

Website:

http://www.geocities.com/thomas_prevenslik

claims of delusion and fantasy. To wit, temperatures inside the imploding bubbles reach 10 million degrees and pressures comparable to 1,000 million earth atmospheres at sea level.

Because the SL researchers promoted the notion that a collapsing bubble produces high temperatures that initiate fusion, this falsity is now thought correct by the public, the tragedy of which is that in the manner of Greek sophistry, the truth is now denied by false public opinion in the US scientific community. To wit, the bubbles do not collapse at high temperature. By Le Chatelier's principle, the collapsing bubbles are only filled with water vapor that does not increase in temperature and pressure as the volume vanishes, and except for some non-equilibrium effects the vapor condenses without any temperature and pressure change. In contrast, the SL researchers erroneously assumed the water vapor is a non-condensable gas in reaching their high temperature estimates currently, anywhere from 5,000 to 2 million degrees.

The problem is the reputations of SL researchers are at risk if their high temperature hoax is exposed, as evidenced by the recent allegations of fraud by Taleyarkhan in the cover-up of bubble fusion experiments at Purdue University.

But Taleyarkhan may only be scapegoat for the larger SL community that has promoted the same incredible claim of high temperatures, although not claiming nuclear fusion as though they are less culpable if they claim temperatures of 5,000 degrees instead of 2 million degrees. One such claim appeared about one year ago. See www.nature.com/nature/journal/v434/n7029/full/nature03361.html 'Nature' reported the finding of excited atomic argon and oxygen ion states in the SL spectra from argon saturated sulfuric acid. The finding is significant in that the excited states have not been previously observed. But the interpretation of this finding by US science is that the SL light is caused by high temperature from the compression heating of bubble vapor. Extensions to the 18 eV necessary to excite the oxygen ion suggests compression heating of bubble vapor produced temperatures of ~ 200,000 degrees.

However, the high temperature plasma relied upon by US science to explain the SL light is precluded by Le Chatelier's principle that requires the vapor to condense to liquid without an increase in temperature. Thus, the bubble collapses near ambient temperature – not at 200,000 degrees!!!

To explain the SL light at ambient temperature, cavity QED induced EM radiation is proposed that produces VUV radiation in a collapsing bubble having Planck energies from 1 to 20 eV. Here QED stands for quantum electrodynamics and EM for electromagnetic. E.g www.geocities.com/sonoluminescence2004/SLrev4.PDF

During collapse, IR radiation from atoms on the bubble surface is suppressed because it simply can no longer fit within the bubble. As long as the water bubble wall is opaque and not transparent, the suppressed IR is trapped during bubble collapse. But the resonant frequency of the bubble is also increasing during the collapse, and therefore the frequency of the suppressed IR increases. So when the bubble resonant frequency coincides with VIS frequencies where water is transparent, the suppressed IR escapes as SL light. All this occurs at ambient temperature.

In Ar saturated water, cavity QED induced EM radiation produces the necessary VUV photons at ~ 10 eV to form the excited Ar* state at ambient temperature. By three body reaction with pairs of water neighbors, the Ar* atoms form Ar.OH* excimers that produce OH*spectral lines upon decomposition in the shock as the bubble walls collide. The OH* spectral lines are superposed on a background SL spectrum that is nothing more than cavity QED induced EM radiation itself.

Cavity QED induced EM radiation featuring variable frequency lasing mechanism producing high energy VUV photons to 20 eV finds utility by producing photons, electrons, and ions at ambient temperature, the embodiments of which are protected by US patent pending.

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