



# 2013 Joint UUFFC, EFTF and PFM Symposium



IEEE International Ultrasonics Symposium (IUS), Joint IEEE International Symposium on the Applications of Ferroelectric (ISAF) and Piezoresponse Force Microscopy and Nanoscale Phenomena in Polar Materials (PFM), Joint IEEE-International Frequency Control Symposium (IFCS) and European Frequency and Time Forum (EFTF)



## 21-25 July 2013, Prague, Czech Republic

Sponsored by the IEEE Ultrasonics, Ferroelectrics, Frequency Control Society and European Frequency and Time Forum

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## CALL FOR PAPERS

**Abstract Submission Deadline: Friday March 1, 2013.**

Please refer to <http://ieee2013.fzu.cz/> for details.

The joint UUFFC Symposia with European Frequency and Time Forum (EFTF) and Piezoresponse Force Microscopy and Nanoscale Phenomena in Polar Materials Workshop (PFM) will be held in Prague, Czech Republic, July 2013. This joint conference celebrates the 60<sup>th</sup> anniversary of the IEEE UUFFC Society and also will be the 6<sup>th</sup> in a series of successful joint meetings between the EFTF and IFCS and the 3<sup>rd</sup> joint meeting between the ISAF and PFM.



**Sunday July 21: Short Courses and Tutorials**

**Monday July 22: IUS plenary presentation**

**Tuesday July 23: ISAF-PFM plenary presentation**

**Wednesday July 24: IFCS-EFTF plenary presentation**

**Monday–Thursday July 22–25: Oral and poster sessions**

**Exhibition:** A technical exhibition will be held during the conference. Detailed information can be found on the conference website <http://ieee2013.fzu.cz/>.

**Tutorials:** On Sunday, July 21, 2013, there will be a series of tutorials covering a wide range of related topics from IUS, ISAF-PFM & EFTF-IFCS. The tutorials include both the fundamental and advanced topics related to specific areas. As such, the tutorials aim to provide useful knowledge to the beginners in the community, as well as those with extensive experience. The list of tutorials can be found at <http://ieee2013.fzu.cz/>.

**Student Paper Competition:** Students submitting abstracts for presentation are invited to participate in a student paper competition. To participate, the student must be the lead author and present the paper. A request to be considered for the student paper competition and for student travel support must be made at the time of abstract submission.

# Technical Program

## International Ultrasonics Symposium (IUS)

### Group 1: Medical Ultrasonics

MBB Medical Beam-forming and Beam Steering  
MBE Biological Effects & Dosimetry  
MBF Blood Flow Measurement  
MCA Contrast Agents  
MEL Elastography  
MIM Medical Imaging  
MPA Medical Photoacoustics  
MSD System & Device Design  
MSP Medical Signal Processing  
MTC Medical Tissue Characterization  
MTH Therapeutics, Hyperthermia, and Surgery

### Group 2: Sensors, NDE & Industrial Applications

NAF Acoustic Microfluidics  
NAI Acoustic Imaging  
NAM Acoustic Microscopy  
NAS Acoustic Sensors  
NDE General NDE Methods  
NFM Flow Measurement  
NMC Material & Defect Characterization  
NSP Signal Processing  
NPA Photoacoustics  
NPC Process Control  
NTD Transducers: NDE and Industrial  
NUA Underwater Acoustics  
NWP Wave Propagation

### Group 3: Physical Acoustics

PAT Acoustic Tweezers and Particle Manipulation  
PGP General Physical Acoustics  
PMI Magnetic/Electromagnetic Interactions  
PNA Nonlinear Acoustics  
POI Opto-acoustics Interactions  
PPN Phononic  
PTF Thin Films  
PUM Ultrasonic Motors & Actuators

### Group 4: Microacoustics – SAW, FBAR, MEMS

ADA Device Applications  
ADD Device Design  
ADM Device Modeling  
AMP Materials & Propagation  
AMS Microacoustic Sensor Devices & Applications  
AMR Microacoustic Resonators

### Group 5: Transducers & Transducer Materials

TMC Materials Characterization & Fabrication  
TMI Medical Imaging Transducers  
TMO Modeling (Analytical & Numerical)  
TMU Micromachined Ultrasonic Transducers  
TFT Thick Film Piezo-Technology  
TPF Applications of Piezoelectrics & Ferroelectrics  
TTT Medical Therapeutic Transducers



Prague Castle (Guest Program)

## International Symposium on the Applications of Ferroelectrics – Piezoresponse Force Microscopy Workshop (ISAF–PFM)

### Group 1: Fundamentals of Ferroelectrics and Related Materials

Conduction Phenomena  
Point Defects & Nanoionics (Electroresistive & Neuromorphic Systems, Tunneling; Ferroelectric & Magnetoresistive Barriers, Fundamental Aspects of Ionic Motion & Defects In Functional Oxides, Energy Storage Systems, Reliability & Lifetime)  
Domain Engineering  
Relaxor Ferroelectrics/Dielectrics  
Ferroelectric Photovoltaics (Bulk & Barrier Photovoltaic Effect, Photostriction, Photopoling, Photoconductivity, etc.)  
Theory & Modeling (Domain Structure, Phase Transitions, Critical Phenomena, Density Functional Theory, First-principles Calculations, Phenomenology)  
Nanoscale Phenomena (Nanostructure & Size Effects on Piezo/Ferroelectric Properties)  
Multiferroics & Magnetoelectric Effects  
Development of New Materials: Experiments & Theory  
Flexoelectricity

### Group 2: Processing of Ferroelectrics Crystals, Ceramics, Thick & Thin Films

Bulk Materials (Single Crystals, Ceramics, Polymers, Liquid Crystals & Composites)  
Thick & Thin Film Processing Technologies (Preparation, Characterization)  
Patterning Methods (Forming, Net Shape Forming, Microfabrication)  
Biomaterials: Biofilms, Self-organized Nanostructures & Ferroelectric-like tissues

### Group 3: Characterization & Properties of Ferroelectrics

Physical & Structural Characterization Techniques (Scanning Probe Microscopy Methods Including Piezoresponse Force Microscopy, Optical Near Field Imaging, X-ray & Neutron Scattering, Electron Microscopies, Vibrational Spectroscopies & Others)  
Electrical & Electromechanical Characterization (Broadband Dielectric Spectroscopy, Piezoelectric Characterization, Non-linear Methods, etc)

### Group 4: Applications of Ferroelectrics, Piezoelectrics and Related Materials

Ferroelectrics & Antiferroelectrics for Energy (Electrocaloric Materials & Devices, Ferroelectric Photovoltaics, Thermoelectric Materials & Devices)  
Dielectrics: Capacitors, Ultra High-K Materials, RF & THz Materials & Properties, Energy Storage  
Harvesting Devices MRI Concepts (Dielectrics for Focusing, etc.)  
Materials for Low and High Power Ultrasound  
Sensors, Actuators, Novel Applications  
Ferroelectric Memory Materials & Devices  
Piezoelectricity: High-performance Piezoelectric Single Crystals, Lead-based Piezo-ceramics, Lead-free Piezoelectric Polymers, MEMS & Other Integrated Piezo Devices  
Pyroelectric Materials & Devices  
Optical Phenomena (Signal Processing, Storage Devices, Periodic Poling, Photonic Band-gaps)

## International Frequency Control Symposium – European Frequency And Time Forum (IFCS–EFTF)

### Group 1: Materials, Resonators, & Resonator Circuits

A. Fundamental Properties of Materials  
B. Micro- and Macro-Fabrication Technology for Resonators and Filters  
C. Theory, Design, and Performance of Resonators and Filters, including BAW, FBAR, MEMS, NEMS, SAW, and others  
D. Reconfigurable Frequency Control Circuits, e.g., Arrays, Channelizers

### Group 2: Oscillators, Synthesizers, Noise, & Circuit Techniques

A. Oscillators – BAW, MEMS, and SAW  
B. Oscillators - Microwave to Optical  
C. Heterogeneously Integrated Miniature Oscillators, e.g., Single-Chip  
D. Synthesizers, Multi-Resonator Oscillators, and Other Circuitry  
E. Noise Phenomena and Aging  
F. Measurements and Specifications  
G. Timing Error in Digital Systems and Applications

### Group 3: Microwave Frequency Standards

A. Microwave Atomic Frequency Standards  
B. Atomic Clocks for Space Applications  
C. Miniature and Chip Scale Atomic Clocks and Other Instrumentation  
D. Atomic interferometers  
E. Fundamental Physics, Fundamental Constants, & Other Applications

### Group 4: Sensors & Transducers

A. Resonant Chemical Sensors  
B. Resonant Physical Sensors  
C. Vibratory Gyroscopes & Magnetometers  
D. BAW, SAW, FBAR, and MEMS Sensors  
E. Transducers  
F. Sensor Instrumentation

### Group 5: Timekeeping, Time and Frequency Transfer, GNSS Applications

A. TAI and Time Scales, Time and Frequency Transfer, and Algorithms  
B. Satellite Navigation (Galileo, GPS, ...)  
C. Telecommunications Network Synchronization, RF Fiber Frequency Distribution  
D. All-optical fiber frequency transfer  
E. Optical free-space frequency transfer  
F. Frequency and Time Distribution and Calibration Services

### Group 6: Optical Frequency Standards and Applications

A. Optical Ion and Neutral Atom Clocks  
B. Optical Frequency Combs and Frequency Measurements  
C. Ultrastable Laser Sources and Optical Frequency Distribution  
D. Ultrastable Optical to Microwave Conversion  
E. Fundamental Physics, Fundamental Constants, and Other Applications