OUTLINE OF ACOUSTIC EMISSION EXPERIMENTS PERFORMED WITH A PERSON REPUTED TO HAVE PARANORMAL METAL BENDING ABILITIES

R. S. Hawke

Lawrence Livermore Laboratory, University of California
Livermore, CA 94550

January 11, 1979

ABSTRACT

This outline summarizes the design, use and results of an acoustic emission experiment intended to investigate paranormal metal bending phenomena. The experiment was designed not merely to verify or refute the occurrence of paranormal metal bending, but rather to gain some insight into the phenomena occurring in a test specimen while bending was attempted. Although no significant bending was observed during the experiments, acoustic emission signals typical of single grain or grain boundary fracture with and without evidence of plastic strain-induced emission were recorded during periods of time when there was no contact with the test specimens. These results are consistent with those of Crussard (1). Further experiments are warranted.

lurgical phenomenon.

4. A. E. signals are very distinct from all forms of touching, rubbing and other noise.

I. Introduction

A. Previous claims:

1. Metal can be paranormally bent without physical contact.

2. Metal seemingly becomes soft and pliable (subjective experience of subject).

B. Type of research needed:

1. Determine internal phenomenology.

2. Determine physical cause of phenomenology.

3. Develop and test hypothesis of actualization mechanism.

C. Reason acoustic emission (A.E.) was chosen:

1. Very sensitive.

a. Responds to a single intragranular or intergranular fracture or grain boundary slip or crystallographic change.

b. Good potential for use as a feedback device to subject.

c. High sensitivity <u>requires</u> non-contact, hence decreases possibility of deception.

2. Provides continuous record <u>during</u> the event and can be recorded for later analysis.

3. Can distinguish between different types of metallurgical phenomenon.

4. A. E. signals are very distinct from all forms of touching, rubbing and other noise.

II. Experimental design: (Ref. 2)

A. Acoustic emission components (See Figure 1).

1. A. E. Sensor

a. Lead Zirconate Titinate (PZT) element.

b. Bandpass, DC - 1 MHz, low Q, resonant at 140 kHz.

c. Open circuit sensitivity, 4.47 mV/Pa @ 140 kHz; 0.141 mV/Pa @ 1 kHz.

d. Shaped to fit and epoxied to bowl of standard stainless steel spoon.

2. Preamplifier

a. Gain 60 db.

b. Bandpass 1 kHz - 1 MHz

3. Amplifier

a. Gain 35 db.

b. Bandpass 1 kHz - 1 MHz

4. Video tape recorder

a. Modified to record positive and negative signals (Standard TV is non-symmetric pulse code).

b. Bandpass 30 Hz - 3MHz.

c. A. E. and room conversation recorded on video channel.

d. Auxillary audio channel (See Below).

5. Root mean square (RMS) voltmeter.

6. Pulse counter.

7. Strip chart recorders.

a. Record RMS voltmeter and pulse counter outputs.

B. TV video camera and recorder (Figure 2).

1. Standard System

a. Used to record the location of people and objects.

b. Used to record the response of the logic probes used in diagnostics.

c. Used to monitor the laser beam position which monitors the degree of bending.

C. Other diagnostics:

1. Electric field on spoon.

a. Logic probe connected to vise and spoon.

b. Light emission whenever input signal is greater than 1 V, DC - 1 GHz.

c. Logic probe light output recorded with TV vidicon.

d. Background electromagnetic (EM) effects.

i. Below logic probe threshold when not touched.

ii. Above threshold when touched.

2. Magnetic field near spoon.

a. Air core inductor placed beneath spoon handle and connected to logic probe.

b. Coil inductance 30 mH.

c. Bandpass 1kHz - 10 MHz.

d. Background EM effects.

i. None.

3. AM radio

a. Tuned to 1600 kHz at end of band (no broadcast station).

b. Output connected to logic probe and auxillary audio input to A.E. video recorder.

c. Background EM effects.

i. None.

4. Laser beam bend detector.

a. HeNe laser beam reflected off bottom of spoon bowl and down onto table with target.

b. Position of beam on target changes with spoon bending.

c. Beam position on target recorded by vidicon TV system.

III. Experimental protocol

A. Spoon and vise could not be moved during experiment.

B. Spoon could be lightly touched by subject for short periods of time but subject was informed that touching obliterated any useful result that might be present while touching occurred and hence was to be minimized if not totally avoided.

1. Logic probe connected to electric field detector provided record of spoon touching.

2. A.E. System provided record of noise if the spoon was rubbed.

3. TV vidicon provided record of hand or finger in proximity of spoon and vise.

C. Experimental sessions were about 1 hour long.

D. Sessions had subject and 2 or 3 observers present.

IV. Experimental results:

A. At least 4 clear instances of A.E. events occurred with one subject during one session.

1. Records verified events occurred while spoon and vise were untouched.

2. Sufficient bending to move the reflected laser beam was not observed.

a. Normal elastic bending (without A.E.) prior to plastic deformation (with A.E.) would have caused an observable displacement of the laser beam.

3. The events were typical of single grain or grain boundary fracture with and without evidence of plastic strain induced emission following. (See Figure 3A and 3B).

4. No anomalous A.E. events were recorded during dry runs.

B. Fewer but similar results were obtained with one other subject.

V. Conclusions

A. Acoustic emissions were recorded in the presence of a person who claimed the ability to paranormally bend metal.

B. Elastic deformation was not observed.

C. Observable plastic deformation did not occur.

D. Further experiments are warranted.

E. Future experiments should be more sensitive to minute bending.

F. Other materials and crystalline structures should be investigated.

References

(1) C. Crussard and J. Bouvaist, Memoires Scientifiques Revue Metallurgie, p. 117, February 1978.

(2) The assistance of A. E. Brown and C. A. Tatro throughout the design, implementation and interpretation of the experiments, is greatly appreciated.

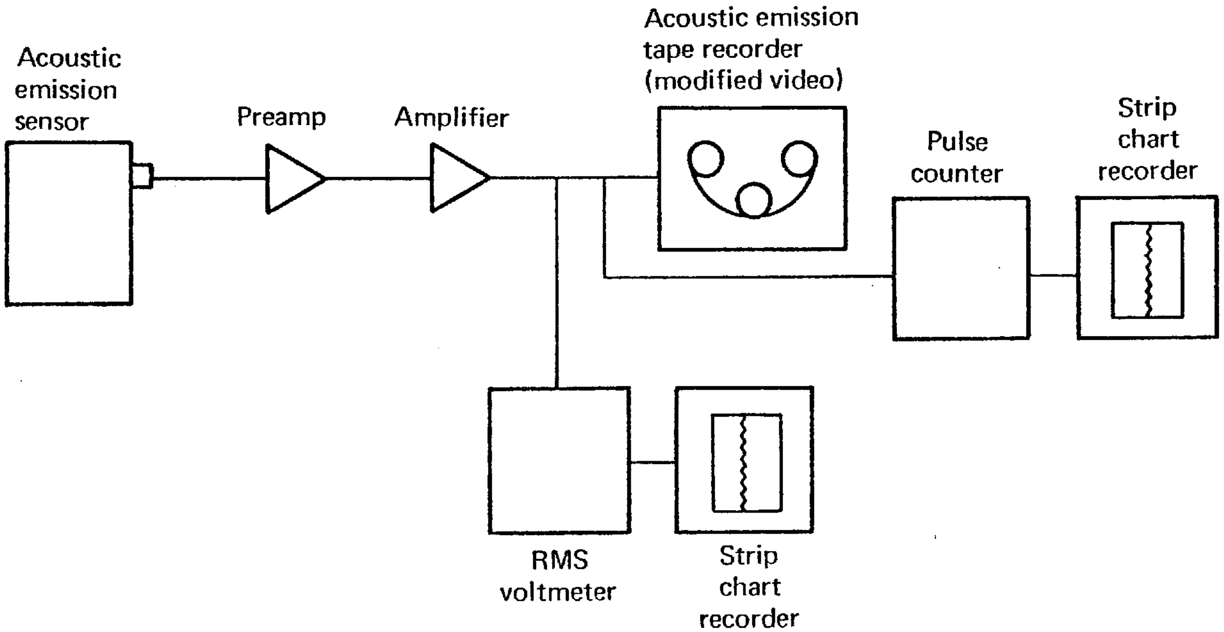
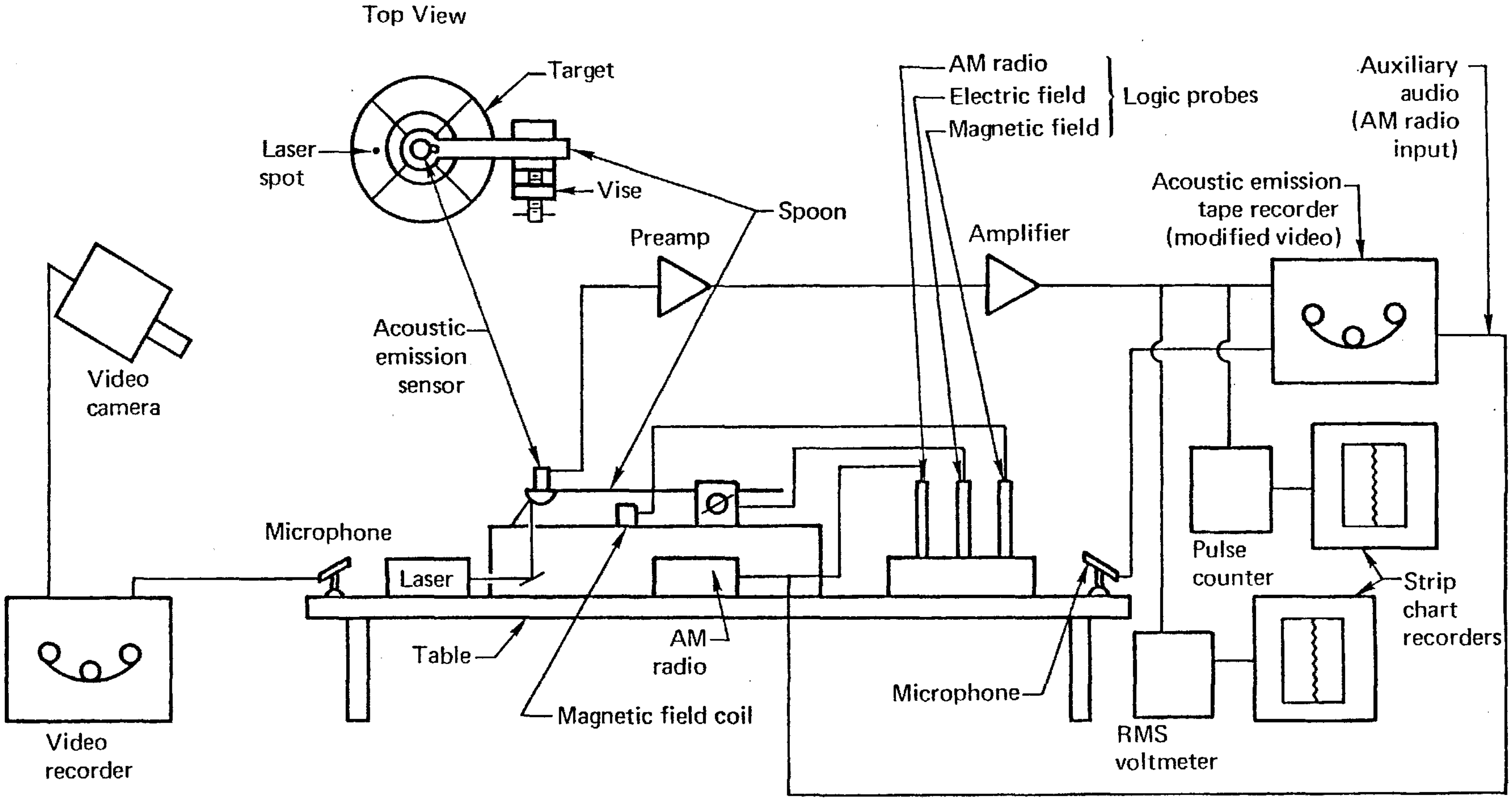


Figure 1

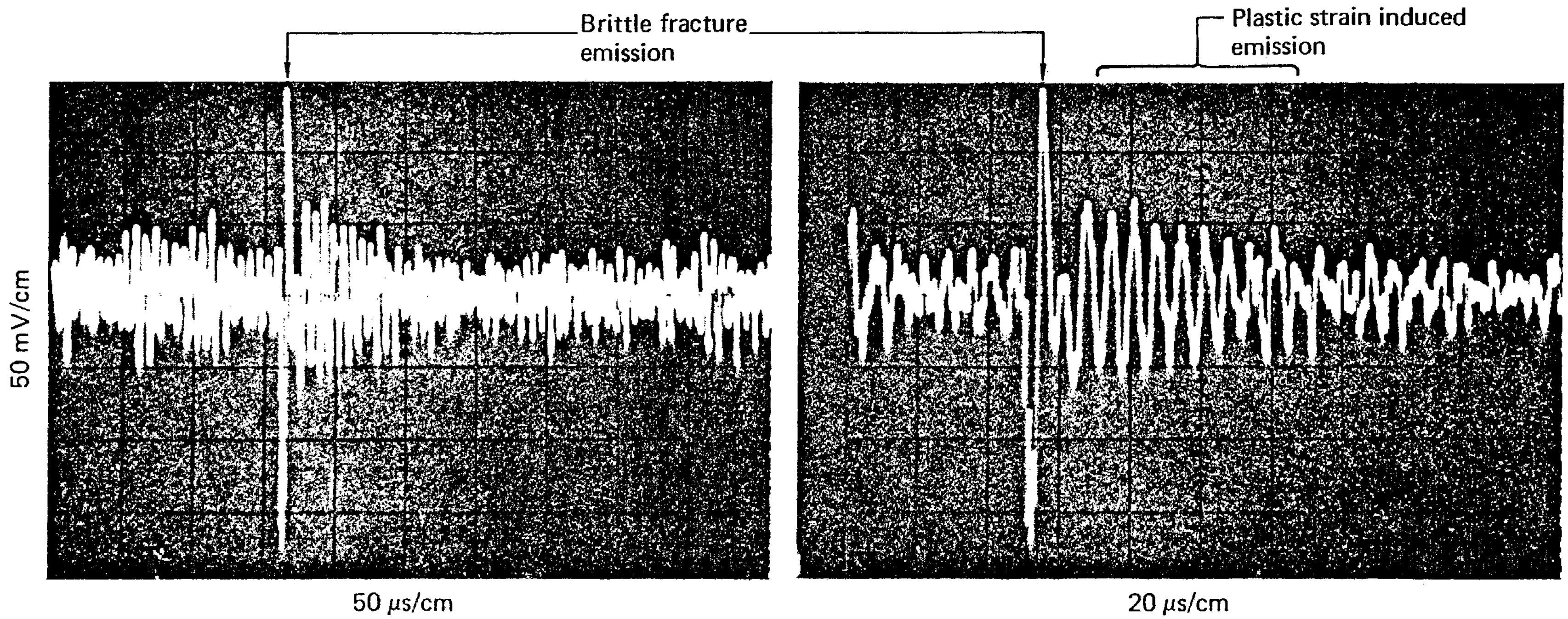
IN STRICT CONFIDENCE

Approved For Release 2003/09/08 : CIA-RDP96-00787R000200130003-5



IN STRICT CONFIDENCE

Figure 2



IN STRICT CONFIDENCE

Figure 3A and 3B

Approved For Release 2003/09/08 : CIA-RDP96-00787R000200130003-5