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Iconic 2007

by

Reza Zoughi



UTC
ETT176

**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 *Applications*.

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.

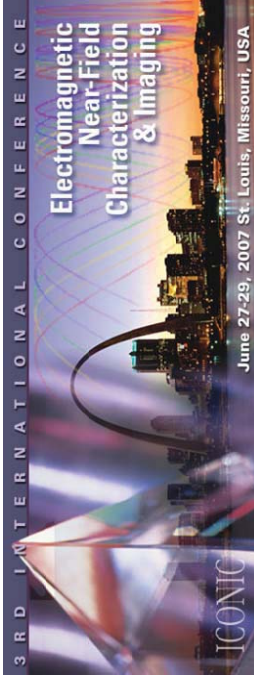


Figure 1. Family Picture



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

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 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.

First call-for-papers

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



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- D.S. Mirshekar (University of Essex) UK
- M. Moghaddam (University of Michigan) USA
- P. Palmer, Jr. (The Boeing Company) USA
- P. Panetta (Pacific Northwest National Laboratory) USA
- M. Pastorino (University of Genoa) IT
- N. Gaddoumi (American University of Sharjah) UAE
- J.M. Rius (Universitat Politècnica de Catalunya) SP
- A. Rydberg (Uppsala University) SW
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Paper number	Title	Author
MS-701	Application of Chirped Measurements to Embedded Modulated Scatter Technique	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	Dau-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 Nondestructive 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	Compensation and Calibration of Near Field Scan Measurements for EMC Analysis, Diagnosis, and Prediction	Haixiao Weng, Jin Shi, Daryl Beetner, Richard E. DuBrock
MS-707	Radiation Imaging Operators for Acoustic Boundary Detection	Md. Ishfaqur Raza, Richard E. DuBrock

MS-708	EMC-Oriented Analysis of Electric Near-Field in High-Frequency	Ali Alaeldine, Olivier Maurice, Jérôme Cordi, Richard Perdriau, Mohamed Ramdani
MS-709	A Near-Field Injection Model for Susceptibility Prediction in Integrated Circuits	Ali Alaeldine, Alexandre Boyer, Richard Perdriau, Sonia Ben Dhia, Mohamed Ramdani, Etienne Sicard
MS-710	Magnetic Soft X-ray Microscopy-Imaging Fast Spin Dynamics in Magnetic Nanostructures	Peter Fischer, Dong-Hyun Kim, Brooke L. Meskr, Weilum Chao, Anne E. Sakdinawat, Erik H. Anderson
MS-711	Image Processing and Pattern Recognition of Metal Detector Data	Hendrick Krueger, Hartmut Ewald
MS-712	A Reconstruction Strategy based on the Dort Method of Imaging finite Dimension Scatterers	D. Franceschini, M. Donelli, A Rosani, Massa
MS-713	Detection, Location and Reconstruction of Multicracks by Mean of a GA- Based Electromagnetic technique	Manuel Benedetti, Matteo Pastorino, Andrea Rosani and Andrea Massa
MS-714	Contactless Method of Measuring Resistivity and Loss	Edward Wheeler, Thomas Werne, Azar Siahmakoun
MS-715	Fusion of Multimodal NDE Data for Improved Corrosion Detection	K. Gupta, R.J. Stanley, M.T. Ghasr, S. Kharkovsky, R. Zoughi, G. Steffes
MS-716	Non Invasive Electromagnetic Quality Control	Jérôme Drean, Luc Duchesne, Per Noren
MS-717	High Resolution Near-Field Multiple Target Detection and Localization Using Support Vector Machines	A. Randazzo, M. A. Abou-Khousa, M.Pastorino, R. Zoughi
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
MS-721	Measuring Amplitude and Phase of Radiated Electromagnetic Near-Fields	Y. Vives, C. Arcambal, A. Louis, B. Mazari, P. Eudeline
MS-722	Numerical calculations of SAR in pregnant woman using a bird cage coil for MR imaging	Satoru Kikuchi, Kazuyuki Saito, Masaharu Takahashi, Koichi Ito
MS-724	Heating performances of thin microwave antennas for interstitial and intracavitary microwave thermal therapies	Kazuyuki Saito, Satoru Kikuchi, Masaharu Takahashi, Koichi Ito
MS-725	Near- field electromagnetic characterization and perturbation of logic circuits	T. Dobois, S. Jarrix, A. Penarier, P. Nouvel, D. Gasquet, L. Chusseau
MS-726	IC's electromagnetic susceptibility: comparison between a near field injection method and a direct injection method	D. Castagnet, A. Meresse, G. Ducham
MS-727	Reconstruction of Non-Uniformly Spaced Under Sampled Data in Planar Near Field Antenna Measurement Applications	V. Dehghanian, M. Okhovvat, M. Hakkak
MS-728	Measurement of Surface Potential at Pentacene/Metal Interfaces by a Near-Field Microwave Microprobe	Arsen Babajanyan, Kiejin Lee, Barry Friedman, Tae Hee Kim, Eunju Lim, Mitsumasa Iwamoto
MS-729	Nonivvasive Glucose Aqueous Solution Biosensing by Near-Field Microwave	Kiejin Lee, Arsen Babajanyan, Jongcht Kim, Barry Friedman

	Microprobe	
MS-730	Noncontact Characterization of Metals by a Near-Field Microwave Microprobe	A. Hovesepeyan, T. Sargsyan, H Melikyan, A. Babajanyan, Barry Friedman, K. Lee
MS-731	Fluorescence Imaging with Nonometer Precision Using Spectral Sele-Interference Microscopy	Brynmor J. Davis, P. Scott Carney, Anna K. Swan, M. Selim Unlu, W. Cler Karl Bennett, B. Goldberg
MS-732	Detecting Embedded Objects Through Near-Field Probes: Experimental And Theoretical Methods	Somsak Tantong, Bruno Camps-Raga, Phumin Kirawanich, N. E. Islam
MS-733	A Hybrid MOMFD-FDTD Method in Modeling Ground Penetrating Radars to Detect Multiple Buried Objects	N. Farnoosh, A. Shoory, R. Moini, S. H H. Sadeghi
MS-734	Terahertz Radiation as a Nondestructive Inspection Tool	James L. Blackshire, Adam Cooney, Qiwen Zhan
MS-735	A Noninvasive Microwave Method for the Inspection of Wood Beams	A. Salvadè, M. Pastorino, R. Monleone G. Bozza, A. Randazzo, T. Bartesaghi
MS-737	A propagation model considering the effects of windows for 60 GHz automotive radio communications	Atsushi Yamamoto, Koichi Ogawa, Tetsuo Horimatsu, Katsuiyoshi Sato, Masayuki Fujise, Hiroshi Shirai
MS-738	A Probe-Array Approach for Near-Field Measurements and Field Reconstruction in a Lossy Medium	A. Cozza, O. Merckel, J. Ch. Bolomey
MS-739	A mode-identification procedure for the determination of equivalent radiation sources from near field measurements	Mohammed Serhir, Philippe Besnier, M'hamed Drissi
MS-740	On the Mutual Coupling between Circular Resonant Slots	M. A. Abou-Khousa, S. Kharkovsky, R. Zoughi

MS-741	Comparison of focused and Near-Field Imaging of Spray on Foam Insulation (SOFI) at Millimeter Wave Frequencies	S. Kharkovsky, R. Zoughi, F.L Hepburn
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MS-744	High resolution microscopy with compact extreme ultraviolet lasers	C. S. Menoni, F. Brizuela, C. Brewer, C Vaschenko, Y. Wang, M. A. Larotonda, B. M. Luther, M. C. Marconi, J. J. Rocca W. Chao, J. A. Liddle, Y. Liu, E. H. Anderson, D.T.Attwood, A.V. Vinogradov, I.A.Artioukov, Y.P.Pershyi V.V.Kondratenko
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MS-746	Longitudinal Electrical Near-field generated by a Tapered Coax and studied with a Piezoelectric Film coupled with an Optical Probe	S. Euphrasie, P. Vairac, B. Cretin
MS-747	Proposal of new far-field gain estimation of the antenna immersed in the conducting medium using the measured data in the near-field region	Nozomu Ishii, Ken-ichi Sato, Lira Hamada, Soichi Watanabe
MS-748	Domain Decomposition Method for Computation of Mine Signatures	Sabine Schulze, Hendrik Krüger, Hartmut Ewald, Ursula van Rienen
MS-749	Vector Regression for Near-Field synthesis of Array Antennas Including Environmental Effects	Rafael G. Ayestaran, Fernando Las-Heras

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MS-750	Sources Reconstruction Techniques for the Diagnosis and Characterization of Antennas of Complex Geometry	Fernando Las-Heras, Yuri Alvarez, Marcos R. Pino, Marta Hernando-Alvar
MS-751	Probe Correction Applied to Sources Reconstruction Techniques	Fernando Las-Heras, Yuri Alvarez, Marcos R. Pino
MS-752	MIMO System with UWB-NMHP Waveforms for Tumor Detection	C. D. Chung, D.C. Chang, L. D. Fang
MS-753	Comparison Between a 2.45 GHz Planar and Circular Scanners for Biomedical Applications	T. Gunnarsson, N. Joachimowicz, A. Joisel, J. Ch. Bolomey
MS-754	Breast Cancer Detection Utilizing Noninvasive Near-Field Microwave Imaging	Wael Saleh, Nasser Qaddoumi, David Wright
MS-755	Bone Fracture Healing Monitoring Using Near-Filed Microwave and Pulsed Ultrasound: Comparative Study	Nasser Qaddoumi, Hassan Al-Nashash
MS-756	Large-Scale Studies of Ultrawideband Dielectric Properties of Normal and Malignant Brest Tissues at Microwave Frequencies	M. Lazebnik, C.B.Watkins, J.H. Booske S.C. Hagness, D. Popovic, L. McCartney, M. Okoniewski, M.J. Lindstrom, T.M. Breslin, J. Harter, S. Sewal, W. Temple, D. Mew, A. Magliocco, T. Ogilvie
MS-757	A Closed Loop Carrier Cancellation Method for the Receiving Circuit of Magnetic Induction Tmography (MIT)	Nuno B. Bras, Luis Soares, Raul C. Martins, Antonio C. Serra
MS-758	Nondestructive Evaluation by High Tc rf SQUID Using Eddy Currents	H. Kokabi, L. Bettaeib, M. Poloujadoff, A. Sentz, H. J. Krause
MS-759	Experimental thermal impacts on EMC characteristics with new near-field measurements approach	Jean-Marc Dienot

MS-760	Modeling and Optimization on Inductive Sensors	Harmut Ewald, Hendrik Kruger
MS-761	Near-Field Spatial Smoothing for Coherent Interference Supression	Yahong R. Zheng
MS-762	RFID Under the MST Viewpoint	J.Ch. Bolomey, F.Gardiol
MS-763	A Vector Coding Technique usinig Evanescent Microwaves	O. Benzaim, M. Maazi, K. Haddadi, D. Glay, T. Lasri
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MS-765	Characterization of Multi-turn Probe for Magnetic Susceptibility and Emissions Scanning	Tun Li, Jayong Koo, Qing Cai, David Pommerenke
MS-766	In Situ Characterization of Adsorption Induced Optical Refractive Index of Zeolite MFI for Chemical Sensor Development	John Montoya, Tao Wei, Jian Zhang, Junhang Dong, Hai Xiao
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MS-771	A Millimeter-Wave Radiometer for Terrestrial Remote Sensing of Chemical Plumes	S. Bakhtiari, N. Gopalsami, T. Elmer, A.C. Raptis
MS-773	Susceptibility Scanning Applied as IC Qualification Toll for Avoiding System Level Immunity Problems	Giorgi Muchaidze, Jayong Koo, Tun Li, Qing Cai, Lijun Han, Jin Min David Pommerenke
MS-774	Role of the Electrical Polarization on the Split-Ring Resonators Resonances	Redha Abdeddaim, Habiba Hafdallah Ouslimani, Alain Priou
MS-775	Behavior of Elementary Radiators Near Composite Layers	M.Y. Koledintseva, V.V. Bodrov, I.V. Sourkova, M. Sabirov, V.I. Sourkov
MS-776	Microwave Nondestructive Evaluation of Dielectric Materials with Metamaterial Lens	D. Shreiber, M. Gupta and R. Cravey



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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 explored 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 presented.

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