



Vibrations

Ultrasonic Industry Association

Will You Leave Your Heart in San Francisco in April 2012?

The 2012 UIA Symposium will be held at the InterContinental Mark Hopkins Hotel in San Francisco, CA, USA.

Daniel J. Cotter, Principal Ultrasonics Engineer, Research and Development, Neurosurgery, Integra, is the Symposium Chair.

Industrial Session Co-Chairs are **Leo Klinstein**, Director of Engineering, Dukane Corporation and

Dr. Patrick Harkness, Lecturer, the School of Engineering University of Glasgow.

Medical Session Co-Chairs are **Dr. Robert Muratore**, Owner, Quantum Now, LLC and **Damien Walmsley**, Professor of Restorative Dentistry, The University of Birmingham, UK.

Margaret Lucas, Professor

of Ultrasonics, Head of Research, Department of Mechanical Engineering, University of Glasgow and **Tony Crandall**, Acoustic Engineering Manager, ITT, are Poster Co-Chairs.

Dominick DeAngelis, Fellow, Mechanical Engineer, Kulicke & Soffa Industries, Inc. is Workshop Chair.



Daniel J. Cotter
Symposium Chair

41st Symposium Invited Speakers

Dr. Stewart Sherrit will be the invited speaker for the Industrial Session. He is a Senior Member of Technical Staff at JPL's Advanced



Technologies Group. Dr. Sherrit received his B.Sc. in engineering physics (Nuclear-Mechanical option), M.Sc. (Solid State Physics-Thermoelectric Conversion) and PhD (Physics: Characterization of losses, dispersion and field dependence of piezoelectric materials.) from Queen's University, Kingston, Canada. He joined JPL's NDE& Advanced Actuators (NDEAA) laboratory in Sept.

1998 as a Cal-Tech Post Doctoral Scholar. From Jan 2000 - Jan 2007 he was the chairman of the IEEE UFFC Standards subcommittee, which is currently developing the "Standard on the Characterization of Loss in Electromechanical Materials". He has been involved in the development of a variety of sampling tools including the Ultrasonic Sonic Driller Corer, the Ultrasonic Rock abrasion tool, Ultrasonic powder sampler, rock crusher, Ultrasonic Gopher and Aerobot Harpoon sampler. Desert, Lake Vida, Antarctica and Mt Hood, Oregon. Task Manager for the Mars Sample Return Clean Sampling Tool.

Dr. Thomas J. Matula will be the invited speaker for the Medical Session. He is Director, Center



for Industrial and Medical Ultrasound (CIMU) Co-Director, Center for Ultrasound-based Molecular Imaging and therapy (uWAMIT) Applied Physics Laboratory University of Washington. Dr. Matula's research interest has been to understand cavitation and its effects in industrial and medical applications, and to transition technology to industry.

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San Francisco Welcomes UIA



Photos courtesy of San Francisco Convention and Visitors Bureau

San Francisco is often called "Everybody's Favorite City," a title earned by its scenic beauty, cultural attractions, diverse communities, and world-class cuisine. Measuring 49 square miles, this very walk-able city is dotted with landmarks like the Golden Gate Bridge, cable cars, Alcatraz and the largest Chinatown in the United States. A stroll of the city's streets can lead to Union Square, the Italian-flavored North Beach, Fisherman's Wharf, the Castro, Japantown and the Mission District, with intriguing neighborhoods to explore at every turn.

Views of the Pacific Ocean and San Francisco Bay are often laced with fog, creating a romantic mood in this most European of American cities. The city has a colorful past, growing from a small village

to a major city nearly overnight as a result of the 1849 Gold Rush. The writers of the "beat" generation, the hippies of the Summer of Love in the late 1960's and the large gay/lesbian population have all contributed to making San Francisco the fascinating place it is today.

The city is home to world-class theatre, opera, symphony and ballet companies and often boasts premieres of Broadway-bound plays and culture-changing performing arts. San Francisco is one of America's greatest dining cities. The diverse cultural influences, proximity of the freshest ingredients and competitive creativity of the chefs result in unforgettable dining experiences throughout the city.

HISTORIC GRANDEUR ON THE CREST OF NOB HILL As splendid now as when it opened to great fanfare in 1926, InterContinental Mark Hopkins San Francisco is one of the city's finest hotels. The headquarters for the 41st Annual Symposium is located at the crossing of three cable car lines, the venerable landmark is minutes from Union Square, Chinatown and the Financial District. Fisherman's Wharf and the Golden Gate Bridge are short drives away.

To make your reservation at the [InterContinental Mark Hopkins San Francisco](http://www.intercontinentalsanfrancisco.com), just click!

To plan the rest of your stay in San Francisco, visit http://www.welcometosf.com/standard_microsite.asp



Alamo Square is a good place to see the Victorian homes of "Postcard Row," with the skyline of San Francisco in the background. Credit: Christine Krieg, San Francisco Convention & Visitors Bureau

40th Symposium: UIA Blown Away

At times during the 40th UIA Symposium at the University of Glasgow, May 23rd-25th, it really did seem as though the supreme powers that be were



against us. We had storm force winds and torrential rain that forced a late change to the

Symposium dinner, and even a brief intervention from the second Icelandic volcanic ash cloud in two years, which incredibly, coincided with UIA again! However, the combined spirit of delegates, presenters and exhibitors ensured that the abiding memories from our Scottish sojourn were a mix of intellectual stimulation, business innovation and the high quality networking for which UIA is rightly renowned.

In a change from previous events, we launched the Symposium with the Medical papers session. The early morning session covered the design and experimental characterisation of transducers and their outputs, focusing on novel technology implementations, and continued until lunchtime with exciting new developments in high resolution acoustic particle manipulation.

Refreshments and a luncheon break, sponsored generously by Integra LifeSciences, were taken in the Atrium of the Wolfson Medical School, providing a stunning backdrop to



our exhibitors: Sonic Systems, E & I, ITT, NPL, NTK Technologies, MTC Electroceramics and Polytec.

The afternoon medical session commenced with the invited presentation: a fascinating insight into the applications of power ultrasonics in dentistry, courtesy of Professor

Damien Walmsley from the University of Birmingham. He discussed such subjects as the implications of 3D scanning images from scaler tips showing exotic



vibration patterns, and emphasised the need for ongoing research to understanding the physics of tool motion, and the resulting cavitation, so that clinical application is optimised. Day 1 closed with a detailed insight into both high and low frequency transducer designs, for clinical applications in diagnosis and therapies.

In the evening, Sonobond Ultrasonics treated delegates to a session of whisky



-tasting, with three single Scottish malts, and their tales of origin, imbibed and enjoyed by all.

Our second morning was dominated by workshop sessions, with UIA Board Member Jay Sheehan kicking off proceedings with a detailed description of the basics of transducer design and analysis. With Jay having established how to build a power ultrasonics system, Professor Victor Humphrey (University of Southampton) then focused on the theory and parameters used to describe ultrasound propagation.

Precision Acoustics' Andrew Hurrell then enlightened delegates as to how to make measurements of acoustic fields, with hands-on demonstrations of HIFU transducers and hydrophones in action. Our planned guest speaker, Professor Peter Wells (Cardiff University) was unable to attend due to travel disruption, but his highly entertaining biopic on Lord Rayleigh will be made available to UIA Members as a future webinar.

Attention then turned to lunch, and to the poster session, with a strong stu-



Pedro Acevado, National University of Mexico, talks with Polytec while Rasmus Lou Moeller chats with NTK.



Rob Perkins and Jay Sheehan discuss what Sonic Systems, Ltd. has to offer.

UIA Blown Away, continued



Andrew Mathieson chats with Mike Draper, Sonic Systems Ltd. About his award winning poster.

dent representation from the host country, in both medical and industrial areas, covering subjects as diverse as ultrasound-assisted oil extraction and transcranial Doppler ultrasound in neonates. In a close-fought contest, the two winners of the student poster were Andy Mathieson (University of Glasgow) and Yongqiang Qiu (University of Dundee). Each receives a cash prize of \$400, and our congratulations!

All delegates then boarded the Glasgow Metro to the University of Strathclyde,

which played host to the Symposium laboratory tour. Showcasing the innovation from Strathclyde, Glasgow and Dundee, PhD students and Postgrads demonstrated research into bio-inspired sensors, HIFU transducer characterisation, acoustic microscopy, robotics and cavitation measurement. The adverse weather conditions meant that our evening Symposium Dinner at Ross Priory, Loch Lomond, was relocated to Glasgow City Centre, with the Events staff at Glasgow doing a sterling job of finding a new venue at three hours' notice!

Day three was the turn of

the industrial ultrasonics sessions, with proceedings led by Professor Juan Gallego-Juarez (CSIC, Madrid) who gave us a great many examples of the application of high power ultrasonics to real industrial multiphase systems, including proposed solutions for removing atmospheric ash contamination, and the drying of food-stuffs such as carrots and fruits using airborne sound. Food applications of high power ultrasound were a recurring theme during the day, with presentations on defoaming, and on extracting isoflavones from soybeans.

Either side of lunch, spon-



Roger Traynor, Polytec; Niccolo Cerisola, Mectron Spa, Damien Walmsley, University of Birmingham and Ron Staut, APC International, Ltd. consider ultrasonic issues during a break.

UIA Blown Away, continued



sored generously by Meggitt, two separate UK groups showed designs for cylindrical multi-frequency sonication vessels, enabling generation of fields in the range 20-140 kHz, and demonstrating complex modal behaviour.

Following three days of high quality science and engineering, the 40th UIA Symposium closed as it had begun, with presentation on acoustic measurements from the National Physical Laboratory, UK, emphasising the need for understanding the sound we apply, in order to obtain the diagnosis, therapy or process we require. UIA President Mark Hodnett concluded the proceedings by thanking the major contributions of Symposium Chair Professor Margaret Lucas, and her session co-chairs, and UIA Executive Director Fran Rickenbach.

We look forward to welcoming you all, and some new faces to the 41st UIA Symposium at the Mark Hopkins Hotel, San Francisco, 16-18 April 2012.



Joseph Luis, Ulthera, Inc; Damien Walmsley, Univ of Birmingham; Roger Traynor, Polytec; George Bromfield and Margaret Lucas in earnest discussion.



Niccolo Cerisola, MECTRON SPA, and Juan Gallego-Juarez, CSIC, Madrid, talks about a presentation.



Jay Sheehan, JFS Engineering



Andrea Cardoni, Pusonics SL, chats with John Russell, Hassan Al-Budairi and Andrew Feeney, researchers with the University of Glasgow.

UIA Honors Sam Berliner III



Sam Berliner celebrates his honorary membership

The Ultrasonic Industry Association Board of Directors is pleased to announce the award of honorary membership to Sam Berliner, III. Honorary membership is awarded in recognition of his many years of service to the ultrasonic industry and to the UIA organization. Thank you Sam for all you have done to advance the field of ultrasonics, to promote the UIA, and to amaze us all with your enthusiasm for so many other projects.

An early member of the Ultrasonic Manufacturers Association (later re-named Ultrasonic Industry Association), Sam first attended the UMA's Annual Technical Symposium at JFK on his birthday on February 15, 1968 (a confirmed pack rat, he still has all the paperwork). He was the first editor of VIBRATIONS, the newsletter of the successor Ultrasonic Industry Association, producing it for many years, and was a long-time member of the UIA's Board of Directors and the first Chair of the Website Committee, hosting the original site.

S. (Sam) Berliner, III, was born in Manhattan, New York City, and lived on Long Island, New York, most of his life. He received his training in mechanical engineering at MIT and RPI and the degree of Bachelor of Science in Science from Adelphi College (now University).

He worked first for several years as a certified Ordnance Proof Director, testing tanks and self-propelled artillery for

the U. S. Army at Aberdeen Proving Ground in Maryland. Sam then joined Pall Corporation, a leading manufacturer of ultra-fine fluid filters, becoming Manager of Support Services. He worked on the development of a probe-type ultrasonic fluid filter element cleaner, and was later responsible for upgraded models.

He left Pall after 15 years to promote a line of miniature ultrasonic probes, then used primarily as biological cell disruptors and in ultrasonic soldering irons, and later served as applications engineer for dielectric oil pumping stations.

Sam then joined Heat Systems-Ultrasonics, Inc. (now Misonix Incorporated), where he was instrumental in bringing out a new line of ultrasonic cell disruptors, developing it into the leading ultrasonic liquid processing equipment (now made by Qsonica). As Director of Technical Services, Sam lectured widely and developed unique accessories and procedures, including the modern cup horn, sapphire tips, a patented continuous flow cell, and a novel means of determining surface cleanliness using ultrasonic ablation. He wrote many monographs (application notes and technical notes and bulletins) about this field, still in use, and two major articles on ultrasonic liquid processing, still widely distributed as reprints.

Sam has worked closely with the Environmental Protection Agency and ASTM, specifying

or rewriting test methods utilizing ultrasonic probes to improve procedures.

In January of 1990, Sam began an on-going independent consultancy in ultrasonic processing with the intent of forwarding the practical application of high-frequency sound to change materials. He keeps active in his other forté, technical support, both of customers, representatives, and distributors, and of R&D and engineering staff; thus freeing the latter from what (to them) are arduous chores.

Sam is also still active in ultrafine filtration, writing technical manuals on filtration and consulting on the application of ultrasonics to filtration, both for cleaning of filters and to improve filtration efficiency. He has also been a consulting technical writer and publisher in mechanical, electro-mechanical, and fluid systems for many years. In addition, he is contracted to write a book on high-intensity ultrasonics, takes oral histories, and writes and lectures about history, especially the history of technology as it applies to ultrasonics and transportation. Sam was instrumental in saving the remnant 1908 Long Island Motor Parkway, (a world's first) and now a bicycle/walk trail. He is the leading expert on the first production diesel locomotives. He runs a massive website, <http://sbiii.com> covering all these many areas and more.

We are delighted that Sam has accepted his honorary membership and look forward to his continuing contribution to ultrasonics.

Students Benefit from UIA Symposia

UIA has a long history of encouraging students interested in ultrasonics. The annual student poster program has brought the brightest graduate level students together with the broad range of ultrasonic professionals in the medical, industrial and academic segments of the various industries in which ultrasound plays an important role.

Andrew Mathieson says of his UIA experiences:

I have attended two UIA symposia as a research student; 2010 in Boston, USA and 2011 at the University of Glasgow, UK. I found the mix of presentations and workshops delivered by academic researchers and industrialists gave valuable exposure to many diverse, but very relevant, areas of ultrasonics which were new to me. Networking is an important component of the symposium, giving it a relaxed atmosphere, which easily allows students to discuss their research with highly experienced people in the medical and industrial ultrasonics communities. Furthermore, the student poster competition allows discussion of your own research, with the benefits of possibly developing your understanding and knowledge, or simply earning you some cash."

Andrea Cardoni notes, *I attended the annual UIA Symposium for the first time back in 2002 whilst I was a Part-time PhD Student and Research Assistant at the University of Glasgow, UK. Since my research was focused on Power Ultrasonics applied to industrial processes, I was interested to meet people working at companies within this field. The nice surprise was that participating at an UIA Symposium not only allowed me to achieve this aim, but it also helped me to establish a long-lasting relationship with people from a wide range of backgrounds and ages.*

Ultrasound pioneers, young engineers and researchers, firm executives, sales people, etc. meet every year to learn and openly discuss what is new in this amazing branch of science and how this knowledge can be applied.

The UIA has managed to perfectly blend academic and industrial world interests to boost a wonderful discipline wherein a lot still can be done. There is no doubt that the secrets behind all this are the passion, expertise, openness and modesty that older mem-



Dr Andrea Cardoni, R&D and Technical Director at PUSONICS SL, Spain



Andrew Mathieson, winner of the 2011 medical session student poster competition

bers have managed to transfer to the new ones throughout the years. This genuine desire to put ideas in practice is also at the heart of the recently started company I have joined.

2012 UIA Symposium Call for Student Posters

The Ultrasonic Industry Association invites you to submit a 200 word abstract for consideration of presentation or poster on 16 – 18 April at its 41st Annual Symposium in **San Francisco, CA, USA**, at the Mark Hopkins Intercontinental Hotel. Plan now to join UIA for this international conference featuring the best of ultrasound from around the world. For more information, please go to <http://www.ultrasonics.org>

- ❑ **Industrial Applications:** NDE, Measurements, Cleaning, Atomization, Materials Processing, Effluent Processing, Joining and Fastening, Welding and Cutting, Sonochemistry, Underwater Applications, Remote Sensing, Transducer Design/ Materials.
- ❑ **Medical:** Surgical, Therapeutic, HIFU/LIFU, Bioeffects, Tissue Characterization, Bio-Acoustic Microscopy, Transducer Design/Materials

Deadline: 16 March 2012

Important Information: Bio-sketches and presentation suitable for inclusion in electronic proceedings must be submitted to the UIA office no later than **16 March 2012**. **Accepted student presenters receive a discounted registration fee of only \$75 for the Tuesday workshops and poster session. A cash prize will be presented to the top poster.**

Please type or print your information below

Presentation Title _____
 Authors _____
 Presenters _____
 Main Contact Name _____
 Address _____
 City _____ State/Prov _____ Country _____
 Phone _____ Email _____

Symposium Chairs:

Symposium: Daniel Cotter ▶ daniel.cotter@integralife.com

Industrial: Leo Klinstein ▶ lklinstein@dukcorp.com; Dr. Patrick Harkness ▶ patrick.harkness@glasgow.ac.uk

Medical: Robert Muratore ▶ wave@quantumnow.com; Dr. Damien Walmsley ▶ A.D.Walmsley@bham.ac.uk

Workshop: Dominick DeAngelis ▶ ddeangelis@kns.com

Poster: Margaret Lucas ▶ Margaret.Lucas@glasgow.ac.uk; Tony Crandall ▶ Tony.Crandall@itt.com

Please submit this form to uia@ultrasonics.org

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A President's Letter

The next generation of UIA is already beginning to show itself, with strong attendance and presentations from pre- and post-grad students at the last few Symposia, showing novel research spanning healthcare, to oil and gas industry applications. With this injection of fresh and exciting ideas, comes a new way of communicating - social media - which may be alien to some, but which is rapidly becoming the most instantly accessible means of passing on information in business, science and engineering alike.

I'm pleased to say the UIA is now up and Tweeting - please follow us on @uiatweets as we pass on news and information about ourselves, our forthcoming events, and also updates from our Sustaining Members. And why not tag your own technology and research updates with #uia too, so we can keep abreast of how our community progresses?

This first step into social media is just part of a series of enhancements which we'll be making to your UIA membership in the coming months, which is designed to extend our relationship with you beyond that of an Annual Symposium, and 'Vibrations'. Of course, those are here to stay, and we're adding more. And don't forget we're always open to new ideas from our members, for what we can do for you.

Mark Hodnett



Mark Hodnett

2011 - 2012 UIA Board of Directors

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How can ultrasonics enhance the value of your business?

UIA is the international business forum for users, manufacturers, and researchers of ultrasonics. Our members use acoustic vibrations to improve materials, industrial processes, and medical technology. We call this "powering sound ideas."

Thanks to our Sponsors and Exhibitors!

