponding numerical techniques are briefly overviewed. Options provided by modern computer tools for multiphysics simulation are considered. Computational strategies of modeling and CAD of systems and processes are discussed and illustrated by examples of successful applied projects. Special attention is paid to scenarios with solid-state generation of microwave energy. The course is concluded by live demonstrations of functionality of QuickWave-3D, the modeling software with advanced capabilities in simulation of microwave thermal processing.

- 1:00pm-1:15pm:** **Welcome and Introductions**
 Bob Schiffmann, President, IMPI and Chairman of IMPI 50 Food
 Science and Technology Program Committee
 Ulrich Erle, Nestle, Co-Chair, IMPI 50 Technical Program Committee
 Kadir Aslan, Morgan State University, Co-Chair Technical Program
 Committee
- 1:15pm-1:45pm:** **Spotlight: AMPERE and Research at the University of Modena**
 Cristina Leonelli, AMPERE and University of Modena
- 1:45pm- 2:15pm:** **Spotlight: MTA/UK and growing the use of microwave ovens**
 Jennipher Marshall-Jenkinson, Microwave Technology Association,UK
- 2:15pm-2:45pm:** **Spotlight: The USDA/ARS and Dielectric Properties Research**
 Stuart Nelson, USDA/ARS (Retired)
- 2:45pm-3:00pm:** **COFFEE BREAK**
- 3:00pm-3:30pm:** **Spotlight: Japan Society of Electromagnetic Wave Energy,
 Applications and Research at Sophia University**
 Satoshi Horikoshi, Sophia University
- 3:30pm-4:00pm:** **Spotlight: The Chinese Microwave Society and Industrial and
 Government Research in China**
 Tian Ren Ji, Hueray (Retired) and CMS
- 4:00pm-4:30pm:** **Spotlight: A Businessman’s View of Industrial Microwave Heating**
 Bernard Krieger, Cober Electronics, Inc.
- 5:00pm-7:00pm:** **Welcome Reception (Posters and Exhibits Open)**

<i>Wednesday, June 22, 2016</i>

- 8:00am-8:10am:** **Welcome & Introductions**
 Bob Schiffmann, Ulrich Erle and Kadir Aslan
- 8:10am-9:25am:** **MEDICAL APPLICATIONS I**
- Keynote Lecture: The Use of Microwave Power for Treatment of
 Cancer**
 Dr. Augustine Y. Cheung, Medifocus Inc.

Antenna Applicators and Microwave Fields for Imaging of the Interior of Human Breasts and Heads

Per Risman, Mälardalen University

9:25am-9:40am: OPEN DISCUSSION

9:40am-10:00am: COFFEE BREAK

10:00am-11:00am: CONCURRENT SESSIONS

MEDICAL APPLICATIONS II

Microwave-Accelerated Bioassays

Enock Bonyi, Morgan State University

Alternative Treatment of Gout Using Metal-Assisted and Microwave-Accelerated Decrystallization (MAMAD) Technique

Zainab Boone-Kukoyi, Morgan State University

Crystallization of Lysozyme on Nanoparticle Surfaces using Monomode Microwave Heating

Brittney Gordon, Morgan State University

FOOD SAFETY

The Current State of Food Safety in the US

William Shaw, Food Safety Inspection Service (*Invited Speaker*)

OPEN DISCUSSION

11:00am-11:05am: Break

11:05am-12:05pm: CONCURRENT SESSIONS

DIELECTRIC PROPERTIES

Use of Dielectric Properties in Agricultural Applications

Stuart Nelson, USDA-ARS (Retired)

Dielectric Properties of Biomass/Bentonite Clay Mixtures between 0.5 and 20 GHz

Candice Ellison, Louisiana State University

Design of a Test Cell for Dielectric Properties Measurement

Soon Kiat Lau, University State University

STANDARDS

How Will You Heat Your Next Meal? UK Microwave Oven Standards & the IEC

Gordon Andrews, Gama Consulting

Panel Discussion

Moderator: Bob Schiffmann, R.F. Schiffmann Associates Inc.

Panelists: Gordon Andrews, Gama Consulting
Per Risman, Mälardalen University
Steve Vlock, ConAgra Foods

12:05pm-1:00pm: NETWORKING LUNCHEON (Posters and Exhibits Open)

1:00pm-2:00pm: POSTER AND EXHIBITOR SESSION

2:00pm-3:20pm: CONCURRENT SESSIONS

SOLID STATE

Recognizing Design Challenges of Solid-State Power Amplifiers for RF Energy Applications

Klaus Werner, RF Energy Alliance (*Invited Speaker*)

64 kW Microwave Generator Using LDMOS Power Amplifiers for Industrial Heating Applications

Brad Lindseth, Ampleon

Compact 1 kW 2.45 GHz Solid-State Source for Industrial Applications

Roger Williams, Ampleon (*Invited Speaker*)

FOOD SCIENCE AND TECHNOLOGY I

A Comparison of Mode Mixer vs. Turntable Upon Temperature Response of Small Samples

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

Effect of Salt and Moisture Contents on Microwave Heating Performance of Mashed Potato

Xinyao Wei, University of Nebraska - Lincoln

Multiphysics Modeling of the Effect of Headspace Steam on Microwave Heating Performance of a Frozen Heterogeneous Meal

Jiajia Chen, University of Nebraska – Lincoln

Model Food System Development for Quality Optimization of Microwave-Assisted Pasteurized Foods

Ellen Bornhorst, Washington State University

3:20pm-4:55pm

CONCURRENT SESSIONS

INDUSTRIAL APPLICATIONS I

The Use of Microwave Energy in Reactive Powder Metallurgy

Cristina Leonelli, University of Modena and Reggio Emilia,

Department of Engineering “Enzo Ferrari”

A Novel Microwave-Thermal Process for Accelerated Curing of Concrete

Natt Makul, Phranakhon Rajabhat University

Improved Treatment for Wood Boards Disinfestation by Microwave Power Application

Angela Tatiana Zona-Ortiz, Universidad Santo Tomas

Feasibility of Liberating Gold from Refractory Ores by Microwave Irradiation

Munemo Prosper, Harare Polytechnic

MICROWAVE EQUIPMENT

Development of High Power 5.8GHz CW Magnetron -Industry’s First

Nagisa Kuwahara, Panasonic Corporation

Performance Description of a Cavity for Heating α -SiC at 5.8 GHz

Juan Aguilar, Universidad Autónoma de Nuevo León

Improvement of Microwave Heating Uniformity Contributed by the Screw Propeller

Huacheng Zhu, Sichuan University

3D Particle-In-Cell Simulation Study of Injection Locked Magnetron

Yang Yang, Sichuan University

4:55pm-5:45pm:

IMPI BUSINESS MEETING

6:30pm-8:30pm:

GROUP DINNER (*Optional, Additional Fee Applies*)

Thursday, June 23, 2016

8:00am-8:10am: Morning Announcements

8:10am-8:55am: Keynote Address: Evolution & Revolution of Microwave Technology in the Commercial Kitchen
James Pool, TurboChef

8:55-9:00am: Break

9:00am-10:00am: CONCURRENT SESSIONS

FOOD SCIENCE & TECHNOLOGY II

Microwave Cookware in the USA and Abroad
David Kusuma, Tupperware (*Invited Speaker*)

Modelling of Baking Processes with Microwave Applications
Brigitta Raaholt, SP Technical Research Institute of Sweden (*Invited Speaker*)

INDUSTRIAL APPLICATIONS

Some Emerging Applications for Microwave Technology in Chemistry, Polymers and Waste
Klaus Baumgaertner, Muegge GmbH

Formation of Micro-Fractures on Ludwigite Ore Under Microwave Treatment and its Effect on the Grinding Efficiency of Ludwigite Ore
Yajing Liu, Northeastern University

Development of a Coaxial Microwave Applicator for Liquid Heating over a Wide Frequency Range
Tomohiko Mitani, Kyoto University

10:00am-10:15am: COFFEE BREAK

10:15am-12:15pm:

FOOD & AGRICULTURE

Effect of Microwave Irradiation of Soil on Germination and Growth of Garden Vegetables

Raymond Boxman, Tel Aviv University

Growth Stimulation System of Plants Using Microwave Irradiation and Elucidation of its Molecular Mechanisms

Satoshi Horikoshi, Sophia University

Microwave Weed Control

Graham Brodie, The University of Melbourne

Effect of Microwave (2.45 GHz) on Agronomic Efficiency of Nitrogen in Wheat

Muhammad Khan, The University of Melbourne

Determination of Kinetic Parameters of Thermal Death of Radio Frequency Heated Red Flour Beetle (*Tribolium Castaneum*) Using Inverse Simulation

Oon-Doo Baik, University of Saskatchewan

A Computer Simulation Model for Microwave Assisted Thermal Pasteurization System

Deeplia Jain, Washington State University

12:15pm-1:00pm:

NETWORKING LUNCHEON (Poster and Exhibits Open)

1:00pm-1:45pm:

POSTER & EXHIBITOR SESSION

1:45pm-3:15pm:

CONCURRENT SESSIONS

FOOD SCIENCE & TECHNOLOGY III

Magnetron, Microprocessors and the Birth of Expert Cooking Intelligence

Steven Drucker, Droaster (*Invited Speaker*)

A 21st Century Microwave Oven Company

Travis Kirwan, Edge Consumer Brands (*Invited Speaker*)

Solid State Cooking

Robin Wesson, Ampleon

PLASMA

The Localized Microwave-Heating Paradigm and its Implementation in Solids, Powders, and Dusty Plasma

Eli Jerby, Tel Aviv University (*Invited Speaker*)

Surface Modification Using Microwave Surface Plasma Reduction

Tsutomu Takizawa, SE Corporation

Microwave Induced Plasma for Food Sanitizing in a Technological Scale

Mathias Andrasch, Leibniz Institute for Plasma Science and Technology, INP Greifswald e.V.

The Plasma Boost in Semiconductor Industry

Tunjar Asgarli, Muegge GmbH

3:15pm-3:30pm

CLOSING CEREMONY & AWARDS

POSTER PRESENTATIONS

Dielectric Properties of Concrete: An experiment and new model approach

Natt Makul, Phranakhon Rajabhat University

Microwave Aided Plasma Generation

Mathias Andrasch, Leibniz Institute for Plasma Science and Technology, INP Greifswald e.V.

Impact of Radio-Frequency Plasma on Physical and Mechanical Properties of Spiral Pumps

Khristoliubova Valeriia, Kazan National Research Technological University

A Novel Rapid Microwave-Vacuum Processing for Accelerating The Compressive Strength of Concrete Materials

Natt Makul, Phranakhon Rajabhat University

Study on an Injection-Locked Magnetron

Satoshi Fujii, National Institute of Technology, Okinawa College

CONFIRMED EXHIBITORS

Ampleon ~ Ferrite Microwave Technologies ~ Graphic Packaging International

L-3 Electron Devices ~ MKS Instruments ~ Muegge GmbH ~ PSC Inc.

Richardson Electronics ~ Taylor & Francis Publishing ~ The RF Energy Alliance