Volume 31 Issue 3: 2022 Fall 2022

ultrasonic industry association
UIA
powering sound ideas

Vibrations

Powering Sound Ideas

UIA51: 24–26 April 2023 in Utrecht, The Netherlands

The UIA is looking forward to an engaging symposium chaired by Dr Andrew Feeney, Lecturer in the Centre for Medical and Industrial Ultrasonics at the University of Glasgow.

The three-day symposium will feature a day focusing on industrial applications on Monday, with medical applications on Wednesday. Subject-specific topics of current interest and importance in ultrasonics will be central to discussions among delegates on Tuesday, followed by poster presentations and a laboratory tour. To conclude Tuesday, delegates will be invited to a canal tour leading to the Oudaen Brewery, where dinner and a tour will take place.

Utrecht was selected for our symposium due to its central location in the Netherlands, and importantly ideally situated in the vicinity of universities with ultrasonic research activity. These include UMC Utrecht, which hosts the Center for Image Sciences (CIS), a Focused Ultrasound Foundation Centre of Excellence; Eindhoven University of Technology, which hosts PULS/e (Photoacoustics & Ultrasound Laboratory Eindhoven); and Delft University of Technology. Utrecht can be reached via a thirty-minute train journey from Amsterdam's Schiphol Airport.

UIA 51
powering sound ideas
24 - 26 April 2023
Karol V Hotel, Utrecht, The Netherlands

We invite you to look at the Call for Presentations information below, for registration, planning your trip with us to Utrecht, and our Tuesday evening event. We hope to see you there!

Inside this issue:

Call for Presentations: 31 January Deadline

UIA is accepting presentations in four areas:

- Industrial
- Medical
- Ultrasonic Basics
- Posters

Do you have a successful ultrasound application?

Some research that the industry would be interested in?

Maybe an update to previous research presented?

Submissions will be acknowledged and, when accepted, scheduled by the end of February.

Questions? Please call UIA at +1.937.586.3725 or email Fran Rickenbach at fran@meinet.com

Submit your presentation

Traveling to Utrecht

Utrecht is a quick 30 minute train ride from Schiphol Airport in Amsterdam and then a 5 minute walk to Karel V Hotel

Utrecht is conveniently located with both train and air access from throughout Europe.

Delta, KLM, American, and United provide direct service from US gateway cities to Schipol Airport in Amsterdam.

Since all trains in The Netherlands stop in Utrecht, arriving from Schiphol airport is a quick 30 minute train ride.

The Karel V Hotel is a delightful 5 minute walk from the Central Station. The ease of access to major European cities provides great opportunities for pre and post Symposium travel.

Grand Karel V: UIA51 Headquarters Hotel

Make your hotel reservations

What was once a 14th-century monastery and served as accommodation for knights & priests is now a luxury five-star hotel in the centre of Utrecht.

Step inside a beautiful monumental building surrounded by several large gardens. You can relax in one of our spacious rooms overlooking the green surroundings.

If you wish to book either Saturday, 23 April or Thursday, 27 April, you must include the days of the Symposium. The default is for a sole occupant—you can adjust check-in if you have a traveling companion staying in your room.

Due to room renovations, a complimentary upgrade is offered to our main building to the Superior (Empire Rooms and Suites).

Tuesday Evening Event: Oudaen Brewery

Utrecht's canals offer a unique view of the city

Our evening begins with a tour of the Utrecht canals as we board our boat near our hotel. Oudaen brewery is right in the middle of Utrecht: around 75,000 litres of beer are brewed in the wharf cellar of Stadskasteel (City Castle) Oudaen every year, according to traditional methods. Each beer has its own distinct character. You can sample beers amid copper kettles, tap your own beer from the uKeg, enjoy a tour of this fully-renovated, modern brewery in the heart of Utrecht., followed by dinner.

This event is included in your Symposium registration;

extra tickets for guests are available.

UIA51 is Multi-Access

Based on the success with offering UIA50 to virtual participants as well as those able to join in person, UIA is committed to a multi-access program.

The program will be scheduled according to the time in Utrecht. However, all sessions will be available on Zoom and then for on-demand viewing for all UIA51 participants.

Virtual participants will have access to all the presentations, including keynote speakers, industrial and medical session presentations, and the focused speakers on Tuesday morning. The question/answer sessions will be open to the virtual participants to ask their questions.

Poster presenters will be able to give a brief overview of their posters as well as having their poster and supporting data available online for symposium participants.

UIA51 Registration is OPEN!

LIVE REGISTRATION FEES:

Members
Before 1 February $650
From 1 February $899

Nonmembers
Before 1 February $850
From 1 February $999

Students $495

Poster Presenters
$199 (includes Tuesday and your choice of either Monday or Wednesday at no additional charge

Daily registration - Members
Before 1 February $299
From 1 February $425

Daily registration - Non-members
Before 1 February $499
From 1 February $599

VIRTUAL REGISTRATION FEES:

Members $650
Nonmembers $850
Daily - members $299
Daily - nonmembers $499
Students Full - $495
Students Daily - $199

Register NOW!

There is no substitute to being in-person, and for those of us that stayed all 3 days, you had the opportunity to talk and socialize with every attendee, which is unparalleled for any other technical conference!

UIA50 was a great conference, every year it brings industry closer to academia where the conversations and connections always aid understanding and collaboration.

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Utrecht is looking forward to hosting UIA51

Ultrasound in the News

Emerge, a company based in California, United States, is developing technology that brings physical touch to the metaverse.

The Emerge Wave-1 device uses ultrasonic waves to create the sensation of physical touch in the metaverse.

Feel the metaverse with your bare hands – using ultrasonic waves

In the metaverse, a virtual handshake will feel real, a tech start-up is promising. The metaverse is described as an immersive version of the internet, where we can experience virtual environments in 3D, instead of viewing digital content on a computer.

Emerge, a company based in California, United States, is developing technology it says allows people to physically feel what they see in virtual reality (VR).

The company is a World Economic Forum 2022 Technology Pioneer – one of 100 start-ups from 30 countries that are driving innovation through cutting-edge technologies.

What does Emerge's system let you do in the metaverse?
Emerge describes itself as a "social virtual connection" company that is bringing physical touch to the metaverse. When you greet someone in the metaverse with a high-five or handshake, you'll actually be able to feel their hand, the company says.

When you pick up or hold a virtual object, you'll be able to feel and interact with the object.

How does it work?
A tabletop panel called the Emerge Wave-1 device uses ultrasonic waves to create the sensation of touch. The panel is roughly the size of a 13" laptop and projects the ultrasonic beams into the air above and around its surface.

When users hold their hands above the panel, the ultrasonic waves map virtual objects they can see in their VR headset. Technology called haptic feedback then translates this into the feeling of touch.

Haptic feedback uses motion like vibration or shaking to simulate touch. For example, haptic technology is what makes your phone vibrate. Haptic motion can also be created using motors and air pockets.

Emerge has paired its Wave-1 device panel with the Meta Quest 2 VR headset (formerly known as Oculus) and its hand-tracking sensors. The ultrasonic waves can reach up to three feet (0.9m) above the panel and spread 120 degrees around it.

Are there limitations?
Because the ultrasonic waves from the Emerge Wave-1 come from one direction only, the range of tactile sensations it can produce is likely to be limited, a review on news site New Atlas suggests.

The range of apps and games the panel can be used with is also currently limited to content from Emerge. Linking Emerge Wave-1 to the wider library of the Quest system would be an "easier sell", New Atlas says.

https://www.weforum.org/agenda/2022/05/metaverse-vr-ultrasonic-tech-emerge/

Burst of ultrasound waves can break up kidney stones in 10 minutes

Delivering low-amplitude, high-frequency ultrasound waves could fragment a kidney stone more quickly than existing high-amplitude, low-frequency treatments

Bursts of ultrasound waves could break up kidney stones within 10 minutes, potentially offering a faster and less painful way to pass stones in the urine without surgery.

Kidney stones are crystals that form when waste products in the blood collect in the kidneys. Some people pass these without any discomfort, however stones can cause considerable abdominal pain if they get stuck in the kidneys or the ureter, the small tube that connects the kidneys to the bladder.

Relatively small kidney stones are often treated via shock wave lithotripsy (SWL), which involves delivering high-amplitude, low-frequency ultrasound waves to a stone for up to an hour, usually while the person is under sedation. This fragments the stone so it can be more easily passed in the urine. Larger stones may require surgery.

Jonathan Harper at the University of Washington in Seattle and his colleagues have developed a less painful treatment that also uses ultrasound waves, but at a lower amplitude and higher frequency, dubbed burst wave lithotripsy (BWL).

In its first human study, 19 people with 25 kidney stones between

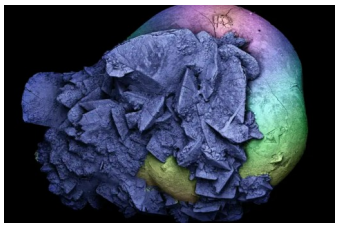
Ultrasound in the News, continued

them underwent BWL for up to 10 minutes. About 90 per cent of the stones' volume fragmented, from up to 12 millimetres to less than 2 millimetres. In SWL, about 60 per cent of stones are generally fragmented to less than 4 millimetres. A 4-millimetre fragment can usually be excreted, but more painfully than with smaller stones.

"Burst wave lithotripsy has the potential to be administered in awake patients without anaesthesia," says Harper.

Team member Michael Bailey, also at the University of Washington, previously used ultrasound waves to move stones closer to the kidneys' exit, which he hopes to combine with BWL.

"We'll start a study any day now in the clinic where people come in with stones, we break them and then we try to push them out so that they are really clear of the kidney when the person leaves," he says.



A magnified kidney stone displayed via a coloured scanning electron microscope image
KEVIN MACKENZIE/UNIVERSITY OF ABERDEEN/SCIENCE PHOTO LIBRARY

US Navy is developing sonic weapon that blasts the target's own voice back at them leaving them disoriented and unable to communicate

The US Navy is working on a non-lethal weapon that would render a person unable to communicate.

The handheld Acoustic Hailing And Disruption (AHAD) system records a subject's voice with a long-range microphone then amplifies it and plays it back on two distinct tracks, one nearly simultaneous with the original and another on a slight delay, perhaps a few hundred milliseconds.

Using a parametric speaker, it directs the sound back at the person speaking, with the resulting echo theoretically disorienting the person and impeding their attempts to continue talking.

'Due to the delayed auditory feedback effect, the target speaker's concentration will be disrupted, making it difficult for them to continue speaking,' according to the weapon's patent application, approved in early August.

The chatter would be inaudible to anyone else, New Scientist reports, 'so, as far as any bystanders can tell, the target will seem to have trouble speaking for no obvious reason.'

The AHAD patent was granted to Christopher Brown, an engineer at the Naval Surface Warfare Center near Bloomington, Indiana.

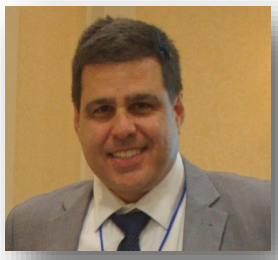
It's not clear if the device has been constructed or tested, though the Navy filed the patent in 2019.

A Soundlazer parametric speaker would focus the disorientating audio as the target, so bystanders would think they had trouble communicating for no apparent reason.

The handheld Acoustic Hailing And Disruption (AHAD) system records a subject's voice then amplifies it and plays it back on a slight delay, perhaps a few hundred milliseconds. "Due to the delayed auditory feedback effect, the target speaker's concentration will be disrupted,' reads the device's patent application, which was approved.

From the President

Planning for the UIA 51 Symposium is now underway with another European venue in the beautiful city of Utrecht, located in the heart of the Netherlands. We couldn't refuse Andrew Feeney's "twofer" offer to be chair again, coming-off his great success from the UIA50 in Warwick, and I think his consecutive chairmanship is a new conference precedent for the UIA. Albeit there will be multi-access options available again via Zoom, I can't stress enough the importance of attending our conference in-person, where you can just focus on absorbing all the information without interruption, and ask all the questions you want during, and in-between, the regular sessions or "unconference" opportunities with our world-class attendees. In case you missed it, our Tuesday evening event starts with a canal boat ride to the historic Oudaen Brewery that has been operating since the Middle Ages, followed by a hands-on tour with beer samplings from copper kettles, and concluding with dinner in a stunning 13th century property. Are you really still on-the-fence about attending in-person? We are also excited to offer our new "unlimited" membership this year that allows "full-access" to all the previous and future Virtual Collaborations, that have become a staple of the UIA brand all year round. Hope to see you in Utrecht in 2023!



Dominick DeAngelis

UIA President

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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.*

Let's work together to power your sound ideas. Contact a member consultant or company through our online Referral Network, learn about ultrasonics with our online primer, or meet industry leaders at our next symposium.

Important Dates

UIA 51
powering sound ideas
24 - 26 April 2023
Karol V Hotel, Utrecht, The Netherlands

19 January 2023: Virtual Collaborations

31 January 2023: Call for Papers/Posters Submission Deadline

24 - 26 April 2023: UIA51, Karel V Hotel, Utrecht, The Netherlands

June 2023: Virtual Collaborations

September 2023: Virtual Collaborations Mini Symposium

November 2023: Virtual Collaborations