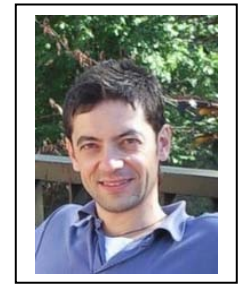


October 2013

CURRICULUM VITAE



PERSONAL DATA

| | |
|----------------|--|
| Name | Andrea Cardoni |
| Nationality | Italian |
| Gender | Male |
| Marital status | Single |
| Place of Birth | Camogli (GE), Italy |
| Date of Birth | May 29 th , 1974 |
| Address | Avenida Ciudad de Barcelona 210, 4G, 28007 Madrid, Spain |
| Tel | 0034-695499738 |
| E-mail | a.cardoni@pusonics.es |

EDUCATION

- Oct 2005–Aug 2007: Obtained the ‘Postgraduate Certificate in Academic Practice’ as a result of attending the Glasgow University’s “New Lecturer and Teacher Programme”. This course was designed to fully train new lecturing staff.
- Oct 1999–July 2004: PhD in Mechanical Engineering obtained at the University of Glasgow (UK) in July 2004. Thesis title: “Characterising the dynamic response of ultrasonic cutting devices”.
- Oct 1993–July 1999: *Laurea* degree in Mechanical Engineering, University of Genoa (Italy). Degree obtained in July 1999; grade: 106/110. Thesis title: “The influence of geometric irregularities on the vibration behaviour of 2-D rings”.
- Oct 1997–July 1998: B.Eng. (Hons.) in Mechanical Engineering. Degree obtained in July 1998 after attending the Final Year of the Mechanical Engineering degree program at the University of Glasgow, as ECTS student; grade: Upper Second-Class.
- Sept 1988–July 1993: Secondary school education at “Liceo Scientifico” of Recco (Italy). Diploma obtained in July 1993.

PROFESSIONAL EXPERIENCE

- June 2010–Present: R&D and Technical Director at PUSONICS SL, Madrid, Spain.
- Sept 2008–Aug 2009: ‘Profesor Visitante’ at the Instituto de Acústica of the ‘Consejo Superior de Investigaciones Científicas’ de Madrid (Spain) sponsored by the Royal Academy of Engineering through the Global Research Award Scheme.

- July 2008: 'Visiting Scholar' at the Precision and Intelligence Laboratory of the Tokyo Institute of Technology (Japan).
- Sept 2007–May 2010: Lecturer in Mechanical Engineering, University of Glasgow (UK).
- Oct 2005–Sept 2007: Mectron Lecturer in Ultrasonics, Department of Mechanical Engineering, University of Glasgow (UK). Industrially fully funded post. Sponsor: Mectron Medical Technology, Italy.
- Oct 2002–Sept 2005: Post-doctoral Research Assistant, Department of Mechanical Engineering, University of Glasgow (UK). EPSRC funded project titled: "Robot assisted ultrasonic bone cutting". Supervisor: Prof. Margaret Lucas
- Oct 1999–Sept 2002: Research Assistant, Department of Mechanical Engineering, University of Glasgow. EPSRC and Nestle UK of York funded project titled: "Nonlinear vibration considerations in the design of ultrasonic tools for manufacture". Supervisor: Prof. Margaret Lucas.

MEMBERSHIPS

- Mar 2010-Mar 2011: Member of the Ultrasonic Industry Association (UIA), Dayton OH 45401-2307 USA.
- Jan 2009-Sept 2012: Editorial Board Member of the IMechE Part C Journal of Mechanical Engineering Science.
- Sept 2011-Present: Young Scientist Advisory Committee (YSAC) Member of the International Congress of Ultrasonics (ICU).

AWARDS

- June 2010: Employed as Technical Director of PUSONICS SL through the award of a three-year 'Torres Quevedo' Fellowship from the Ministry of Science and Innovation of Spain. Award amount: €107958. Starting date 1st June 2010.
- June 2009: Co-Investigator on a three-year EPSRC funded project. Title: "Miniature Ultrasonic Cutting Devices for High Precision Minimal Access Orthopaedic Surgical Procedures". Amount of the award: £ 420000. Investigator share of the project equal to 40 % of the University of Glasgow Ownership. The total grant awarded to the project was for just under £1 million, with partners in Loughborough University and Edinburgh University. Additional cash and in-kind contributions of £ 10000 and £ 30960, respectively, have been provided for this project by the Industrial Collaborator: Mectron Medical Technology. Starting date 1st September 2009.
- September 2009: Collaborator on a three-year R&D Coordinated Research Project in partnership with the Instituto de Acustica/CSIC of Madrid (Leading Institution) the Universidad Politecnica de Valencia, Universidad de Islas

Baleares, and AINA technology centre (Valencia), awarded by the National Plan of the Ministry of Science and Innovation of Spain (Grant no. DPI2009-14549-C04-01). Project title: ‘Study of power ultrasound effects on mass transfer processes’. Within this research work which kicked off on the 1st January 2010, Dr Cardoni leads a workpackage aimed at the study of the nonlinear behaviour of power ultrasonic transducer prototypes for food processing, and he is involved in the tasks of the project related to the design of novel ultrasonic transducers.

- July 2008: Visiting Scholar at the Precision and Intelligence Laboratory of the Tokyo Institute of Technology (Japan) from July 17th until July 31st. Amount of the award ¥ 177100.
- Sept 2008-Aug 2009: Visiting Professor at the Instituto de Acustica (Madrid, Spain) funded by the Royal Academy of Engineering under the Global Research Awards Scheme. Amount of the award: £40000. Title of the collaborative project: “Vibration behaviour of plate transducers for macrosonic applications”.
- September 2007: Principal Investigator on a three-year STFC funded project (ST/F003587/1). Title: “Ultrasonic Drilling and Coring for Planetary Astrobiological Applications”. Amount of the award: £ 308000. Additional in-kind contribution provided for the project by the Industrial Collaborators, EADS Astrium and Branson Ultrasonics. Starting date 1st January 2008.
- October 2006: Principal Investigator on a three-year EPSRC Grant (EP/E025811/1). Title: “Design of high power ultrasonic devices for bone surgery and manufacturing through control of parametric and nonlinear vibrations”. Amount of the award: £ 110732. An additional in-kind contribution was provided for the project by the Industrial Collaborator (Mectron Medical Technology). Starting date 1st August 2007.
- October 2005: Mectron Lecturer in Ultrasonics. Sponsored Lectureship. Sponsor name: Mectron Medical Technology. Award type: Sponsored Staff Post. Amount of the award: £ 123000. Principal Investigator on a twenty-four months project (starting date 1st August 2005).
- August 2002: Airbus sponsored Young Stress Analyst 1st Prize for the paper “Strategies for reducing stress in ultrasonic cutting systems”.

AREAS OF EXPERTISE

- Since June 2010 Dr Cardoni is the Technical and R&D Director of PUSONICS SL, a Spanish spin-off company created in 2008 for transferring to industry and R&D centers the new power ultrasonic technologies developed at the Spanish Higher Council for Scientific Research (CSIC) by the Power Ultrasonics Group (GUP). PUSONICS has launched a new family of power ultrasonic generators with extensive plate radiators capable of efficiently transmitting highly focused or coherent acoustic waves in fluids (gases and liquids) and multiphase media.

The initial product commercialized by PUSONICS consists in the first ultrasonic defoaming system (UDS) capable of destroying industrial foams generated in various applications including, among the others, fermenting vessels and canning lines, as well as in chemical and pharmaceutical manufacturing applications. The UDS is an innovative and sustainable device which allows to significantly reduce foaming problems without contaminating the treated product.

Current company R&D activities consist in the development of power ultrasonic systems for:

- *Food drying processes without producing deteriorative changes in the product.*
- *Supercritical Fluid Extraction assisted by power ultrasound.*
- *Removal of fine particles (smaller than 1-2 microns) from industrial gas emissions.*
- *Enhanced cleaning of textiles.*
- *Atomization applied to water treatments, and food and pharmaceutical spray drying processes.*
- *Sewage treatments.*
- *Particle size reduction in preparation of paints.*
- *Debubbling of coating layers (varnishes, paintings...)*
- *Cutting applications.*

- Research work as a Lecturer at the University of Glasgow, UK: Investigation into the adaptability of flextensional transducers in power ultrasonic surgical applications. This research programme brings together the three academic institutions in the UK with particular expertise and strong track records in power ultrasonic devices and ultrasonic bone cutting (Glasgow University), multi-scale computational modelling of ultrasonic machining and bone drilling (Loughborough University), and trialling of ultrasonic cutting devices and orthopaedic engineering (Edinburgh University). To provide a commercial focus to the research and access to expertise in ultrasonic device design and manufacture, two industrial partners, Mectron Medical and Sonic Systems, are supporting the programme (2009-2010).

- Research on the applicability of power ultrasonics to planetary explorations lead while working as a Lecturer at the University of Glasgow, UK. The main aim of this study is to model, design, build and test an ultrasonic driller/corer for planetary sampling and astrobiological analysis, and to consider its integration on a planetary manipulator arm. This project, which is currently funded by STFC under the PIPSS Scheme, marks the beginning of a productive collaboration between power ultrasonics and space systems researchers at the University of Glasgow, EADS Astrium Ltd and Branson Ultrasonics. A further aim of this project is to transfer the technology developed during the project to welding and food cutting applications (2008-2010)

- Research work lead as a Lecturer at the University of Glasgow UK: Theoretical and experimental studies for the identification and characterisation of response instabilities and nonlinearities (bifurcations, response saturations, ‘jumping’ phenomenon, etc) that hamper the vibration behaviour of ultrasonic systems for surgery and manufacturing applications. Hence, design and development of a novel generation of ultrasonic devices based on mitigation of nonlinear vibration characteristics. This work is currently funded by EPSRC under the First Grant Scheme and Mectron Medical Technology (2008-2010)
- Extensive research on the application of high power ultrasonics in dentistry osteotomy, and implantology. This work was supported by Mectron Medical Technology through funding of the first two years of Dr Cardoni’s lectureship (2005-2010)
- Characterisation of the vibration behaviour of ultrasonic plate-transducer for the generation of high-directional and/or focusing radiations in macrosonic processes such as defoaming, food drying, and supercritical fluid extraction. The research work upon this novel transduction technology is carried out in collaboration with the Power Ultrasonics Group of the CSIC at Madrid (Spain). This partnership was initially funded through the award of a Royal Academy of Engineering Fellowship (Global Research Awards Scheme) during September 2008 and August 2009. Ultrasonic plate-transducers for defoaming applications are currently commercialised by PUSONICS SL (2008-2009)
- Research work as a Researcher at the University of Glasgow UK: Design and development of ultrasonic tools for bone surgery to be deployed by a surgical-assist robot able to obtain access to difficult and constrained sites. This work was funded by EPSRC and carried out in collaboration with the Department of Mechanical Engineering at the University of Dundee and the Ninewells Hospital, Dundee (2002-2005)
- Research work as a Researcher at the University of Glasgow UK: Design of ultrasonic cutting devices for food processing. In particular, characterisation of the vibration behaviour of tuned systems through a combination of finite element modelling and experimental modal analysis using 1D and 3D laser Doppler vibrometers. Investigation of novel criteria for enhanced design of ultrasonic assemblies based on reducing the effects of modal participation of untuned modes to the operating mode. This work was funded by EPSRC and Nestle UK (1999-2002)

INVITED SEMINARS, AND CONFERENCE ORGANIZATION

June 2010: Organized and chaired a conference session entitled ‘*Nonlinear Dynamics of Acoustic Resonators*’ at the 39th International Congress and Exposition on

Noise Control Engineering, will be held in Lisbon, Portugal, from 13-16 June.

- March 2010: *'Design and performance of power ultrasonic devices for cutting'*
School of Engineering, Physics and Mathematics, University of Dundee, Scotland.
- December 2009: *'Design and performance of power ultrasonic devices for cutting'*
Universidade de São Paulo, Escola Politécnica, Departamento de Engenharia Mecatrônica e de Sistemas Mecânicos, Brazil.
- June 2009: *'Design and performance of power ultrasonic devices for cutting'*
Departamento de Física Aplicada - Universidad Politécnica de Valencia, Gandia, Spain.
- April 2009: *'Design and performance of ultrasonic devices for cutting applications'*
Instituto de Acustica, CSIC, Madrid, Spain.
- July 2008: *'Design and performance of ultrasonic cutting devices'*, Precision and Intelligence Laboratory, Tokyo Institute of Technology, Tokyo, Japan.

CONSULTANCIES

- June 2010: Consultancy work carried out for Mectron Medical Technology (Italy), website: www.mectron.com
- Sept 2008: Consultancy work carried out for Dukane-Ultrasonics-Division website: www.dukcorp.com/us/default.htm
- March 2005: Consultancy work carried out for Mectron Medical Technology (Italy), website: www.mectron.com

PROMOTIONS OF RESEARCH

- [1] 'Cutting up bones', The Engineer, published online 02 April 2007. Web-link: www.theengineer.co.uk/Articles/298866/Cutting+up+bones.htm
- [2] 'Cutting-edge technology', University of Glasgow Newsletter, Issue 282. Web-link: www.gla.ac.uk:443/newsdesk/newsletter/details.cfm?id=4496&issue=282&category=catresearch
- [3] 'Enhancing national capabilities' 2008/2009 Annual Review of the Royal Academy of Engineering. Web-link: www.raeng.org.uk/about/annrev/pdf/2009/Annual_Review.pdf

TEACHING EXPERIENCE AND SUPERVISION

First Supervisor of Dr Patrick Harkness (2008-2010), Mr Andrew Mathieson (2007-present, and Mr Fernando Bejarano (Jan. 2010-Jun. 2010); Co-supervisor of Mr Hassan Dakhil (2009-2010); Second Supervisor of Mr Zhongyin Pan (2009-2010), Mr Malcolm McRobb (2008-2010), Mr Dong Wang (2008-2010), Miss Norilmi Amilia Ismail (2008-2010), Mr Sa'ardin Abdul Aziz (2008-2010), Mr Asif Israr (2005-2008).

- 2006–2010: Responsible Lecturer: Design Practice 4, Group Design Project 4. Also provide ten lectures in Vibration M4 during Semester 2; and has been a Design and Manufacture 2A and 2B tutor.
- 2005–2010: Supervised and Co-supervised between three and six Final Year Students' projects during each Academic Year.
- 2005–2006: Ten lectures in Vibration M4.
- 2004–2005: During the 2nd semester of this academic year gave ten lectures in Vibration M4 (whilst working as post-doctoral Research Assistant.)
- 2001–2004: Co-supervision of various Final Year Projects in the area of vibration mechanics and power ultrasonics.
- 2001–2004: 1st Year Mechanics tutor. Mechanical Engineering, University of Glasgow.
- 2000–2001: 1st Year Maths tutor, and 4th Year Vibration lab demonstrator. Mechanical Engineering, University of Glasgow.

PHD EXAMINATIONS:

- November 2009: Internal examiner of Mr David McKenzey's PhD Thesis and Viva. Thesis title: 'The Dynamics of Tethers and Space-Webs'. PhD awarded
- June 2008: Internal examiner of Mr Asif Israr's PhD Thesis and Viva. Thesis title: 'Vibration Analysis of Cracked Aluminium Plates'. PhD awarded.
- June 2008: Internal examiner for Mr Graham Hunter's PhD Thesis and Viva. Thesis title: 'Bacterial Inactivation using Radial Mode Ultrasonic Devices. PhD awarded.

ADMINISTRATIVE DUTIES:

- March 2007-2010: Erasmus Coordinator in the Department of Mechanical Engineering at the University of Glasgow
- 2006-2010 Group Design Project 4 co-ordinator
- 2006-2010 Design Practice 4 co-ordinator

LANGUAGE SKILLS

Italian: Mother thong
English: Excellent (lived and worked in the UK for eleven years)
Spanish: Very good (living and working in Madrid since June 2010)

LIST OF PUBLICATIONS

Journal papers

- [1] LUCAS, M., PETZING, J.N., CARDONI, A., SMITH, L.J., “Design and characterisation of ultrasonic cutting tools”, *Annals of CIRP*, Vol. 50/1, pp. 149-152, 2001.
- [2] CARDONI, A., LUCAS, M., “Enhanced vibration performance of ultrasonic block horns”, *Ultrasonics*, Vol. 40, pp. 365-369, 2002.
- [3] CARDONI, A., LUCAS, M., “A novel multiple blade ultrasonic cutting device”, *Ultrasonics*, Vol. 42, pp. 69-74, 2003.
- [4] LUCAS, M., CARDONI, A., CARTMELL, M.P., LIM, F.C.N., “Effects of modal interactions on vibration performance in ultrasonic cutting”, *Annals of CIRP*, Vol. 52/1, pp. 193-196, 2003.
- [5] LIM, F.C.N., CARTMELL, M.P., CARDONI, A., LUCAS, M., “A preliminary investigation into optimising the response of vibrating systems used for ultrasonic cutting”, *Journal of Sound and Vibration*, Vol. 272, pp.1047-1069, 2004.
- [6] CARTMELL, M.P., LIM, F.C.N., CARDONI, A., LUCAS, M., “Optimisation of the vibrational response of ultrasonic cutting systems”, *Journal of Applied Mathematics*, Vol. 70, pp. 645 – 656, 2005.
- [7] CARDONI, A., LUCAS, M., “Strategies for reducing stress in ultrasonic cutting systems”, *Strain*, Vol. 41/1, pp. 11-18, 2005.
- [8] LUCAS, M., CARDONI, A., “Temperature effects in ultrasonic cutting of natural materials”, *Annals of CIRP*, 54/1, pp. 195, 2005.
- [9] CARDONI, A., MACBEATH A., LUCAS, M., “Methods for reducing cutting temperature in ultrasonic cutting of bone”, *Ultrasonics*, Vol. 44, Suppl. 1, pp. 37-42, 2006.
- [10] LUCAS, M., CARDONI, A., MCCULLOCH, E., HUNTER, G., MACBEATH, A., “Applications of Power Ultrasonics in Engineering”, *Applied Mechanics and Materials*, Vols. 13-14, pp 11-20, 2008.
- [11] LUCAS, M., GACHAGAN, A., CARDONI, A., “Research applications and opportunities in power ultrasonics”, *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, Vol. 223, No. 12, pp. 2949-2965, 2009.

- [12] CARDONI, A., “Enhancing oral implantology with power ultrasonics”, *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, Vol. 57, No. 9, pp. 936-942, 2010.
- [13] CARDONI, A., HARKNESS, P., LUCAS, M., “Ultrasonic rock sampling using longitudinal-torsional vibrations”, *Ultrasonics*, Vol. 50, No. 4-5, pp. 447-452, 2010.
- [14] GANILOVA, O., LUCAS M., CARDONI, A., “Analytical model of the cymbal transducer dynamics. Radial vibration of the piezoelectric disc”, *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, Vol. 225, No. 5, pp. 1077-1086, 2011.
- [15] FARRELL, M., MATHIESON, A., CHUNG, P., HELLER, A., CLARKE, S.P., MCDONALD, M. K., CARDONI, A., “Ex vivo performance testing of two arcuate oscillating saw blades designed for use during tibial plateau leveling osteotomy”, *Veterinary Surgery*, 2011, DOI: 10.1111/j.1532-950X.2011.00855.x.
- [16] HARKNESS, P., CARDONI, A., LUCAS, M., “Architectures for Ultrasonic Planetary Sample Retrieval Tools”, *Ultrasonics*, Vol. 51, No. 8, pp. 1026-1035, 2011.
- [17] HARKNESS, P., LUCAS, M., CARDONI, A., “Maximisation of the effective impulse delivered by a high-frequency/low-frequency planetary drill tool”, *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, Vol. 58, No. 11, pp. 2387-2396, 2011.
- [18] CARDONI, A., RIERA, E., BLANCO, A, ACOSTA, V., GALLEGUO-JUAREZ, J., “Modal Interactions in Ultrasonic Plate-Transducers for Industrial Applications”, *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, Vol. 226, pp. 2044-2052, 2012.
- [19] HARKNESS, P., LUCAS, M., CARDONI, A., “Coupling and degenerating modes in longitudinal–torsional step horns”, *Ultrasonics*, Vol. 52, No. 8, pp. 980-988, 2012.
- [20] MATHIESON, A., CARDONI, A., CERISOLA, N., LUCAS, M., “The influence of piezoceramic stack location on nonlinear behavior of Langevin transducers”, *IEEE Ultrasonics, Ferroelectrics, and Frequency Control*, Vol. 60 , pp. 1126 – 1133, 2013.

Conference papers

- [21] CARDONI, A., LUCAS, M., “Enhanced vibration performance of ultrasonic block horns”, *Ultrasonics International 2001*, Delft, Holland, July 2001.
- [22] CARDONI, A., LUCAS, M., CARTMELL, M.P., LIM, F., “Characterising modal interactions in an ultrasonic cutting system”, invited paper, *Forum Acusticum*, Seville (Spain), paper ULT-02-003-IP, September 2002.
- [23] CARDONI, A., LUCAS, M., “Strategies for reducing stress in ultrasonic cutting systems”, *BSSM International Conference on Advances in Experimental Mechanics*, Stratford-upon-Avon (UK), pp. 101-104, August 2002.

- [24] LUCAS, M., CARDONI, “Experimental and computational modelling of vibration performance of ultrasonic tools for manufacturing applications”, invited paper, *32nd Ultrasonic Industry Association Symposium*, New York (USA), October 2002.
- [25] CARTMELL, M.P., LIM, F.C.N., CARDONI, A., LUCAS, M., “Optimisation of the vibrational response of ultrasonic cutting systems”, *IMA Conference*, Southampton (UK), June 2003.
- [26] CARDONI, A., LUCAS, M., “Design of ultrasonic block horns by finite element models”, *18th International CAPE Conference*, pp. 377-384, ISBN 1-86058-404-7, Edinburgh (UK), March 2003.
- [27] CARDONI, A., LUCAS, M., CARTMELL, M.P., LIM, F.C.N., “Nonlinear and parametric vibrations in an ultrasonic cutting system”, *Proc. IoP MPSVA Conference*, Glasgow (UK), pp. 379-404, September 2003.
- [28] LUCAS, M., CARDONI, A., CARTMELL, M.P., LIM, F.C.N., “Controlling the effects of modal interactions in ultrasonic cutting devices”, invited paper, *Proceedings of the World Congress on Ultrasonics*, Paris (France), pp. 49-56, September 2003.
- [29] CARDONI, A., LUCAS, M., “A novel multiple blade ultrasonic cutting device”, *Ultrasonics International 2003*, Granada, Spain, July 2003.
- [30] CARDONI, A., LUCAS, M., “Characterising energy exchanges from high- to low-frequency modes in ultrasonic cutting systems”, invited paper, *33rd Ultrasonics Industries Association Symposium*, Indianapolis (USA), September 2003.
- [31] MACBEATH, A. CARDONI, A. SMITH L., LUCAS, M., “Ultrasonic cutting with high-gain blades”, *Proceedings of the International Conference on Advances in Experimental Mechanics*, York (UK), pp. 45-50, September 2004.
- [32] CARDONI, A., MACBEATH, A., LUCAS, M., “Cutting bone using high-gain ultrasonic cutting blades”, *Proceedings of the 12th International Conference on Experimental Mechanics*, Bari (Italy), pp. 352-353, September 2004.
- [33] MACBEATH, A., CARDONI, A. LUCAS, M., “Design of an ultrasonic blade for cutting bone”, *BSSM International Conference on Advances in Experimental Mechanics*, Southampton (UK), September 2005.
- [34] CARDONI, A., MACBEATH, A., LUCAS, M., “Vibration Parameter and Temperature Dependencies in Ultrasonic Cutting of Wood, Bone, and Artificial Bone”, *34th Ultrasonics Industries Association Symposium*, Las Vegas (USA), March 2005.
- [35] CARDONI A., MACBEATH A., LUCAS M., “Methods for reducing cutting temperature in ultrasonic cutting of bone”, *World Congress of Ultrasonics merged with Ultrasonics International 2005 (WCU-UI2005)*, Beijing, China, August 2005.

- [36] LUCAS M., MACBEATH A., MCCULLOCH E., CARDONI A. “A finite element model of ultrasonic cutting”, *World Congress of Ultrasonics merged with Ultrasonics International (WCU-UI2005)*, Beijing, China, August 2005.
- [37] MACBEATH A, CARDONI A., LUCAS M., “Effect of Ultrasonic Cutting Blade Orientation on Cutting Temperature”, *IEEE International Ultrasonic Symposium*, Vancouver, October 2006.
- [38] CARDONI A., “Design of ultrasonic devices for oral implantology”, *International Congress on Ultrasonics*, Vienna, April 2007.
- [39] CARDONI A., LUCAS M. CARTMELL, M.P., “Modal interactions in ultrasonic cutting devices”, *Ultrasonic Industry Association Symposium*, National Physics Laboratory, London, March 2007.
- [40] CARDONI A., “Power Ultrasonics in Oral Implantology”, *IEEE International Ultrasonic Symposium*, New York, October 2007.
- [41] LUCAS M., DAUD Y., CARDONI A., “Finite element modelling of ultrasonic tension and compression tests and ultrasonic forming processes”, *Ultrasonic Industry Association Symposium*, Washington DC, 7 - 9 April 2008.
- [42] LUCAS, M., CARDONI A., McCULLOCH E., HUNTER G., “Applications of power ultrasonics in engineering”, *6th BSSM International Conference on Advances in Experimental Mechanics*, National Physical Laboratory, London, September 2008.
- [43] HARKNESS P., CARDONI A., LUCAS M., “Vibration considerations in the design of an ultrasonic driller/corer for planetary rock sampling”, *ISMA2008 Conference*, Leuven (Belgium), September 2008.
- [44] CARDONI A., HARKNESS P., LUCAS M., “Ultrasonic rock sampling using longitudinal-torsional vibrations”, invited paper to the *Internat. Congress on Ultrasonics*, Santiago del Chile, Jan. 2009. Now in *Physics Procedia*, Vol 3, No 1, pp. 125-134, 2010.
- [45] MATHIESON A., CARDONI A., “A study into the vibration behaviour of power ultrasonic devices for bone surgery”, *Internat. Congress on Ultrasonics*, Santiago del Chile, Jan. 2009.
- [46] LUCAS M., CARDONI A., HARKNESS P., “Ultrasonic Drilling and Coring for Planetary Exploration”, *Ultrasonic Industry Association Symposium*, Vancouver, British Columbia, Canada, March 2009.
- [47] HARKNESS P., CARDONI A., LUCAS M., “An ultrasonic corer for planetary rock sample retrieval”, *7th International Conference on Modern Practice in Stress and Vibration Analysis*, Cambridge, September 2009.
- [48] HARKNESS P., CARDONI A., LUCAS M., WAUGH L., “A simple, lightweight and low-reaction deployable architecture for subsurface sample retrieval”, *AIAA Space 2009*, Pasadena, September 2009.

- [49] CARDONI, A., RIERA, E., BLANCO, GALLEGO-JUAREZ, J., ACOSTA, V., “On the nonlinear dynamics of plate-transducers”, *2009 IEEE Ultrasonics Symposium*, Rome, 19-23 September.
- [50] MATHIESON, A., CARDONI, A., HARKNESS, P., LUCAS, M., “Characterisation of nonlinear behaviour of power ultrasonic drilling horn”, *2009 IEEE Ultrasonics Symposium*, Rome, 19-23 September.
- [51] HARKNESS, P., CARDONI, A., LUCAS, M., “Ultrasonic rock drilling devices using longitudinal-torsional compound vibration”, *2009 IEEE Ultrasonics Symposium*, Rome, 19-23 September.
- [52] CARDONI, A., MATHIESON M., CERISOLA, N., “Reducing the nonlinear vibration behaviour of power ultrasonic transducers for bone surgery”, *Internoise 2010*, Lisbon, Portugal, June 2010.
- [53] HARKNESS, P., CARDONI, A., RUSSEL, J., LUCAS, M., “Designing a Hollow Langevin Transducer for Ultrasonic Coring”, *7th BSSM International Conference on Advances in Experimental Mechanics*, University of Liverpool, Liverpool, 7-9 September 2010.
- [54] RIERA, E., CARDONI, A., BLANCO, A., ACOSTA, V., GALLEGO-JUAREZ, J., “Characterising the nonlinear dynamics of power ultrasonic systems”, *Internoise 2010*, Lisbon, Portugal, June 2010.
- [55] HARKNESS P., CARDONI A., LUCAS M., WAUGH L., “Optimization of the horn, free-mass and support architecture of an ultrasonic rock-boring system., *AIAA Space 2010 Conference*, 30 Aug - 2 Sep 2010, Anaheim, USA.
- [56] CARDONI, A., RIERA, E., BLANCO, ACOSTA, V., ARROYO, D., GALLEGO-JUAREZ, J., “Estudio del comportamiento vibracional no lineal de los sistemas ultrasónicos de potencia con radiadores de placa para aplicaciones industriales”, *TECNIACUSTICA 2010*, León, España, 2010.
- [57] ARROYO, D., BLANCO, A., RIERA, E., CARDONI, A., “Metodología para la caracterización del comportamiento no lineal de una familia de transductores de ultrasonidos de potencia”, *TECNIACUSTICA 2010*, León, España, 2010.
- [58] CARDONI, A., PINTO, A., GALLEGO-JUAREZ, A., RIERA E., “Design strategies to mitigate the nonlinear vibration behaviour of piezoelectric power ultrasonic transducers”, *PIEZO 2011*, Sestriere, Italy, Febr/March, 2011.
- [59] MATHIESON, A., CARDONI, A., CERISOLA, N., “Characterisation of Langevin transducers”, *Ultrasonic Industry Association Symposium*, University of Glasgow, Glasgow, UK, May 2011, selected as Best Conference poster.
- [60] MATHIESON, A., CARDONI, A., CERISOLA, N., “Characterisation of an ultrasonic transducer connected to quarter and full wavelength rod horns”, *Ultrasonic Industry Association Symposium*, University of Glasgow, Glasgow, UK, May 2011.

- [61] CARDONI, A., “A novel commercial system to break foams using power ultrasound”, *Ultrasonic Industry Association Symposium*, University of Glasgow, Glasgow, UK, May 2011.
- [62] CARDONI, A., PINTO, A., GALLEGUO-JUAREZ, A., RIERA E., “Estrategias de diseño para mitigar el comportamiento vibratorio no lineal de los transductores piezoeléctricos para aplicaciones ultrasónicas de potencia”, *X Reunión Nacional de Electrocerámica*, Madrid, 13-15 Junio 2011.
- [63] RIERA, E., CARDONI, A., ACOSTA, V., GALLEGUO-JUAREZ, J., “Nonlinear Behaviour of Power Ultrasonic Transducers for Food Processing”, *International Congress of Ultrasonics*, Gdansk, Poland, 5-8 September, 2011. Published on *American Institute of Physics Conf. Proc.* 1433, 345, 2012; doi: 10.1063/1.3703202.
- [64] ACOSTA, V., RIERA, E., CARDONI, A., RODRIGUEZ, G., PINTO, A., GALLEGUO-JUAREZ, J., “Modelización interacción acústico-estructura de transductores piezoeléctricos en medio fluidos mediante el método de los elementos finitos”, *TECNIACUSTICA 2011*, Cáceres, España, 26-28 Octubre, 2011.
- [65] RIERA, E., CARDONI, A., ACOSTA, V., RODRIGUEZ, G., GALLEGUO-JUAREZ, J., “Estudio del comportamiento no lineal de transductores ultrasónicos de potencia para el procesado de alimentos”, *TECNIACUSTICA 2011*, Cáceres, España, 26-28 Octubre, 2011.
- [66] RIERA, E., CARDONI, A., ACOSTA, V., GALLEGUO-JUAREZ, J., BLASCO, M., TORNERO, A., CASAS, E., “Diseño y desarrollo de sistema ultrasónico basado en transductor ultrasónico de potencia con radiador de superficie extensa para procesado de alimentos en gases densos”, *TECNIACUSTICA 2011*, Cáceres, España, 26-28 Octubre, 2011.
- [67] MATHIESON, A., CARDONI, A., CERISOLA, N., LUCAS, M., “Characterization of Langevin transducers with different piezoceramic stack locations”, *2011 International Workshop on Acoustic Transduction Materials and Devices*, the Penn State Conference Center Hotel, State College, Pennsylvania, 8-12 May, 2012.
- [68] ACOSTA, V.M., RIERA, E., RODRIGUEZ, G., PINTO, A., CARDONI, A., GOMEZ, T., GALLEGUO-JUAREZ, J.A., “Acoustic-structure interaction modelling of piezoelectric transducers in fluid medium”, *Comsol Conference Europe*, Milan, awarded as ‘Best Conference poster’, 2012.
- [69] CARDONI, A., RIERA, E., GALLEGUO-JUAREZ, J.A., “Nonlinear response in airborne piezoelectric transducers for power ultrasonics”, *International Congress of Ultrasonics*, Singapore, May, 2013.
- [70] PEREZ ALVAREZ, N., CARDONI A., CERISOLA, N., RIERA, E., BRIZZOTTI, M.A., ADAMOWSKI, J.C., “Nonlinear modeling of Langevin transducers using the Rayleigh law in the piezoelectric ceramics”, *International Congress of Ultrasonics*, Singapore, May, 2013.
- [71] RIERA, E., CARDONI, GALLEGUO-JUAREZ, J., “Respuesta no lineal de transductores piezoeléctricos ultrasónicos de potencia para radiación en aire”, *TECNIACUSTICA 2013*, Valladolid, España, 2-4 Octubre, 2013.