



**SCHEDULE OF EVENTS**  
**59<sup>th</sup> ANNUAL MICROWAVE POWER SYMPOSIUM (IMPI 59)**  
**The Westin Edmonton**  
**Edmonton, Alberta, Canada**  
**June 24-26, 2025**

*Updated February 28, 2025*

*\*\*Exact times/days of presentations are subject to change\*\**

**Tuesday, June 24, 2025**

- 8:00am-11:15am:**    **SHORT COURSE I: MW 102: Fundamentals for Understanding Microwave Interactions in Static and Dynamic Processes** (*Optional – Additional Fee Applies*)  
Instructors: John F. Gerling, Ralph W. Bruce and Graham Brodie
- 11:30am-1:00pm:**    **SOLID STATE RF ENERGY HOSTED LUNCHEON**  
Section Updates, Market Survey Recap, Roadmap & Lunch  
(*Open to all IMPI 59 Attendees - Optional – Additional Fee Applies*)
- 1:15pm-4:30pm:**    **SHORT COURSE II: Practical Implementation of Microwave Modeling: from Development to Validation** (*Optional – Additional Fee Applies*)  
Instructors: Pablo Santón & Jiajia Chen
- 4:30pm-5:30pm:**    **EXHIBITOR SHOWCASE**
- |                                   |                               |
|-----------------------------------|-------------------------------|
| Muegge GmbH (Germany)             | QWED (Poland)                 |
| Odyssey Technical Solutions (USA) | Stellant Systems (USA)        |
| Richardson Electronics (USA)      | 3DRFE Corp (USA)              |
| Microwave Techniques (USA)        | MKS (Italy)                   |
| pinkRF (Netherlands)              | Ampleon (USA)                 |
| RFHIC (Republic of Korea)         | SAIREM (France)               |
| WavePIA (Republic of Korea)       | Symphony Microwave (USA)      |
| Mini-Circuits (USA)               | Solid State RF Energy Section |
| Crescend Technologies (USA)       | IEEE’s MTT-S                  |
- 5:30pm-6:30pm:**    **WELCOME RECEPTION** (*Posters and Exhibits Open*)
- 6:30pm:**            **DINNER ON OWN**  
*There are dozens of restaurants in walking distance to the Westin Edmonton.*

Wednesday, June 25, 2025

- 8:00am-8:15am: WELCOME & INTRODUCTIONS**  
Ralph Bruce, RWBruce Associates, Inc./ Vanderbilt University (*formerly*)  
Jiajia Chen, University of Tennessee, Knoxville  
John F. Mastela, JFM Technical Corporation & President, IMPI
- 8:15am-8:45am: The History of IMPI and Its Role in Applications of Microwave and RF Power**  
John F. Gerling  
*Gerling Consulting, Inc., Gilroy, CA, USA*
- 8:45am-9:35am: KEYNOTE ADDRESS: Does it Make Sense to Use Microwaves and RF when Creating Ceramic-Based Materials for High Temperature Applications?**  
Jon Binner  
*School of Metallurgy and Materials, University of Birmingham, United Kingdom*
- 9:35am-9:45am: POSTER FLASH SESSION**
- 9:45am-10:05am: COFFEE BREAK**
- 10:05am-11:55am: CONCURRENT SESSIONS**

**SESSION A: MATERIALS I**

**INVITED: Microwave Debinding of Ceramics Produced by Additive Manufacturing**

Donna Post Guillen<sup>1</sup>, C.S. DeChant<sup>1</sup>, K.S. Cutts<sup>1</sup>, and D. Tucker<sup>2</sup>

<sup>1</sup>*Idaho National Laboratory, Idaho Falls, Idaho USA*

<sup>2</sup>*Rocky Mountain Scientific, Idaho Falls, Idaho USA*

**Electrochemical Characterization of Boron and Germanium Co-Doped Diamond Electrodes Synthesized by MPCVD**

Kesheng Guo & Hu Lang

*Jihua Laboratory, Foshan, China*

**Microwave-Assisted Gasification of Biomass and Plastics for H<sub>2</sub> Production: Plant-wide Modeling and Techno-Economic Analysis**

Md Emdadul Haque<sup>1</sup>, Opeyemi Ogunniyan<sup>1</sup>, Pranjali Muley<sup>2</sup>, Ashraf Abedin<sup>2</sup>, Dushyant Shekhawat<sup>3</sup>, and Debangsu Bhattacharyya<sup>1</sup>

<sup>1</sup>*Department of Chemical and Biomedical Engineering, West Virginia University, Morgantown, WV, USA*

<sup>2</sup>*NETL Support Contractor, Morgantown, WV, USA*

<sup>3</sup>*National Energy Technology Laboratory, Morgantown, WV, USA*

**Microwave Assisted Synthesis of Nanomaterials with Desired Properties**

Przemysław Korpas<sup>1</sup>, Magdalena Borowska<sup>1</sup>, Małgorzata Celuch<sup>2</sup>, Krzysztof Jankowski<sup>1</sup> and Wojciech Wojtasiak<sup>1</sup>

<sup>1</sup>*Warsaw University of Technology, Warsaw, Poland*

<sup>2</sup>*QWED Sp. z o.o., Warsaw, Poland*

**SESSION B: FOOD PROCESSING & TECHNOLOGY**

**INVITED: Advanced Intermittent Microwave Convective Drying (IMCD) Method to Improve Energy Efficiency and Food Quality**

Azharul Karim

*Queensland University of Technology, Australia*

**A Review of the Benefits of Wave-Based Heating for Processing Liquid Food Products in Vertical Vessels**

Lou A. Honary

*WAVEtek Process Technology, LLC, Grundy Center, Iowa, USA*

**Evaluating Sample Geometry and Frequency Scheduling on Energy Efficiency and Heating Uniformity of a Model Food Sample**

Afshan Mehrabi & Volker Gaukel

*Institute of Process Engineering in Life Sciences, Food Process Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany*

**Microwave Baking of Food Foams under Selected Gas Pressure**

Patricia Le Bail<sup>2</sup>, Manon Chemin<sup>1,2</sup>, Olivier Paurd<sup>1</sup>, Laure Villarecque<sup>1</sup>, Alain Riaublanc<sup>2</sup>

<sup>1</sup>*NBread Process®., Le Controis en Sologne, France*

<sup>2</sup>*INRAe, BIA. impasse Yvette Cauchois, Nantes, France*

**11:55am-12:35pm: NETWORKING LUNCHEON** (*Posters & Exhibits Open*)

**12:35pm-1:35pm: POSTER & EXHIBITOR SESSION**

**1:35pm-2:50pm: SPECIAL SESSION: IEEE's MTT-S**

*Hosted by Malgorzata Celuch, selected papers will be presented during this Special Session. Additional details forthcoming.*

**2:50pm-3:40pm: PLENARY SESSION: SOLID STATE I**

**Design and Realization of a Solid-State RF System for Clean Hydrogen Experimentation**

Pablo Santón and Klaus Werner

*pinkRF B.V., Nijmegen, The Netherlands*

**Pushing the Limits: High-Power GaN Transistors Surpass 80% Efficiency**

Patrick Valk<sup>1</sup>, Adam Ritscher<sup>2</sup> and Coen Centen<sup>1</sup>

<sup>1</sup>*Ampleon, Nijmegen, Netherlands*

<sup>2</sup>*Ampleon, Smithfield, USA*

**3:40pm-4:00pm: COFFEE BREAK**

**4:00pm-5:15pm: PLENARY SESSION: SOLID STATE II**

**Performance Study of a Solid-state Microwave Remote Plasma Source**

Amandine Guissart<sup>1</sup>, Timo Richter<sup>1</sup>, Marco Fiore<sup>2</sup>, Robert Müller<sup>3</sup>, Edgar Perez-Lopez<sup>3</sup>, Huseyin Ates<sup>3</sup>, Markus Dingeldein<sup>1</sup>, Klaus-Martin Baumgaertner<sup>1</sup>

<sup>1</sup>MUEGGE GmbH, Reichelsheim, Germany

<sup>2</sup>LEANFA Srl, Ruvo di Puglia, Italy

<sup>3</sup>MUEGGE Gerling, Modesto, USA

**Solid-state Generator Array for Dynamic Plasma Shaping**

Marco Fiore<sup>1</sup>, Amandine Guissart<sup>2</sup>, Rocco Di Modugno<sup>1</sup>, Fabio Lobascio<sup>1</sup>, Nicola Di Modugno<sup>1</sup>, Tommaso De Nicolo<sup>1</sup>, Cristian Bruno<sup>1</sup>

<sup>1</sup>LEANFA Srl, Ruvo di Puglia, Italy

<sup>2</sup>MUEGGE GmbH, Reichelsheim, Germany

**An AI-driven Complementary Frequency Shifting Strategy to Improve Heating Uniformity in a Solid-state Microwave System**

Amit Kumar<sup>1</sup>, Ran Yang<sup>2,3</sup> and Jiajia Chen<sup>1</sup>

<sup>1</sup>Department of Food Science, The University of Tennessee, Knoxville, Tennessee, USA

<sup>2</sup>Virginia Seafood Agricultural Research & Extension Center, Virginia Tech, VA, USA

<sup>3</sup>Department of Biological Systems Engineering, Virginia Tech, VA, USA

**5:15pm-5:45pm: IMPI ANNUAL BUSINESS MEETING**

*Open to all current and potential Members. Voting Board Elections, Officer Reports, Award of the R.F. Schiffmann Memorial Scholarship*

**6:30pm-9:00pm: GROUP DINNER AT LOCAL RESTAURANT**

*Registration Required – Additional Fee Applies*

**Thursday, June 26, 2025**

**8:00am-8:15am: ANNOUNCEMENTS**

**8:15am-9:05am: KEYNOTE ADDRESS: Essential Aspects of Commercialization of Microwave Heating Technology for Foods and Beverages**

Tatiana Koutchma

*Guelph Food Research and Development Center Agriculture and Agri-Food Canada/Government of Canada Ontario, Canada*

**9:05am-9:10am: BREAK** to Allow Attendees to Traverse Rooms

**9:10am-10:35am: CONCURRENT SESSIONS**

## **SESSION A: FOOD TECHNOLOGIES II**

### **INVITED: Recent Development of Radio Frequency Systems for Postharvest Processing of Agricultural Products**

Shaojin Wang

*College of Mechanical and Electronic Engineering, Northwest A&F University, Yangling, Shaanxi China*

### **Numerical Simulation of a Microwave Applicator for the Treatment of Low-moisture Food**

Ana Caroline Frabetti<sup>1,2</sup>, T. Garnault<sup>1</sup>, H. Curto<sup>1</sup>, A. Thillier<sup>1</sup>, L. Boillereaux<sup>2</sup>, O. Rouaud<sup>2</sup>, S. Curet<sup>2</sup>

<sup>1</sup>*SAIREM, Décines Charpieu, France.*

<sup>2</sup>*Oniris, Nantes Université, Nantes, France*

### **Microwave Baking of Biscuits; Towards the Next Generation of Biscuits with the ABCD Project**

Alain Le-Bail<sup>1</sup>, M. Valizadeh<sup>1</sup>, S. Curet<sup>1</sup>, C. Rannou<sup>1</sup>, M.L. Lebrquier<sup>2</sup>, G. Bertheau<sup>2</sup>, and P. Le-Bail<sup>3</sup>

<sup>1</sup>*ONIRIS-GEPEA CNRS 6144, Nantes France*

<sup>2</sup>*CTCPA, Nantes France*

<sup>3</sup>*INRAE-BIA, Nantes France*

## **SESSION B: MATERIALS II**

### **INVITED: Microwave Process for Lunar Construction**

Holly Shulman<sup>1</sup>, Morgana Fall<sup>2</sup>, Hal Kimrey<sup>3</sup>, John F. Gerling<sup>4</sup>

<sup>1</sup>*Blue Star Advanced Manufacturing, LLC, Belmont, NY, USA*

<sup>2</sup>*Engineering Consultant, Albany, NY, USA*

<sup>3</sup>*Microwave Materials Technologies, Inc., Knoxville, TN, USA*

<sup>4</sup>*Gerling Consulting, Inc., Gilroy, CA, USA*

### **Advancements in Mining Applications using Solid-State Microwave Power Microwaving Rocks can be Profitable and Improve Mining Operations**

Adam Jones

*Crescend Technologies, Gorman, ME, USA*

### **Microwave Heating for Minerals Drying: Experimental and Numerical Study**

M. Asgarpour Khansary, P. Samea, A. Shadi and S.A. Ghoreishi-Madiseh

*The University of British Columbia, Vancouver, Canada*

**10:35am-10:55am: COFFEE BREAK**

**10:55am-12:10pm: CONCURRENT SESSIONS**

## **SESSION A: PLASMA & CHEMISTRY**

### **Computational Analysis of Electron Density Effect on Power Absorption in Microwave Plasma Applicators**

Kamal Hadidi<sup>1</sup>, Camille E. Williams<sup>2,3</sup>, and Vadim V. Yakovlev<sup>2</sup>

<sup>1</sup>*Isklen, LLC, Sudbury, MA, USA*

<sup>2</sup>*Center for Industrial Mathematics and Statistics, Department of Mathematical Sciences, Worcester Polytechnic Institute, Worcester, MA, USA*

<sup>3</sup>*Physics Department, Worcester Polytechnic Institute, Worcester, MA, USA*

### **From Renewable Energy to Valuable Chemicals: Plasma-Process Innovations in Power-to-X Applications**

Robert Müller<sup>2</sup>, Amandine Guissart<sup>1</sup>, Jens Hofmann<sup>1</sup>, Edgar Perez-Lopez<sup>2</sup>,

Huseyin Ates<sup>2</sup>, Markus Dingeldein<sup>1</sup>, Klaus-Martin Baumgaertner<sup>1</sup>

<sup>1</sup>*MUEEGGE GmbH, Reichelsheim, Germany*

<sup>2</sup>*MUEEGGE Gerling, Modesto, USA*

### **Scaling Up Microwave Plasma Technology with Solid-State Generators: Overcoming Surface Limitations for Enhanced Performance**

Fadi Zoubian

*SAIREM, Décines Charpieu, France.*

## **SESSION B: MODELING**

### **Microwave Energy to Effectively Electrify Process Heat in the Fluidization Industry: A Particle-scale Insight**

Mehdi Salakhi<sup>1</sup> and Murray J. Thomson<sup>1</sup>

<sup>1</sup>*University of Toronto, Toronto, Canada*

### **Inclusion of Thermal Dependent Material Relations for Modeling Microwave Ablation Antennas**

Tomasz Nalecz<sup>1</sup>, Lukasz Nowicki<sup>1</sup>, Malgorzata Celuch<sup>1</sup>,

<sup>1</sup>*QWED Sp. z o. o. , Warsaw, Poland*

### **Theoretical Average Power Handling of Circular Waveguide**

Brent Leier<sup>1</sup>, Mohammed Zaher<sup>1</sup>, John F. Gerling<sup>2</sup>, Francois van der Merwe<sup>1</sup>

<sup>1</sup>*Aurora Hydrogen, Edmonton AB, Canada*

<sup>2</sup>*Gerling Consulting, Inc., Gilroy CA, USA*

**12:10pm-12:50pm: NETWORKING LUNCHEON** (*Posters & Exhibits Open*)

**12:50pm-1:50pm: POSTER & EXHIBITOR SESSION**

**1:50pm-3:05pm: PLENARY SESSION: MICROWAVE MYTHS & DIELECTRIC PROPERTIES**

### **Getting the Most Out of Your Magnetron: Facts, Myths, and Misconceptions**

Thomas R. Blassick and Jerry K. Wessel

*Richardson Electronics, Ltd.*

**Facts and Misinformation about What is “Microwave-Safe” and What is Not**

John F. Gerling<sup>1</sup>

<sup>1</sup>*Gerling Consulting, Inc., Modesto, California, USA*

**Temperature-dependent Dielectric Measurements of PAN Fibers During Stabilization Process**

Oleksandr Maksymenko<sup>1,3</sup>, Guido Link<sup>1</sup> and John Jelonnek<sup>1,2</sup>

<sup>1</sup>*IHM, <sup>2</sup>IHM, Karlsruhe institute of Technology, Karlsruhe, Germany*

<sup>3</sup>*Kharkiv Institute of Physics and Technology, Kharkiv, Ukraine*

**3:05pm-3:20pm: AWARDS & CLOSING REMARKS**

**3:20pm: SYMPOSIUM CONCLUDES**