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by

Reza Zoughi

A University Transportation Center Program
at Missouri University of Science & Technology

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16. Abstract

This conference is dedicated to providing a unified and unique international forum in which different communities (Acoustics, Electromagnetics and Optics) are brought together for the exchange of ideas in the realm of innovative Near-Field Methods in Characterization Techniques, Simulations and Applications including: active and passive probe design and calibration; dielectric and magnetic material characterization; test benches; imaging; ISM applications, simulations and modeling; experimental validation; antenna design and measurement for communications, radars, industrial and automotive applications; EMC measurements, shielding, interferences and signal integrity; EMC for automotive, transportation and industrial applications; EM dosimetry and biomedical applications; nondestructive testing and evaluation and embedded sensors for structural, transportation and industrial applications and other important topical subjects with a emphasis on Near-Field Methods.

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ICONIC 2007
Adam's Mark Hotel
St. Louis, MO
June 27-29, 2007

Conference Chair's Welcome to ICONIC 2007

On behalf of the Scientific Committee, I would like to invite you to St. Louis, Missouri, USA to attend the 3rd International Conference on Electromagnetic Near-Field Characterization and Imaging, (ICONIC 2007). This two and a half-day conference is scheduled to be held June 27-29, 2007 and aims to explore the advances, developments, trends and limits of Near-Field Methods and to provide a unified and unique international forum in which different communities (Acoustics, Electromagnetics and Optics) are brought together for the exchange of ideas in the realm of innovative Near-Field Methods in Characterization Techniques, Simulations and Applications. The conference technical program is complemented by an outstanding group of internationally recognized researchers as keynote and invited speakers who are scheduled to address several related state-of-the-art topics.

Conference Vision

The rapidly expanding area of ***Near-Field Methods***, covering the entire frequency spectrum, finds applications for example in high-resolution imaging, nondestructive testing, electronic devices and component characterization, antennas for radar and communications, and electromagnetic compatibility. ***ICONIC*** aims to provide a unified and unique international forum in which different communities (***Acoustics***, ***Electromagnetics*** and ***Optics***) are brought together for the exchange of ideas in the realm of innovative ***Near-Field Methods*** in *Characterization Techniques*, *Simulations* and *Application*s.

Conference Objectives

- To create a unified forum and facilitate exchange of ideas, approaches and experiences in the broader area of near-field characterization and imaging.
- To promote a dialogue among researchers engaged in near-field methods employing a wide frequency range extending from acoustics to optical regions.
- To improve the science, modeling, applications and utility of near-field methods for a wide range of applications.

There were 47 oral presentations in eleven technical sessions and two poster sessions, including a student poster competition, totaling 26 poster presentations. The award for the best student poster was received by Ms. Kristen Munoz (UMR).

Several of the conference proceedings papers, after having been technically extended and reviewed, will be published in the IEEE Transactions on Instrumentation and Measurement (TIM).

There were also four invited speakers who addressed the attendees on several different topics.

Figure 1. Family Picture

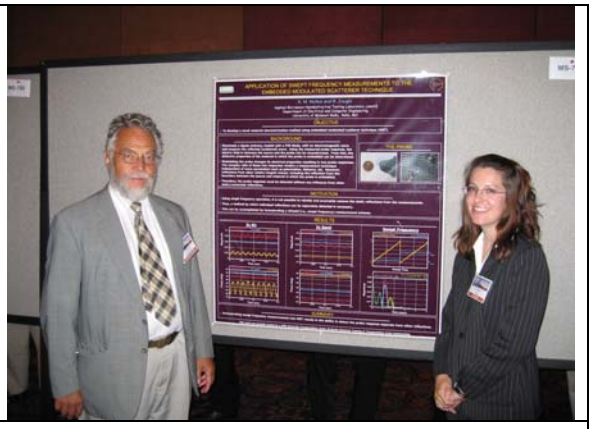

Figure 2. First Place Student Poster Winner Kristen Munoz (UMR) and F.E. Gardiol

First Call-for-Papers

3rd International Conference on Electromagnetic Near-Field Characterization and Imaging – ICONIC 2007

The *3rd International Conference on Electromagnetic Near-Field Characterization and Imaging* (ICONIC 2007), will be held in St. Louis, MO, USA on June 27-29, 2007. The first meeting of this conference was held in Rouen, France in 2003 and the second meeting was held in Barcelona, Spain in 2005. The rapidly expanding area of ***Near-Field Methods***, covering the entire frequency spectrum, finds applications for example in high-resolution imaging, nondestructive testing, electronic devices and component characterization, antennas for radar and communications, and electromagnetic compatibility. This conference is dedicated to providing a unified and unique international forum in which different communities (***Acoustics***, ***Electromagnetics*** and ***Optics***) are brought together for the exchange of ideas in the realm of innovative ***Near-Field Methods*** in Characterization Techniques, Simulations and Applications including: active and passive probe design and calibration; dielectric and magnetic material characterization; test benches; imaging; ISM applications, simulations and modeling; experimental validation; antenna design and measurement for communications, radars, industrial and automotive applications; EMC measurements, shielding, interferences and signal integrity; EMC for automotive, transportation and industrial applications; EM dosimetry and biomedical applications; nondestructive testing and evaluation and embedded sensors for structural, transportation and industrial applications and other important topical subjects with an emphasis on ***Near-Field Methods***. Researchers interested in these areas are invited to submit an extended abstract for consideration as a paper at this conference. Accepted papers will be published in a proceedings book accompanied by a CD. The two and a half-day conference consists of oral and poster sessions, a Keynote and three Invited and internationally recognized researchers who are scheduled to address the attendees on several state-of-the-art topics related to the scientific objectives of the conference. Student participation is strongly encouraged and facilitated by a reduced student registration fee. Additionally, ten student posters will be entered in a poster competition. The top three student poster winners will receive a plaque, a copy of the conference proceedings and a monetary award which will be presented to the winners at the conference banquet. For more information on this and ICONIC 2007, including on-line submission of extended abstracts and papers please contact the conference web site: http://www.umr.edu/ICONIC, or Professor R. Zoughi by e-mail at (zoughir@umr.edu), by phone at (573) 341-4656 or by fax at (573) 341-6671.

- 31 October 2006 – Submission of extended abstract.
- 15 January 2007 – Notification of paper acceptance.
- 15 April 2007 – Final paper submission.

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Paper number	Title	Author
MS-701	Application of Chirped Measurements to Embedded Modulated Scatter Techinique	Kristen M. Muñoz, Reza Zoughi
MS-702	Radiation of UWB Antennas inside the Water	Dau-Chyrh Chang, Jean-Fu Kiang, Chao-Hsiang Liao , Yen-Chun Chen, Zhi-Heng Lin
MS-703	Study of UWB Antennas and Their Applications in Antenna Test Ranges	Dua-Chyrh Chang, Ji-Chyun Liu, Chao Hsiang Liao, Chin-Chun Wu, Jr-Hung Lee, Zong-Ying Tsai
MS-704	A Novel Near-Field Millimeter Wave Nondstructive Inspection Technique for Detecting and Evaluating Anomalies in Polymer Joints	S. Kharkovsky, E, Nanni, R. Zoughi, J. Yu, R. Wilson.
MS-705	Non-destructive Evaluation of Plasma-Sprayed Thermal Barrier Coatings	Abbas Fahr, Catalin Mandache, Marc Genest
MS-706	Compenstation and Calibration of Near Field Scan Measurements for EMC Analysis, Diagnosis, and Prediction	Haixiao Weng, Jin Shi, Daryl Beetner, Richard E. DuBroff
MS-707	Radiation Imaging Operators for Acoustic Boundary Detection	Md. Ishfaqur Raza, Richard E. DuBroff

MS-708	EMC-Oriented Analysis of Electric Near-Field in High-Frequency	Ali Alaeldine, Olivier Maurice, Jérôme Cordi, Richard Perdriau, Mohamed Ramdani
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MS-714	Contactless Method of Measuring Resistivity and Loss	Edward Wheeler, Thomas Werne, Azad Siahmakoun
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MS-718	Dielectric Property Characterization of Refractory Materials Using Microwave Open-Ended and Completely-Filled Waveguide Methods	S. Kharkovsky, B. Carroll, R. Zoughi , R. Limmer, J. Smith and J. D. Smith

MS-719	Polarization-preserving optical-fiber probe for near-field scanning optical microscopy	Tadashi Misui, Kazuaki Sakoda, Nobuyuki Koguchi
MS-720	Using a near field test bench for immunity investigation	D. Baudry, A. Louis, B. Mazari
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Keynote Speaker

Professor D. Mittleman

Professor D. Mittleman of Rice University will discuss recent advances in the generation and manipulation of electromagnetic waves with frequencies near one terahertz. This region, lying between microwaves and infrared, is the least well exlpored part of the spectrum, and offers many opportunities for imaging and sensing applications.

Invited Speakers

Professor T. Hubing

Professor T. Hubing of Clemson University will discuss the rapidly expanding role of near-field measurements in test and design for EMC. Once viewed as a novelty, near-field scanners are rapidly becoming essential pieces of equipment for any EMC laboratory. This presentation reviews the progress that has been made in the development of near-field scanning equipment and describes the ways that near-field data is being used to identify and analyze sources of electromagnetic interference. Professor Hubing is a fellow of the IEEE and the past president of the IEEE EMC Society.

Professor S. Hagness

Professor S. Hagness of the University of Wisconsin-Madison will address recent theoretical and experimental advances in ultra wideband microwave imaging for near-field tissue characterization. She will present an overview of the prospects for applying this technology to diagnostic applications in medicine, namely early-stage breast cancer detection. Professor Hagness was named one of the 100 top young innovators in science and engineering in the world by the MIT Technology Review magazine in 2002.

Mr. R. Lasser

Mr. R. Lasser (Imperium, Inc.) will address the concept of utilizing optical techniques for ultrasound imaging. He will discuss the adaptation of these ultrasound techniques to generate high resolution and real-time images of interior of objects. These nondestructive testing techniques allow non-specialized inspectors the capability to "see" inside targets with great clarity. The excitement over these techniques is based on results where subsurface delaminations, voids, cracking, and corrosion can be seen in real-time. The benefits of this approach for a variety of applications will be prsented.

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- L. Udpa (Michigan State University) USA
- N.F. van Hulst (Institute of Photonic Sciences) SP
- F. Volgyi (Budapest U. of Technology & Economics) HU
- S. Watkins (University of Missouri-Rolla) USA

Distance & Continuing Education
216 University Center
1870 Miner Circle
Rolla, MO 65409
Phone: 573-341-6576
Fax: 573-341-4992
Email: iconic@umr.edu