

Abstract Submitted
for the DFD05 Meeting of
The American Physical Society

Mechanoluminescence from Acoustic Cavitation NATHAN ED-
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— The external effects of acoustic cavitation- the formation, expansion, and implo-
sive collapse of bubbles in liquids irradiated with ultrasound- include turbulent flow,
shock waves, and microjetting. To study these effects we have looked at mechano-
luminescence (ML): light produced during any mechanical action on a solid. We
report for the first time the ML of sucrose and resorcinol induced by acoustic cavi-
tation in alkanes. The spectra of ML induced by cavitation resemble other sources
of ML but with more intense gas discharge relative to the crystal luminescence. It
is known that as the strength of the mechanical action on the solid is increased the
intensity of the gas discharge increases; this gives evidence of the extreme external
effects of cavitation. We have also observed other discharge products not seen be-
fore in ML including CH, C₂, and CO (when oxygen is present). The effect of liquid
vapor pressure (VP) has also been studied; as lower VP liquids are used the ML
intensity of the gas discharge increases. In high VP liquids no helium gas discharge
is observed, but with very low VP liquids the gas discharge is very intense.

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Date submitted: 02 Sep 2005

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