

FROM THE ORGAN LOFT

MUSIC & MASONRY: A BEGINNING - THE CONNECTION OF MUSIC & LIGHT

As Masons, we are taught that Music is one of the highest forms of learning and a bridge to a deeper understanding of ourselves and the universe. We are instructed to hold Music in the highest regard and to do our best, regardless of the fact that most approach the art as novices, to apply the principles of Music to our lives. As most people aren't professional musicians, why is Music so important to our Masonic heritage and practice, and how can we begin to understand and appreciate Music in a way that helps us grow spiritually?

To begin with, let's take a peek at the connection of Music and Light. It is fascinating to discover that sound itself (pitch, frequency, basic tone) is at least a "brother" to Light. Both are measurable wave forms. More mysterious is the connection between the two called, "Sonoluminescence," or "The star in a jar!"

NOUN: The production of light as a result of the passing of sound waves through a liquid medium.* The sound waves cause the formation of bubbles that emit bright flashes of light when they collapse.

[*Human beings are at least 70% water!]

Article: "Sound waves size up Sonoluminescence"

By Katie Pennicott, Editor of PhysicsWeb

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When a gas bubble trapped in a liquid is destroyed by a sound wave, it can – under certain circumstances – emit light. The origins of this 'sonoluminescence' are still unclear, but a technique developed by physicists in France could help to test theories of the effect. Mathias Fink and colleagues of Université Denis Diderot created a device that increased the intensity of light emitted by such a bubble, and accelerated its collapse. The technique could even lead to a novel method for sparking nuclear fusion (J-L Thomas et al 2002 Phys. Rev. Lett. 88 074302).

Sound check

The pressure variations of a sound wave can make a gas bubble in a liquid periodically shrink and grow. At certain temperatures and pressures, the bubble may implode to generate a huge pulse of energy, which leads to the emission of photons. Many physicists believe that the gas inside the collapsing bubble is rapidly compressed and becomes so hot – typically 20 000 to 30 000 kelvin – that it becomes a plasma.

Most studies of sonoluminescence have focused on the effect of adjusting the pressure on the gas bubble – that is, using different frequencies and intensities of sound waves. But these experiments have been hampered by the narrow range of conditions under which sonoluminescence will take place.

According to Fink and co-workers, their technique overcomes these limitations. They filled a spherical glass cell with water and trapped an air bubble by focusing a 28 kHz standing wave onto it. This caused the bubble to oscillate in size between 5 and 50 micrometres in radius. Just as the bubble was about to collapse, the team switched on eight 700 kHz generators that were evenly spaced around the cell. These signals interfered constructively with the lower-frequency

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waves and made the bubble collapse more quickly, emitting nearly twice as much light as it did without them.

The team believes this method can be modified to make the bubble collapse even faster, which would lead to greater light intensities. This would allow physicists to study the relationship between pressure, light intensity and temperature in sonoluminescence in more detail.

Some physicists have suggested that a rapidly collapsing bubble could be used to compress nuclear fuel in order to initiate fusion reactions, although team member Jean-Louis Thomas emphasizes that this is some way off. Lasers are currently used to squeeze the fuel pellets in this technique, which is known as inertial confinement fusion.

‘The work done so far on sonoluminescence is largely academic and aimed at understanding the physics involved’, Thomas told PhysicsWeb. ‘We are still a long way from fusion but it doesn’t seem impossible’.

(end article)

Scientists are still baffled by this strange phenomenon where sound creates light and what it means for us. They have even have found evidence that medical ultrasound devices can produce sonoluminescence. See the fascinating brief YouTube video on this subject at: [YouTube.com](https://www.youtube.com/watch?v=...) - search for "sonoluminescence- is this nuclear fusion?" by DarkJedi8x.

So, you see, when we talk about music and sound we are dealing with something much more wondrous and mysterious than most of us realize. Light, the thing we desire most, and Music are connected. It is no mistake that Music was integral in the Ancient Mysteries, and why it remains a central directive in Masonic growth. In the next Trestleboard we'll begin to look at applying Music as a very important metaphor in living the Masonic life.

FRATERNALLY,

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