

Miodrag Prokic
Marais 36
CH 2400, Le Locle
Switzerland
Fax/Tel.: +41-32-9314045
E-mail: mpi@bluewin.ch
<http://mpi.powerultrasonics.com>

SPECIFIC EXPERIENCE (Key Areas):

ULTRASONICS, Transducers, Piezoceramics, Sensors, Ultrasonic Generators, Ultrasonic Cleaning, Welding, Material Processing, Environmental protection, Water Purification, Ultrasonic Sterilization, Ultrasound in liquid and solid metal processing, Ultrasonic Homogenization, Polymerization, De-polymerization, Ultrasonic Extractions...

A. Ultrasonic industrial engineering:

- Sensors and Transducers design, characterization and optimization.
- High-temperature and high-pressure rigid ultrasonic sensors.
- Piezoelectric material diagnostic and characterization.
- Ultrasonic Material Processing, Sonochemistry, Liquid Processing, Pasteurization, Biodegradation, Ultrasonic Sedimentation, Ultrasonic Filtering, Ultrasonic Extractions, Waste Waters Treatment...
- Acoustical and electric coupling and matching (with solids, liquids and gases). Determination of models of electromechanical structures.
- High Power Ultrasonics (Cleaning, Welding: Design of Generators, Transducers, Boosters/Sonotrodes/Horns).
- Ultrasonic Liquid Metal Processing, Homogenization, Alloying, Crystallization, Solidification, Microstructure modification...
- Ultrasonic Flow-Meter sensors.
- NDT sensors.
- Residual stress deliberation in solid structures, Artificial and accelerated aging...
- Analyzing mechanical structure and parameters by electrical impedance-phase-frequency characteristics (transfer functions etc.).
- Surface Processing: Ultrasonic coating, hardening, metal plating...

B. **Spectral and vibration analysis**, complex impedance measurements and system diagnostics.

C. **Vibration control** (product testing).

D. **Energy management and transformation**: Resonance Control, PLL, PWM-Switching Power Control.

E. **High reliability requirements** (in production of professional quality devices).

F. **Basic AutoCAD knowledge**.

G. **Basic knowledge about Programmable Industrial Automates**.

H. **Assembling, Repairation, Upgrade, Service and Maintenance of personal computers...**

EXPERIENCE:

- 1996 – Present **MP – Interconsulting**. Registered private consulting and R&D company in Ultrasonics. (Le Locle, Switzerland)
- 1996 – 1998 **HAMO AG, Pieterlen, CH. Electronics Engineer, Consultant**. Optimization of Ultrasonic Cleaning equipment. (June, 10, 1996 – Feb. 28 1998)
- 1995 – 1996 **Free-lance expert in Ultrasonics: Consulting, Research, applications** (Transducers, Piezoceramics, Sensors, Generators).
- 1992 – 1995 **KROHNE-Ultrasonic SA, Le Locle, CH: Coordinator – Leader of R&D, (Ultrasonic Flow meters).**
- 1991 – 1992 **Free-lance expert in Ultrasonics: Consulting, Research, applications** (Transducers, Piezoceramics, Sensors, Generators).
- 1989 – 1991 **BRANSON ULTRASONIC Corp., DANBURY, CT, USA. Consultant and Senior Research Engineer, Advanced Programs, Research and Development.**
- 1988 – 1989 **JBM S.A. HVC, La Chaux-de-Fonds, CH. Technical Director**, responsible ultrasonic department and for the manufacturing of highly reliable military glass-metal connectors.
- 1977 – 1988 **ELECTRONIC INDUSTRY CORPORATION, Nis, YU.**
- **Project leader**, directly responsible for design and development of ultrasonic welding and cleaning equipment.
 - **Process Engineer** in the production of Geophone for professional use.
 - Some experience in semiconductor industry and plasma-gas discharges.
 - Some experience in surface protection.
 - Experience in mechanical vibration and shock testing and spectral analysis.

EDUCATION:

- 1982 **Master of Science in Electrical Engineering**, Department of Electronic Engineering, University of Nis, YU. MS Thesis: "The Influence of Ultrasonic Vibrations on Electrical Breakdown in Gases".
- 1975 **Bachelor of Science in Electrical Engineering**, Department of Electronic Engineering, University of Nis, YU. BS Thesis: "Mathematical and Other Analogies between Various Physics Phenomena".
- 1985 – 1988 Started doctoral thesis. University of Belgrade, Center for Multidisciplinary Studies, YU. Ph.D. Thesis: "Principals of Design and Operations of High Power Ultrasonic Sources for Industrial Technologies". Left the country in 1988, before the final defense of Ph.D.
- 1992 – Present Different computer, design and other courses (continuous education in CH).

Patents:

Below listed patent applications are owned by the company MP Interconsulting (and Miodrag Prokic): www.mpi-ultrasonics.com , www.mastersonics.com

DISPOSITIF POUR LA GENERATION D'ONDES ULTRASONORES

Inventeurs : Prokic Miodrag et Jean Claude Padoy

N° de publication 2 743 929

N° d'enregistrement national : 96 01029

République Française, Institut National de la Propriété Industrielle, Paris, 25.07.97 & 10.04.98, bulletin 98/15

European Patent Application: EP 1 405 679 A1

Linear array of sonic and ultrasonic transducers, assembled in the form of complex, integral tube resonator

Applicants: Prokic Miodrag, MP Interconsulting, and Lee, Hee-Myong, Ilsan Suntek, 03.10.2002 – 07.04.2004

European Patent Application: EP 1 050 347 A3

Ultrasonic transducer

Applicants: Prokic Miodrag, MP Interconsulting, and Lee, Hee-Myong, Ilsan Suntek, 18.06.1999 - 24.07.2002

European Patent Application: EP 1 060 798 A1

Unidirectional single piston ultrasonic transducer

Applicant: Prokic Miodrag, MP Interconsulting, 8.06.1999 – 20.12.2000

European Patent Application (related to MMM technology):

EP 1 238 715 A1

Multifrequency ultrasonic structural actuator

Applicant: Prokic Miodrag, MP Interconsulting, 5.03.2001 – 11.09.2002

Books:

Miodrag Prokic, Piezoelectric Transducers Modeling and Characterization. 240 pages, January 2004, MPI, Le Locle, Switzerland, www.mpi-ultrasonics.com

H. Feng et al. (eds.), Ultrasound Technologies for Food and Bioprocessing, Food Engineering Series, DOI 10.1007/978-1-4419-7472-3_5. Chapter 5 Wideband Multi-frequency, Multimode, and Modulated (MMM) Ultrasonic Technology (author M. Prokic). Springer Science+Business Media, LLC 2011

Papers:

New Trends in Aluminium Degassing –A Comparative Study
Fourth International Conference on Advances and Trends in Engineering Materials and their Applications. (AES – ATEMA' 2009 Hamburg)

H. Puga 1, J. Barbosa 1*, E. Seabra 1, S.Ribeiro 2, M. Prokic 3

1 CT2M –Centre for Mechanical and Materials Technologies, University of Minho

4800-058 Guimarães, Portugal, (Email: kim@dem.uminho.pt)

2 Dep of Metallurgical and Materials Engineering, FEUP, 4100 Porto, Portugal

(Email: sribeiro@fe.up.pt)

3 MP Interconsulting, 2400 Le Locle, Switzerland (Email: mpi@bluwin.ch)

The combined effect of melt stirring and ultrasonic agitation on the degassing efficiency of AlSi9Cu3 alloy.

Materials Letters 63 (2009) 2089–2092

H. Puga [a](#), J.C. Teixeira [a](#), J. Barbosa [a](#), [□](#), E. Seabra [a](#), S. Ribeiro [b](#), M. Prokic [c](#)

a. Universidade do Minho, Departamento de Engenharia Mecânica, 4800-058 Guimarães, Portugal

b. FEUP, Departamento de Engenharia Metalúrgica e de Materiais, 4200-465 Porto, Portugal

c. MP Interconsulting, 2400 Le Locle, Switzerland

The influence of processing parameters on the ultrasonic degassing of molten AlSi9Cu3 aluminium alloy.

Hélder Puga, Joaquim Barbosa, E. Seabra [a](#), S. Ribeiro, M. Prokic.

Universidade do Minho, Departamento de Engenharia Mecânica, 4800-058 Guimarães, Portugal, FEUP, Departamento de Engenharia Metalúrgica e de Materiais, 4200-465 Porto, Portugal, MP Interconsulting, 2400 Le Locle, Switzerland. Submitted to ELSEVIER Materials Letters in October 2008. Accepted 8 January 2009.

EVALUATION OF ULTRASONIC ALUMINIUM DEGASSING BY PIEZOELECTRIC SENSOR

H. Puga^a, J. Barbosa^{a*}, J. Gabriel^b, E. Seabra^a, S. Ribeiro^c, M. Prokic^d

^aCT2M – Centre for Mechanical and Materials Technologies, Universidade do Minho, Azurém

4800-058 Guimarães, Portugal

^bIDMEC – Pólo FEUP, Faculdade de Engenharia da Universidade do Porto

4200-465 Porto, Portugal

^cFEUP, Departamento de Eng^a Metalúrgica e de Materiais, 4200-465 Porto, Portugal

^dMP Interconsulting, 2400 Le Locle, Switzerland

ELSEVIER Materials Letters

IFT (Institute of Food Technologists) symposium 2005

“Advances in Power Ultrasound Research and Technology:

Food and Bio-product Applications”

New Orleans, USA, July 2005

Innovative MMM Technology for Implementing Power Ultrasonic Technique in Food-Processing Industry

Miodrag Prokic, M.P. Interconsulting, Le Locle, Switzerland,

www.mpi-ultrasonics.com

J.-Paul Sandoz, Applied Sciences University, He-Arc, Le Locle, Switzerland

Prokic M., Radmanovic M., Hedrih K. The change of Electrical and Mechanical resonant Characteristics under Conditions of Various Trans. Loads, GAMM, Dubrovnik, pp.1-24. 1985

Prokic M. Multifrequency Ultrasonic Actuators with Special Application to Ultrasonic Cleaning in Liquid and Supercritical CO₂, UIA Conference, Atlanta, 10-12 October 2001

Prokic M., Tapson J., Mortimer B. The ultrasonic Hammer Transducer

Miodrag Prokic: MP Interconsulting, Marais 36, CH-2400 LeLocle, Switzerland

Jon Tapson: Department of Electrical Engineering, University of Cape Town, Rondebosch 7701, South Africa

Bruce J.P. Mortimer: Centre for Instrumentation Research, Cape Technikon, PO Box 652, Cape Town 8000, South Africa

Business references:

M. Prokic is the owner and co-owner of the following companies, established in Switzerland,

MP Interconsulting: www.mpi-ultrasonics.com

Active Ultrasonics: www.activeultrasonics.com