IMPI FALL 2023 SEMINAR

OCTOBER 3-5, 2023

Presented by the International Microwave Power Institute
Hosted by Richardson Electronics
Suburban Chicago, IL ,USA

Richardson Electronics

TOUR • MW TECHNOLOGY FUNDAMENTALS • EQUIPMENT • FOOD PROCESSING
• PASTEURIZATION • VALIDATION • MW COOKING DIRECTIONS • SOLID STATE • NETWORKING
EMERGING APPLICATIONS • STERILIZATION • BEST PRACTICES

AGENDA

TUESDAY, OCTOBER 3, 2023

Venue: Richardson Electronics, La Fox, Illinois

3:30pm - 5:00pm **TOUR OF RICHARDSON ELECTRONICS**

5:00pm - 6:00pm **WELCOME RECEPTION, RICHARDSON ELECTRONICS**

WEDNESDAY, OCTOBER 4, 2023

Venue: The Hotel Baker, St. Charles, Illinois

8:00am - 8:30am **CONTINENTAL BREAKFAST**

8:30am - 8:45am **WELCOME & OPENING REMARKS**
John F. Gerling, IMPI President
Jerome Czajkowski, Richardson Electronics


8:45am - 10:15am **Mw 101.1: Microwave Technology Fundamentals: The Electromagnetic Field in Free-space**
Ray Boxman, Tel Aviv University

Concepts of vector and field. Electrical and magnetic force on a charge. Maxwell's equations. Electromagnetic waves. The plane wave. Waves in transmission lines. Waves in waveguides, modes. Reflection and transmission of waves at interfaces. Resonators.

10:15am - 10:30am **COFFEE BREAK**

10:30am - 11:00am **Mw 101.2: Microwave Technology Fundamentals: Interaction of Electromagnetic Fields with Matter**
Ray Boxman, Tel Aviv University

Conductivity. Permittivity. Permeability. Skin depth. Heating. The domestic microwave oven.

11:00am - 12:30pm **Mw 101.3: Microwave Technology Equipment**
John F. Gerling, Gerling Consulting, Inc.

Fundamentals of applicators (single and multi-mode, high and low Q-factor, batch and conveyorized), waveguide components (isolators, couplers, tuners, terminations, transitions), generators (magnetrons, power supplies, solid state) and systems commonly used for industrial microwave processing. Examples will include common food process systems and emerging applications.

WEDNESDAY, OCTOBER 4, 2023, CONTINUED

12:30pm - 1:30pm **NETWORKING LUNCH**

1:30pm - 3:00pm **Mw 101.4: Microwave Food Processing Fundamentals**

Ulrich Erle, Nestlé

Dielectric properties of food. Thermal runaway. Fundamentals of common microwave-assisted food processes, such as Pasteurization and Sterilization, Drying, as well as Tempering of frozen food.

3:00pm - 3:30pm **Mw 101.5: How to Develop Microwave Cooking Instructions**

Marie Jirsa, Consumer Microwave Consultant

This presentation will explore best practices in setting up a microwave testing lab. What microwaves to purchase, how many? Testing equipment as well as fundamentals of how to develop foolproof preparation directions for today's consumer.

3:30pm - 3:45pm **COFFEE BREAK**

3:45pm - 4:45pm **Mw App 1: Validation of Food Products Processed using Electrical Technologies**

Pablo M. Coronel, CRB Engineers

Ensuring the safety and quality of food products necessitates adherence to regulations. The incorporation of electrical technologies introduces a set of intricate challenges that regulators must surmount. Regulators are required to grasp the intricacies of preservation mechanisms and establish confidence in the safety of foods, even in adverse scenarios. This seminar is designed to offer guidance to processors and researchers engaged with electrical heating technologies. Its objective is to assist them in formulating a comprehensive plan for product development and validation that aligns with the stipulations of regulatory bodies.

The seminar will encompass the following focal points: Fundamental aspects of regulatory requirements, a structured roadmap for validation, determination of worst-case scenarios, utilization of mathematical models and model validation, analysis of residence time distribution, and the intricacies of FDA filings. Furthermore, the seminar will delve into two real-world case studies concerning low acid aseptic products. One case study will spotlight a homogenous viscous product, while the other will revolve around a particulate product.

6:30pm **GROUP DINNER AT LOCAL RESTAURANT**

THURSDAY, OCTOBER 5, 2023

Venue: The Hotel Baker, St. Charles, Illinois

8:00am - 8:30am **CONTINENTAL BREAKFAST**

8:30am - 9:30am

Mw App 2: Methodologies for Microwave Sterilization of Continuous Flow Food Products
Michael Druga, SinnovaTek

A comparison of microwave heating methodologies including travelling wave, focused energy, and multimode applicators in a continuous flow regime for the sterilization of liquid food products with heating up to 145C across a wide range of fluid viscosities and dielectric properties.

9:30am - 10:30am

Mw App 3: Practical, Real-World Efficiency Comparison between L-Band Magnetron and SSPA Microwave Sources
Adam Jones, Crescend Technologies

With the introduction of solid-state microwave generators (SSPA) for the Industrial (ISM) market, there has been significant amount of discussion and debate comparing the AC/line power needs to microwave (MW) power conversion efficiency for both magnetron and solid-state based microwave sources. This paper will review and compare the major differences.

10:30am - 10:45am **COFFEE BREAK**

10:45am - 11:45am **PANEL DISCUSSION WITH FALL SEMINAR SPEAKERS**

11:45am - 12:00pm **CLOSING REMARKS & CONFERENCE CONCLUDES**

Lunch will be available at Noon (Dine-In or Carry Out)

Learn more about the Mw/RF Technology Fundamentals Workshop.

REGISTRATION

EARLY BIRD THROUGH AUGUST 25, 2023

FALL SEMINAR *(Circle one)*	Registration Fee
IMPI Member	$675
Non-Member	$775
IMPI Student Members	$300
Student Non-Members	$400

SCAN HERE OR CLICK TO REGISTER TODAY

***Registration rates increase by $100 after August 25th.**

Registration Fee Includes: *Tour of Richardson Electronics, Welcome Reception, a multi-hour Mw/RF Technology Fundamentals Workshop, lectures on various Mw, RF and Solid State applications, 2 continental breakfasts and networking luncheons, 3 coffee breaks, PDF versions of presentations and unprecedented networking!*

HOTEL & ACCOMODATIONS

Hotel Rooms: Book your hotel room now by calling the Hotel Baker and asking for the IMPI/Richardson rate: +1-630-584-2100.

WWW.IMPI.ORG

Questions? Contact: molly.poisant@impi.org