Impressions from the AMPERE-2017 Conference at TU Delft

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Short courses were taught on Monday, before the AMPERE conference officially kicked off. There were 24 participants from various different countries. The five distinguished instructors provided the attendees a broad technical overview of the basic principals, which included dielectric properties, applicator design, and modeling. They concluded with practical examples of electromagnetic, RF, and microwave applications. This course is, in my view, a wonderful opportunity for both the novice to microwaves and the experienced practitioner, to gain valuable insights into these fascinating material processing techniques.

No visit to delft would be complete without a visit to the Royal Delft factory. This company was founded in 1653. Following the short courses, the registration and opening reception were held in this historic venue. "De Porceleyne Fles" most commonly translated as "The Porcelain Jar", this working factory produces the iconic "Delft blue" pottery, has become synonymous with the Netherlands. This was a wonderful chance to renew relationships with old friends and the opportunity to make new ones in a beautiful setting, surrounded by historically significant examples of pottery from over 300 years of operation.

After the opening of ceremony and kickoff of AMPERE 2017, day one started with a Plenary talk by Dr. Carlo Groffils. His talk was entitled "Microwave Energy Application Consult", discussing the activities and capabilities at his facility. This was followed by two thought provoking Keynote talks. In the first, Prof. Bala Vaidhyanathan presented his research on "Microwave and Flash Processing of 3D Printed Ceramics". The second Keynote talk was given by Edward Ripley presented "Surface Charge Mobility Theory - An Explanation for Certain "Microwave Effects"" (see Page 26 in this issue). Both keynote talks generated considerable interest and discussion. On the first day, there were six technical sessions, covering the topics of;

- Microwave and high-frequency material interactions
- Microwave assisted chemistry and processing
- Microwave and high frequency supply design

After the presentations, many of the attendees were able to take a boat tour of historic downtown Delft, with insights in to the fascinating history of this beautiful city. The boat tour ended at the city center where there was a reception at City Hall. Inside this wonderful venue, there were historical surprises around every corner, including an exact replica of Anton von Leeuwenhoek's historical first microscope.

One exciting trend in MW technology which was highlighted in several talks was the new solid-state MW generators. These systems offer previously unparalleled control and flexibility for the researcher, academic, and experimenter.

The second day started with a Plenary talk by Georgios Dimitrakis, on "The Use of Dielectric Spectroscopy for Process Monitoring and Optimization". This was followed by a Keynote talk by Michel Delmotte on "The Influence of Heat Properties of Metallic or Dielectric Containers on Thermal Yield and Energy Efficiency in Microwave Heating Applications" These Plenary and Keynote talks, are a wonderful chance to get a first glimpse at the work being conducted by our colleagues throughout the field.

During the second day there were eight technical sessions, covering the topics of;

- Dielectric Properties Measurement
- Process Intensification using Electromagnetic Energy
- Biomass and Waste Processing
- Microwave and RF Plasma Applications
- Industrial Medical and Biological Applications

There were some great talks which continued on the theme started by Dr. Dimitrakis, and there were a number of talks which dealt with biomedical applications, materials and processes. Also there were several very interesting talks on processing of bio wastes, as well as greener approaches for traditional processing. There was a thought provoking talk on "The use of MW stunning for more humane for the harvesting of livestock", intended to minimize the potential of animal suffering.

The final day of the conference, started with a Plenary talk by Dr. Richard van de Sanden, non "The use Non- Equilibrium Plasma Chemistry to Improve Kinetics and Selectivity of Chemical Ttransformations". This was followed by a Keynote lecture by Prof. Yoshio Nikawa regarding the "Study on Optical Sensors to Measure Field Strength and Distribution in Processing Applicator".

During the final day there were four technical sessions, covering the topics of;

- Modeling of Microwave and RF Applications
- Materials Processing

There were notable talks on the use of MW for 3D metal printing, as well as several talks on modeling. The application of MW to novel materials, and novel approaches to processing continue to keep these sessions exciting.

In the afternoon, Dr. Thorsten Gerdes, delivered the Monika Willert-Porada Memorial Lecture, entitled "Microwave Processing from Fundamentals to Application". This talk is an overview of Dr. Willert-Porada's body of work. Monica was a professor at the University of Bayreuth. Getting a chance to review her body of work and seeing the number of students and colleagues that she influenced during her lifetime, made it clear how much she will be missed. She was both a gifted academic and a wonderful human being. The microwave community has been diminished by her loss. Bob Schiffmann and Rickey Metaxas shared stories and memories of this remarkable woman.

There was an Ordinary General Assembly meeting where the minutes from Krakow were distributed, and approved. It was announced that Dr. Guido Link will be the Editor of the AMPERE Newsletter for the next two years. We need to thank Prof. Eli Jerby for his excellent handling of this task for the past two years. A report of the management committee was given. The financial account was given, and a budget proposal for the next two years was discussed. The next AMPERE conference will be Valencia Spain in 2019. The history of the PhD Intensive Course was reviewed, information about this program was shared. It is taught cooperatively with the UIE and AMPERE. The Management committee was elected for the next two years. In the Closing Ceremony, the 20 countries of the 103 attendees were noted, and gratitude was expressed to the TU Delft for organizing this conference.

Gala Dinner was held at De Lindenhof. In the early 1880's the rustic quarter was built in Delft for the personnel of the Gist and Spirits Industry. The charming and historic building served as a cultural center of the quarter. Because of the impressive interior, the authentic Theater and the beautiful murals the Lindenhof has been placed on the monuments list.

The AMPERE Awards for 2017 were announced at the Gala dinner, as follows:

- Prof. Jon Binner (University of Birmingham, UK) is now a Fellow of AMPERE.
- Prof. Yoshio Nikawa (Kokushikan University, Japan) was awarded the AMPERE Medal.

Five research student were awarded prizes for their excellent presentations in various categories:

- Elena Colombini (University of Modena, Italy)
- Amir Shelef (Tel Aviv University, Israel)
- Alice Angoy (Université d'Avignon IFTS, France)
- Sergio Moreno (Delft University of Technology, The Netherlands)
- Xiao Wei (Sichuan University, China)

Entertainment was provided by our own, Ed Ripley (an award winning magician, who was recently chosen to represent North America at the next FISM World Championships of Magic to be held in Busan, South Korea in July 2018).

There are a lot of exciting opportunities coming up in the future, between the PhD intensive courses, the 4GCMEA in Chengdu, and the 2019 AMPERE meeting at Valencia. These represent excellent opportunities for us to start encouraging young students to discover new technologies and techniques, to things they are passionate about. It would be great for us to help the next generation combine their enthusiasm and interests with our experience, in order to keep this field vibrant and evolving.

A gallery of AMPERE 16th photographs is available at:
http://www.ampere2017.nl/content/pictures