

# Sonoluminescence: Star in a Jar

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Sonoluminescence is the production of picosecond flashes of ultraviolet light using sound energy in a liquid. It is not fully understood how it works. The spectrum produced is that of a black body at 6200 K if a frequency of 35 kHz is used. If the frequency is increased to 1 MHz, the spectrum becomes similar to that of bremsstrahlung.

See [http://www-phys.llnl.gov/N\\_Div/sonolum/](http://www-phys.llnl.gov/N_Div/sonolum/) for a history of sonoluminescence.

Dr. Putterman alluded to an interesting side-effect, the Xenon Water Hammer. See <http://www.globaltechnoscan.com/7thMay-13thMay03/sonoluminescence.htm>. Caution: the water hammer often releases enough energy to destroy itself.

Interesting aside: the mechanism of charge transfer in electrostatics is also not well understood. We need 10 eV to rip electrons from their atoms, or a temperature of about 100 000 K. Somehow, local hot spots are created during charge transfer processes.