



Symposium on the Acoustics of Poro-Elastic Materials

**FROM CONCEPT TO
APPLICATION AND BEYOND**



17-18-19 December 2008

Scientific Programme

Official sponsors:

 **Microflown Technologies**

 Charting sound fields <http://www.microflown.com/>

 **armacell**
engineered foams

<http://www.armacell.com/>

 **ESI GROUP**
THE VIRTUAL TRY-OUT SPACE® COMPANY

<http://www.esi-group.com/>


ENTPE

<http://www.entpe.fr/>

Brüel & Kjær 

<http://www.bksv.com/>

ISOVER

<http://www.isover.co.uk/>

Symposium organisers:



Day 1 - Morning - 17 December 2008

Session: **Theoretical models**
 Chairmen: Boutin
 Gourdon
 Attenborough

Times for oral presentations:	
8:45-9:00	Opening Ceremony
9:00-9:45	KN1 : Prof. Keith Attenborough Some Historical Milestones in Modelling Sound propagation in Porous Media
9:50-10:10	5. C. BOUTIN Prediction of scattering effects on sound propagation in rigid porous media
10:10-10:30	42. J.-F. ALLARD Prediction of the Monopole Acoustic Field above Porous Layers
10:30-11:10	Coffee - posters/exhibitors
11:10-11:30	6. L. OXARANGO and V. PAVAN Acoustics in a porous medium saturated by a rarefied gas: Closure of a spatial averaged form of the Maxwell-Boltzmann equation
11:30-11:50	8. E. GOURDON and M. SEPPI Modelling acoustical heterogeneous materials composed of porous inclusions
11:50-12:10	66. C. A. CUMMINGS Internal Mean Flow Effects on the Bulk Acoustic Properties of Rigid Porous Media
12:10-12:30	71. C. DEPOLLIER, M. NAAS, N. SEBAA, J.B. LEGLAND, E. OGAM and Z.E.A. FELLAH Sound wave propagation in cancelous bone: modified Biot's models
12:30 - 14:00	Lunch - posters/exhibitors
Posters	
15. S. DERIBLE and H. FRANKLIN Influence of the pore sealing on the acoustic Transition Terms of a water-saturated porous plate obeying Biot's theory	
22. D. TURO and O. UMNOVA Time Domain Investigation of Pulse Propagation in Porous Media	
45. D. TURO and O. UMNOVA Time domain modelling of finite amplitude acoustic pulse in rigid porous media	
30. N. PRODI and P. BONFILGIO Prediction and measurement of sound intensities and energy densities inside porous layers	
51. N. VILCHINSKA Ultrasound Impulse Propagation in Wet Dense Marine Quartz Sand in Situ	
62. B. NENNIG, J.-D. CHAZOT, E. PERREY-DEBAIN and M. BEN TAHAR Evaluation of simplified poroelastic models	

Day 1 - Afternoon - 17 December 2008

Session: **Numerical methods**
 Chairmen: Dazel
 Jaouen

Times for oral presentations:	
14:00-14:45	KN2 : Prof. Michael J. Buckingham Sound waves and shear waves in marine sediments
14:50-15:10	69. P. GÖRANSSON ANISOTROPIC POROUS MATERIALS, and then?
15:10-15:30	46. G. LIELENS and J.-P. COYETTE Biot model for transverse porous materials
15:30-16:10	<i>Coffee - posters/exhibitors</i>
16:10-16:30	64. O. DAZEL, A. GESLAIN, B. BROUARD and N. DAUCHEZ Enhanced Biot's finite element displacement formulation for porous materials and original resolution methods
16:30-16:50	65. A. DUVAL, J. BARATIER and L. DEJAEGER Introduction of curved trims in Virtual SEA models using poroelastic finite elements in the middle frequency range
16:50-17:10	26. R. GERDES, R. DRAVIDA and J. CIPOLLA Finite-element modeling of complex-fluid porous materials - Case studies using Abaqus
17:10-17:30	O. DAZEL, B. BROUARD, N. ATALLA Numerical Methods, improvements future works, conclusion of the session
17:40-18:40	Laboratory Tour
Posters	
	63. C. PERROT, F. CHEVILLOTTE and R. PANNETON Checking of an Optimal Sound Absorbing Microporous Structure
	56. P. BONFIGLIO and F. POMPOLI Numerical methodology for determining the cut-off frequency of the anechoic chamber of the University of Ferrara
	37. K. HIROSAWA, H. NAKAGAWA, M. KON and A. YAMAMOTO Comparison of three measurement techniques of normal absorption coefficients in free field method using boundary element method
	70. B. BROUARD and O. DAZEL Some Sort Of Numerical Improvement : Analysis Of Extreme Cases
19:00 – 22:00	Cocktail party at the Atrium, University of Bradford

Morning - Day 2 - 18 December 2008

Session: **Characterisation methods**
 Chairmen: Bolton
 Bonfiglio

Times for oral presentations:	
9:00-9:45	KN3 : Prof. J. Stuart Bolton Poro-elastic material characterisation methods by using standing wave tubes: history and current issues related to Biot parameter estimation
9:50-10:10	39. E. TIJS and H.-E. DE BREE Recent developments free field PU impedance technique
10:10-10:30	57. P. BONFIGLIO et al. Experimental reproducibility investigation on physical and acoustical characterization of porous media
10:30-11:10	<i>Coffee - posters/exhibitors</i>
11:10-11:30	29. L. BOECKX, K. VERNIERS and J. VANDENBROECK Linking polyurethane foam cell morphology to acoustical performance using X-ray tomography and Computational Fluid Dynamics
11:30-11:50	18. J.P. DALMONT and J.C. LE ROUX A New Impedance Tube for Large Frequency Band Characterization of Absorbing Materials
11:50-12:10	1. J. DESCHEEMAER, L. BOECKX and W. LAURIKS Temperature and frequency dependence of the elastic properties of porous materials
12:10-12:30	14. V. AVERBAKH, A. LEBEDEV, A. MARYSHEV and V. TALANOV Field acoustic characterization of soil properties
12:30 - 14:00	<i>Lunch - posters/exhibitors</i>
Posters	
	25. F. WENZLAU, J. ALTMANN and T. MÜLLER Estimating Effective Elastic Properties of Heterogeneous Porous Media Using Time-Domain Finite Element Modelling
	52. N. DAUCHEZ, O. DOUTRES, J.-M. GENEVAUX and G. LEMARQUAND A new set-up to measure the viscoelastic properties of porous media using a specific electrodynamic transducer
	47. S. DERIBLE, H. FRANKLIN, P. CAMPISTRON and B. NONGAILLARD Characterization of the ultrasonic waves in a water-saturated porous plate via its acoustic impulsive response
	48. M. GAROUM Estimation of non Acoustical Parameters of Porous Materials Using Sensitivity Analysis and Global Minimisation Algorithms
	19. K. V. HOROSHENKOV, M. H. A. MOHAMED and S. N. TING The effect of moisture on the flow resistivity and acoustic admittance of granular media
	34. Y. SALISSOU and R. PANNETON Quantifying the Through-Thickness Asymmetry of Sound Absorbing Porous Materials
	13. Y. SALISSOU and R. PANNETON Pressure/Mass Method to Measure Open Porosity of Porous Solids
	58. P. CAMPISTRON, B. NONGAILLARD, S. DERIBLE and H. FRANKLIN Characterization of the ultrasonic waves in a water-saturated porous plate via its acoustic transfer function
	77. C. BERTOLINI, T. COURTOIS, C. GAUDINO and L. MAROTTA Transfer function based method to identify frequency dependent Young's modulus, Poisson's ratio and damping loss factor of poroelastic materials

Afternoon - Day 2 - 18 December 2008

Session: **New materials**
 Chairmen: Kang
 Toyoda
 Bécot

Times for oral presentations:	
14:00-14:45	KN4 : Dr. Vincent Tournat Linear and nonlinear acoustics of unconsolidated granular media
14:50-15:10	49. J. KANG Application of micro-perforated materials in sustainable building envelopes
15:10-15:30	82. F. PENG, B. CHANG AND X. WANG Sound absorption of porous metals at high sound pressure levels
15:30-16:10	<i>Coffee - posters/exhibitors</i>
16:10-16:30	7. M. TOYODA and D. TAKAHASHI Experimental study on transmission loss of MPP structures with the air-layers subdivision technique
16:30-16:50	41. J.-W. KIM The effect of flow resistivity on sound absorption and sound transmission loss of film-faced poroelastic foam
16:50-17:00	<i>Coffee - posters/exhibitors</i>
17:00-17:20	27. V. LEROY, A. STRYBULEVYCH, M. SCANLON and J. PAGE Acoustic propagation in bubbly viscoelastic materials
17:20-17:40	72. Y. S. CHOY and L. HUANG Sound absorption in porous material filled with helium
17:40-18:00	68. I. CHEKKAL, M. BIANCHI, C. REMILLAT, F. SCARPA, F.-X. BÉCOT and L. JAOUEN Acoustic properties of auxetic open cell foams: model and experimental results
Posters	
24. A. KHAN, K. HOROSHENKOV, H. BENKREIRA, R. PATEL and M. SWIFT A Novel Cold Extrusion Process to Tailor a Porous Structure from Plastic, Rubber and Fibre Particulate Waste	
53. A. SITEL, Y. HU and M.-A. GALLAND Active Multilayered Panels Based on Porous Materials for Improving Acoustic Performance	
61. T. ZIELINSKI Porous Foams with Active Implants Improving Acoustic Absorption	
23. F. BECHWATI, O. UMNOVA and T. COX On the Sorption Kinetics of Activated Carbon and their Effects on Low Frequency Energy Dissipation	
19:00-22:00	<i>Reception, IMAX film and dinner in National Media Museum, Bradford</i>

Morning - Day 3 - 19 December 2008

Session: **Novel applications**
 Chairmen: Horoshenkov
 Swift

Times for oral presentations:	
9:00-9:45	KN5 : Prof. Hadj Benkreira Microcellular Thermoplastic Foams: Structure Control & New Technology
9:50-10:10	40. Y.Y. KIM, J.S. LEE, J.S. KIM and Y.J. KANG Unified Analysis Model and Topology Optimization of an Acoustical System including a Poro-Elastic Material
10:10-10:30	32. M. SWIFT Technical Requirements for Recycled Noise Control Materials
10:30-11:10	<i>Coffee - posters/exhibitors</i>
11:10-11:30	43. M.S. AHMED, C. PARK and N. ATALLA Fabrication of Novel Microcellular Acoustical Foams with Controlled Structure and Morphology
11:30-11:50	28. R. VENEGAS and O. UMNOVA, Acoustical properties of disordered arrays of circular cylinders
11:50-12:10	21. A. KRYNKIN and O. UMNOVA Sonic crystals supporting low-frequency resonance phenomena
12:10-12:30	67. E. LIND and P. GORANSSON Optimising Open Porous Foam for Acoustical and Vibrational Performance
12:30 - 13:40	<i>Lunch - posters/exhibitors</i>

Afternoon - Day 3 - 19 December 2008

Session: **Special ESI session**
 Chairmen: Duval
 Hamdi

Times for oral presentations:	
13:40-14:25	KN6 : Prof. German Maximov Generalized variational principle for dissipative hydrodynamics and its application for description of generalized Biot's models of multiphase media
14:30-14:50	80. A. DUVAL Industrial applications overview of trim FEM simulation at component level using Rayon-VTM-TL
14:50-15:10	79. P. SHORTER Modeling the low, mid and high frequency response of poro-elastic materials in vibro-acoustic applications
15:10-15:30	60. M.-A. HAMDI An efficient System Approach for Integration of Porous Elastic Materials in Finite Element Models of Vehicles
15:30-15:50	54. J. MONET DESCOMBEY, M.-A. HAMDI and C. ZHANG Modeling of Multilayered Sound Insulators Including Poroelastic Material in Industrial Conditions
15:50-16:10	59. J. KANFOUD and M.-A. HAMDI Analytical modelling of a novel acoustic absorber for space launcher fairings using modified BIOT Equations
16:10-16:30	<i>Closing Ceremony</i>
19:00-23:00	<i>Dinner in the Old Tramshed, Saltaire</i>