3GCMEA Scientific Programme

José Fayos-Fernández, Juan Monzó-Cabrera

Chair of the 3rd Global Congress on Microwave Energy Applications

http://cpcd.upct.es/3gcmea/
<table>
<thead>
<tr>
<th>Start Time</th>
<th>Place</th>
<th>Presentation</th>
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</table>
| 09:00      | UPCT / FCE Room 305 | **Basics of microwave heating**  
Dr. Antonio J. Lozano-Guerrero, Univ. Politécnica de Cartagena, Spain         |
| 10:00      |                     | **Measurement of permittivity at microwave frequencies**  
Dr. Felipe L. Peñaranda Foix, Univ. Politécnica de Valencia, Spain             |
| 11:00      | UPCT / FCE Cafeteria| **COFFEE BREAK**                                                            |
| 11:30      | UPCT / FCE Room 305 | **From Characterisation to industrial applications of RF**  
Andrew C. Metaxas, AMPERE Europe Association, United Kingdom                   |
| 12:30      |                     | **Microwaves and RF - scaling up equipment for chemical, plasma, food and drying industrial use**  
Dr. Marilena Radoiu, UK Royal Society for Chemistry, France                     |
| 13:30      | UPCT / FCE Cafeteria| **LUNCH**                                                                    |
| 15:00      | UPCT / FCE Room 305 | **Microwave Component Configurations for Industrial Heating Systems**  
John F. Gerling, International Microwave Power Institute, United States        |
| 16:00      |                     | **Multi-physics simulation of an electrical press with CST**  
Jerome Mollet, Computer Simulation Technologies AG, Germany                      |

More information and registration at  
http://cpcd.upct.es/3gcmea/index.php/short-courses
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<tr>
<th>Start Time</th>
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<tbody>
<tr>
<td>09:00</td>
<td>UPCT / FCE Main Room</td>
<td>Microwave propagation in chemical reaction</td>
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<td></td>
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<td>Ka-Ma Huang</td>
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<td>09:20</td>
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<td>Cutting-edge developments in microwave chemistry and material processing: latest applications of the microwave semiconductor generator</td>
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<td>Satoshi Horikoshi</td>
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<td>09:40</td>
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<td>The localized microwave-heating paradigm and its relevance to 3D printing</td>
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<td>Eli Jerby, Microwave Working Group, US</td>
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<td>10:00</td>
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<td>New insights about material heating mechanism during microwave processing</td>
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<td>José Manuel Catalá-Civera</td>
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<tr>
<td>10:30</td>
<td>UPCT / FCE Cafeteria</td>
<td>COFFEE BREAK</td>
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<tr>
<td>11:15</td>
<td>UPCT / FCE 302 &amp; 305 Rooms</td>
<td>A dielectric test-set for monitoring curing processes of thermosetting resins</td>
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<td>D. Prastiyanto, Karlsruhe Inst. Tech., DE</td>
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<td>11:30</td>
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<td>Advanced dual-mode resonator technique for in-situ dielectric measurements of lossy materials</td>
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<td>V. Ramopoulos, Karlsruhe Inst. Tech., DE</td>
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<td>11:45</td>
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<td>Dielectric measurements with a kind of TM&lt;sub&gt;0np&lt;/sub&gt; at different harmonics</td>
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<td>F. L. Peñaranda-Foix, ITACA, ES</td>
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<td>12:00</td>
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<td>Dynamic measurement of dielectric properties of different zeolite Y at high temperature</td>
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<td>R. Mallada, Univ. Zaragoza, ES</td>
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<tr>
<td>12:15</td>
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<td>Wideband permittivity measurement using coaxial line and capacitive cell</td>
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<td>M. W. Ben Ayoub, CETIAT, FR</td>
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<tr>
<td>12:30</td>
<td>UPCT / FCE Cafeteria</td>
<td>LUNCH</td>
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<td>ePoster Session</td>
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<tr>
<td>14:15</td>
<td>UPCT / FCE Show Room</td>
<td>MATERIAL SYNTHESIS II</td>
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<tr>
<td></td>
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<td>Microwave treatments of MSWI bottom ash</td>
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<td></td>
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<td>C. Leonelli, Univ. Modena and R. E., IT</td>
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<td>Microwave heating applied to polymer science</td>
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<td>A. Arenillas, INCAR-CSIC, ES</td>
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<td>Improved microwave-assisted synthesis of rare earth phthalocyanines</td>
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<td>R. Rosa, Univ. Modena and R. E., IT</td>
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<td>Two-step microwave sintering of nanostructured ZnO-based varistor</td>
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<td>Microwave assisted combustion synthesis of AlFe&lt;sub&gt;2&lt;/sub&gt;B&lt;sub&gt;2&lt;/sub&gt; for magnetic refrigeration</td>
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<tr>
<td></td>
<td></td>
<td>P. Veronesi, Univ. Modena and R. E., IT</td>
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### MODELING AND NUMERICAL TECHNIQUES I

Numerical and Experimental Investigation of Continuous-Flow Microwave Heating in a Cylindrical Applicator
T. K. Palazoğlu, Mersin Univ., TR

### DIELECTRIC & MAGNETIC MEASUREMENTS II

Microwave heating of powders at high temperature: effect of grain size and bulk density
B. García-Baños, ITACA, ES

Study of microwave thermal processes through in-situ Raman and dielectric spectroscopy
J. D. Gutiérrez-Cano, ITACA, ES

<table>
<thead>
<tr>
<th>Time</th>
<th>Session A (Room 302)</th>
<th>Session B (Room 305)</th>
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<tbody>
<tr>
<td>16:00</td>
<td>UPCT / FCE 302 &amp; 305 Rooms</td>
<td>Microwave processing of solid-state electrolyte for Li-ion batteries</td>
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<td>Permittivity of fresh vegetables smoothies at radiofrequency and microwave frequencies and various temperatures</td>
<td>M. M. Mahmoud, Karlsruhe Inst. Tech., DE</td>
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<tr>
<td>16:15</td>
<td>The study on the permittivity of pyridine-ethanol mixed solutions</td>
<td>Microwave synthesis of high entropy alloys comprising at least one ferromagnetic element</td>
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<td>16:30</td>
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<td>P. Veronesi, Univ. Modena and R. E., IT</td>
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<tr>
<td>16:45</td>
<td>Microscopic drying kinetics and infusion characteristics of olive leaves</td>
<td>Effect of microwave mechanisms to fabricate efficient bioceramic components</td>
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<tr>
<td>17:00</td>
<td>Finite element modeling of microwave tempering and experimental validation</td>
<td>F. L. Peñaranda-Fox, ITACA, ES</td>
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<tr>
<td>17:15</td>
<td>UPCT / FCE Cafeteria</td>
<td>Microwave synthesis of iridium complexes for OLED and their precise analysis by using a LC-TOF MASS method</td>
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</tbody>
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### COFFEE BREAK

<table>
<thead>
<tr>
<th>Time</th>
<th>Session A (Room 302)</th>
<th>Session B (Room 305)</th>
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<tbody>
<tr>
<td>18:00</td>
<td>A simulation-based methodology for designing microwave heating processes</td>
<td>Microwave assisted heterogeneous catalysts, how to deposit energy and measure temperature</td>
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<td>A. Rosin, Univ. Bayreuth, DE</td>
<td>R. Mallada, Univ. Zaragoza, ES</td>
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<tr>
<td>18:15</td>
<td>CAD of a dielectric insert supporting uniformity of microwave heating</td>
<td>Efficient reduction of copper oxide with carbon using microwave local heating</td>
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<td>18:30</td>
<td>Analysis and design of multimode cavities including mode stirrers</td>
<td>Microwave-enhanced dehydrogenation of 2-propanol over magnite catalyst</td>
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<tr>
<td>18:45</td>
<td>Multiphysics numerical modeling of microwave heated porous catalyst bed</td>
<td>Insight into microwave-driven catalytic reactions: non-equilibrium local heating and acceleration of electron transfer</td>
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<td>for biofuel production using COMSOL</td>
<td>S. Tsubaki, Tokyo Institute Tech., JP</td>
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<td>09:00</td>
<td>UPCT / FCE</td>
<td>Creating ultra-high temperature ceramic matrix composites by microwave or RF</td>
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<td>Main Room</td>
<td>assisted chemical vapour infiltration</td>
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<td>Jon Binner</td>
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<td>09:20</td>
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<td>Bridging gaps in microwave technologies for industrial production of safe foods</td>
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<td>Juming Tang</td>
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<td>09:40</td>
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<td>Microwave-assisted extraction in natural products</td>
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<td>Rafael B. Mato-Chain</td>
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<td>10:00</td>
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<td>Next generation energy efficient mineral processing achieved through high</td>
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<td>intensity microwave heating</td>
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<td>Chris Dodds</td>
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<td>10:30</td>
<td>UPCT / FCE</td>
<td>COFFEE BREAK</td>
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<td>Cafeteria</td>
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<td>11:15</td>
<td>UPCT / FCE 302</td>
<td>Microwave-induced growth acceleration in plants</td>
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<td>&amp; 305 Rooms</td>
<td>S. Horikoshi, Sophia Univ., JP</td>
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<td>11:30</td>
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<td>Microwave pyrolysis of biomass in a fluidised-bed process</td>
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<td>M. Adam, Univ. Nottingham, UK</td>
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<td>11:45</td>
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<td>Impact of microwave susceptor on biochar properties obtained from biosolids</td>
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<td>MWAP E. Antunes, James Cook Univ., AU</td>
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<td>12:00</td>
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<td>Microwave-driven plasma gasification for biomass waste treatment</td>
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<td>G. Sturm, Delft Univ. of Technology, NL</td>
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<td>12:15</td>
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<td>Arrangements for radio-frequency heating of building structures</td>
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<td>U. Roland, Helmholtz Cntr. Env. Res., DE</td>
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<td>MICROWAVE ASSISTED EXTRACTION I</td>
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<tr>
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<td>Controlled release systems for rosemary and lavender essential oils obtained</td>
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<td>through microwave-assisted extraction</td>
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<td>M. Patrascu, Romanian Academy Sci., RO</td>
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<td>V-doped TiO₂ nanopowders obtained by microwave assisted sol-gel method</td>
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<td>M. Patrascu, Romanian Academy Sci., RO</td>
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<td>Cannabis sativa ecosustainable microwave assisted extraction for cosmetic and</td>
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<td>nutraceutical applications</td>
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<td>C. Villa, Univ. Genova, IT</td>
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<td>INDUSTRIAL, MANUFACTURING, PROCESSING II</td>
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<td>Correlation to dipole moment of distillates as molecular mechanism on essential</td>
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<td>oils separation by microwave assisted distillation</td>
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<td>S. Ohjuchi, Kyushu Inst. Tech., JP</td>
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<td>Session A (Room 302)</td>
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<td><strong>16:00</strong></td>
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| UPCT / FCE 302 & 305 Rooms | Microwave-assisted energy-saving: organic hydride system for hydrogen energy storage  
S. Horikoshi, Sophia Univ., JP |
| **16:15** | **16:15** |
| ENERGY & ENVIRONMENT II | Reduction of CO₂ with hydrogen in a microwave-driven plasma reactor  
J. Fernández, Delft Univ. Technology, NL |
| **16:30** | **16:30** |
| Microwave treatment of asbestos and other wastes  
R. Parosa, Promis-Tech, PL | **16:30** |
| **16:45** | **16:45** |
| IND.MAN. PROC. IV | Description of microwave-assisted dewaxing process for artworks  
J. Monzó-Cabrera, Univ.P.Cartagena, ES |
| **17:00** | **17:00** |
| RADIAT. SAFETY | Parameters stabilization for time-domain shielding effectiveness of enclosures in presence of a plane wave  
L.G. García-Pérez, Univ.Pol.Cartagena,ES |
| **17:15** | **17:15** |
| UPCT / FCE Cafeteria | **17:15** |
| **COFFEE BREAK** | **COFFEE BREAK** |
| **18:00** | **18:00** |
| UPCT / FCE 302 & 305 Rooms | Methane dry reforming by microwave heating  
L. S. Gangurde, Delft Univ. Techn., NL |
| **18:15** | **18:15** |
| MICRO Watts | Yield vs selectivity in grape pomace polyphenol microwave extraction  
A. Álvarez, Univ. Valladolid, ES |
| **18:30** | **18:30** |
| MICROWAVE ASSISTED EXTRACTION II | Microwave-assisted extraction of phytochemicals  
R. Rosa, Univ. Modena e R. E., IT |
| **18:45** | **18:45** |
| MICROWAVE ASSISTED EXTRACTION II | Simultaneous microwave & ultrasound – assisted process for synthesis of functionalized metal nanoparticles used for control of mosquito vectors  
M. Patrascu, Chemspeed Ltd., RO |
| **INDUSTRIAL MANUFACTURING PROCESSING III** | **INDUSTRIAL MANUFACTURING PROCESSING III** |
| **PROCESS CONTROL** | **PROCESS CONTROL** |
| **NANOTECHNOLOGY I** | **NANOTECHNOLOGY I** |

**Impact of microwave drying on total phenolic content and colour of onion slices**  
Ö. Süfer, Osmaniye Korkut Ata Univ., TR

**Effects of microwave irradiation on spore-forming bacteria**  
S. Ohuchi, Kyushu Inst. Techn., JP

**Performance analyses of mechanically-assisted silent microwave-drills for concrete**  
Y. Neronwy, Tel Aviv Univ., IS

**Incremental solidification (toward 3D-Printing) of metal powders by localized microwaves**  
M. Fugeneirov, Tel Aviv Univ. IS
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<th>Start Time</th>
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<tr>
<td>09:00</td>
<td>UPCT / FCE Main Room</td>
<td><strong>Encounter of microwave chemistry and microwave engineering</strong>&lt;br&gt;Naoki Shinohara</td>
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<td>09:20</td>
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<td><strong>Microwave induced pyrolysis for producing syngas</strong>&lt;br&gt;J. Ángel Menéndez</td>
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<td>09:40</td>
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<td><strong>Avoiding injury from microwavable products: an expert witness’ suggestions</strong>&lt;br&gt;R. F. Schiffmann</td>
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<td>10:00</td>
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<td><strong>Tools utilized for microwave cooking instruction development and validation</strong>&lt;br&gt;Dhawan Sumeet, Nestlé R&amp;D, US</td>
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<td>10:30</td>
<td>UPCT / FCE Cafeteria</td>
<td><strong>COFFEE BREAK</strong></td>
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<tr>
<td>11:15</td>
<td>UPCT / FCE 302 &amp; 305 Rooms</td>
<td>Design and optimization of an antenna for microwave heating of agglomerates&lt;br&gt;T. Kinoshita, Nippon Steel &amp; Sumitomo Metal Corp., JP</td>
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<tr>
<td>11:30</td>
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<td><strong>Comparative study and simulation of ex-vivo tumor cell inactivation by microwave and conventional heating</strong>&lt;br&gt;A. Rosin, Univ. Bayreuth, DE</td>
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<td>11:45</td>
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<td><strong>Devices</strong>&lt;br&gt;<strong>Design and optimization of an antenna for microwave heating of agglomerates</strong>&lt;br&gt;T. Kinoshita, Nippon Steel &amp; Sumitomo Metal Corp., JP</td>
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<td>12:00</td>
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<td><strong>Problems heating small samples in domestic microwave ovens</strong>&lt;br&gt;R. Schiffmann, R. F. Schiffmann Assoc., US</td>
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<td>12:15</td>
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<td><strong>Microwave heating pattern beamforming using cylindrical leaky-wave antennas</strong>&lt;br&gt;A. Pérez-Garcia, Univ. Pol. Cartagena, ES</td>
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<td><strong>On proper use of magnetron antenna probes</strong>&lt;br&gt;V. Bilik, Slovak Univ. Technology, SK</td>
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<td>12:30</td>
<td>UPCT / FCE Cafeteria</td>
<td><strong>LUNCH</strong></td>
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<td>14:15</td>
<td>UPCT / FCE Show Room</td>
<td><strong>NANOTECHNOLOGY II</strong>&lt;br&gt;<strong>Microwave-assisted synthesis of Cu$_2$ZnSnS$_4$ (CZTS) nanocrystals for photovoltaic application</strong>&lt;br&gt;D. Bogdal, Cracow Univ. Technology, PL</td>
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<td><strong>ENHANCED CHEMICAL REACTIONS II</strong>&lt;br&gt;<strong>Catalytic revalorization of glycerol to fuel additives. Microwave effect in catalysts and in reaction</strong>&lt;br&gt;Y. Cesteros, Univ. Rovira i Virgili, ES</td>
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<td><strong>Microwave assisted Michael addition of phenols or anilines in the presence of DMAP</strong>&lt;br&gt;H. Iida, Kanto Gakuin Univ., JP</td>
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<tr>
<td>Title</td>
<td>Author and Institution</td>
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<td>Microwave power dependence corresponding to temperature dependence</td>
<td>S. Ohuchi, Kyushu Institute of Technology, JP</td>
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<td>on enzymatic reactions</td>
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<td>Enhanced chemical vapour infiltration of high temperature ceramic</td>
<td>M. Porter, University of Birmingham, UK</td>
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<td>matrix composites (HT-CMCs)</td>
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**ENERGY AND ENVIRONMENT III**

- Effectiveness of innovative microwave wood modification technology applications in industry
  A. Leshchnskaya, National Univ. Sci. Technology MISIS, RU

- Microwave drying of seeds and vegetable products: a viable option for Ecuador
  A. H. Moreno, Univ. Técnica Cotopaxi, EC

- Selected topics on microwave application to green technology in our research group
  N. Yoshikawa, Tohoku Univ., JP

- Intensification of CO₂ capture processes using microwave heating
  C. F. Martín, Univ. Aberdeen, UK
<table>
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<tr>
<th>Start Time</th>
<th>Place</th>
<th>Presentation</th>
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| 09:00      | UPCT / FCE Main Room   | Frequency control over energy efficiency and temperature patterns in solid-state-fed microwave cavities  
Vadim V. Yakovlev                                                                                             |
| 09:20      |                        | A novel microwave assisted precipitation technique for nanonization of nutraceuticals  
Aditya Nayak                                                                                                    |
| 09:40      |                        | The Microwave Summit 2017 (MWS)  
**Round Table Discussion sponsored by MWG.**  
Moderators: Rebecca Schulz / Bernie Krieger  
The Summit will consist of microwave experts, government officials and representatives from potential commercial/industrial end-users. The Summit’s primary objective is to determine a method for advancing electromagnetic technology applications over the next decade. The goal of this Round Table Discussion is to solicit suggestions on how to formulate and carry out this objective and to recruit participants for the Summit from the global mw community. |
| 10:30      | UPCT / FCE Cafeteria   | **COFFEE BREAK**                                                                                                                                                                                             |
| 11:10      | UPCT / FCE Main Room   | The presence and future of microwave applications in the food industry  
**Round Table Discussion sponsored by IMPI**  
Food safety - industry requirements, concerns and opportunities.  
Industrial systems, current & future, prospects for solid-state microwave generation.  
Hardware & cost limitations (include a discussion of solid state opportunities). |
| 12:00      | UPCT / FCE Main Room   | **CLOSING CEREMONY**                                                                                                                                                                                          |

More information and registration at

http://cpcd.upct.es/3gcmea

Contact us by email
3rdgcmea@upct.es

Friday 29.07.2016
NOTES
SCIENTIFIC AGENDA: Configure your attendance preferences

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday 25</th>
<th>Tuesday 26</th>
<th>Wednesday 27</th>
<th>Thursday 28</th>
<th>Friday 29</th>
</tr>
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<tbody>
<tr>
<td>9:00</td>
<td>Welcome Reception</td>
<td>Coffee Break</td>
<td>Coffee Break</td>
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<td>9:20</td>
<td>9:40</td>
<td>Coffee Break</td>
<td>10:30</td>
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