Abstract Submitted
for the DPP98 Meeting of
The American Physical Society

Sorting Category: 10 (experimental)

Sonoluminescence in an Acoustically Levitated Water Filled Shell P.J. RIVERA, Tennessee State University, R.B. STEPHENS, General Atomics, J.P. JONES, University of California, Irvine — The possibility of using shells levitated by acoustic waves to improve the conditions to study sonoluminescence was conducted. Single bubble sonoluminescence (SBSL) was generated using a 2 mm diameter water filled plastic shell, supported in air with 1 MHz sound waves. The bubble was generated and compressed with a separate transducer emitting pulsed 5 MHz acoustic waves which were focussed on the center of the suspended shell. This approach is considerably different from the typical generation technique of SBSL in that the acoustic power is coupled through the air rather than by a solid bond to the container. With this configuration, the water container can be substantially reduced in size and the luminescence pulse rate is probably not connected with cavity resonances. As a result, optical access to the spark is improved, water attenuation is reduced (water thickness $\sim$ 1 mm), and repetition rate can be considerably higher. This geometry presents problems and opportunities in controlling the gas content and temperature of the water. It might also be sensitive to the perfection of the enclosing plastic shell, so success is erratic. Details will be discussed.

Richard B. Stephens
rich.stephens@gat.com
General Atomics

☐ Prefer Oral Session
☒ Prefer Poster Session

Special instructions: Undergraduate Research

Date submitted: July 22, 1998 Electronic form version 1.3