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The Ball Lightning State In Cold Fusion

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There is evidence of microscopic ball lightning in the most common kinds of cold fusion and transmutation experiments. Photographs of ball lightning effects from four groups are shown in this article. There is a state of existence of material and energy like that of ball lightning. Common characteristics and effects of ball lightning are described, as are simple hypotheses and conjectures.

1 Introduction

There is evidence of microscopic ball lightning (BL) in electrolysis cells used for cold fusion (CF) and other in other kinds of cold fusion experiments. These microscopic objects are clearly associated with evidence of transmutation, excess heat, and other anomalies. Atmospheric BL exhibits a variety of behaviors and a broad range of size. These microscopic phenomena exhibit similar characteristics. Several groups and individuals have reported BL effects in transmutation or CF-related experiments; photographs from four of these groups are shown in this article. The report of ball lightning activity, the discussion of ball lightning characteristics and effects, and the ideas and hypotheses presented here may help researchers recognize and utilize the ball lightning effects.

2 Photographs From Four Groups

There is evidence of ball lightning in cold fusion[1]. Here are photographs from four groups of cold fusion and transmutation researchers who worked independently. The photographs provide evidence of BL phenomena in the experiments.

2.1 Lewis

In 1996, I examined the pieces of the nickel-on-plastic microsphere electrolysis cell called Ni/plastic Run #8 in the Fusion Studies Lab at the University of Illinois at Urbana-Champaign. The cell contained little plastic beads that were coated with about 650 angstroms of nickel by a patented electrode-sputtering technique. This cell and the anomalous appearance of a wide range of elements have been described by Prof. George Miley[2] in several articles. The electrolysis was performed in his laboratory at UIUC. The pictures were taken by using a digital camera attached to a high-quality optical microscope. After the experiment was over, I examined the used microspheres, the Lexan plastic casings for the microspheres, and both sides of the Ti anode and cathode for evidence of BL marks. I also examined one or two other similar cells from similar experiments in the lab. In Miley's ICCF10 lecture, he said that it was this Run #8 that exhibited by far the most excess heat. This cell also exhibited more ring markings, pits, microscopic grooves and tracks, and other evidence of BL than did the other cells I examined. These seven photographs are at a magnification of 200x or 400x and are of markings on the two Lexan casings, two microspheres, and the Ti anode and cathode of Run #8.

Figures 1 and 2 are of the post-run microspheres; Figures 3 and 4 are photographs of the titanium plate cathode and the titanium plate anode of the cell. These plates enclosed the microspheres in a Lexan plastic casing. Figures 5, 6, and 7 show ring marks on the casings. Two different casings were used for this run.

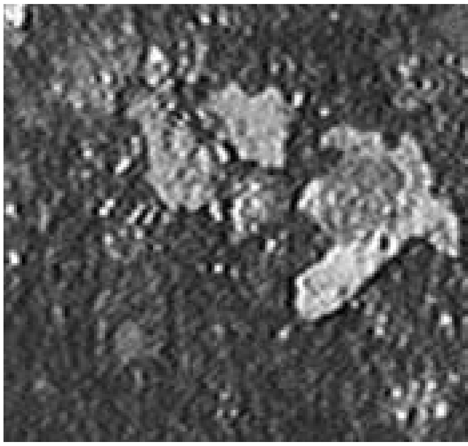
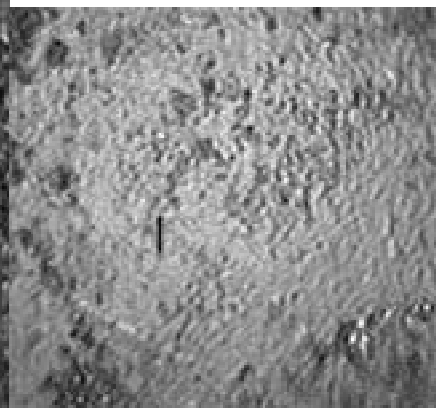



Figure 1. **Rings on Metal Layer on Bead from Ni/Plastic Run #8.** Two ring marks on the thin layer of Ni metal that remained on the plastic microsphere. This part of the microsphere was also covered with a few other rings and many pits, grooves, and chain marks. Most of the metal was gone on this part of the bead. Figure 19 from Ref. 3. Figure 2. **Ring on Plastic Substrate of Bead from Ni/Plastic Run #8.** The ring mark is just above the dark black arrow. It is very faint. It is oval shaped, which suggests that the ring may have been oval or elliptical or that it hit the surface at an angle. Other marks are also visible. Figure 22 from Ref. 3.

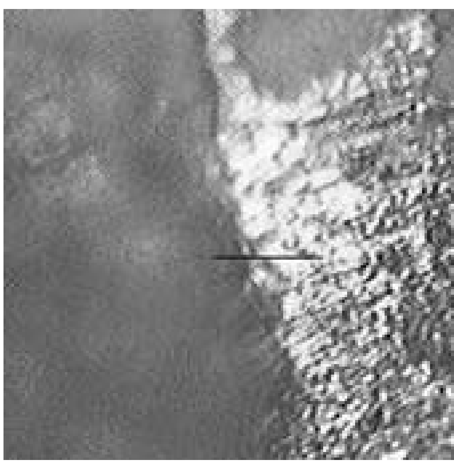
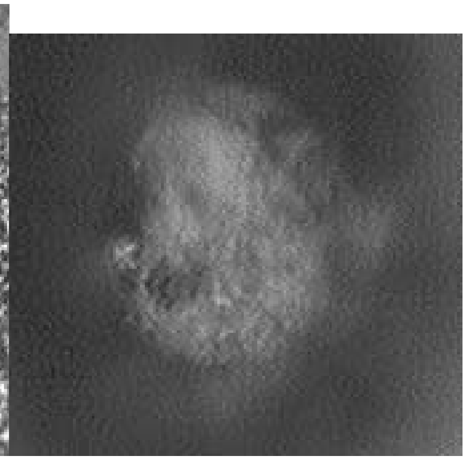



Figure 3. **Ring Mark on Titanium Plate Cathode of Ni/Plastic Run #8.** Magnification 400x. The black line points out the mark. It is about 18 micrometers wide and seems to show that a ring of discreet plasmoids landed on the surface and draped over the texture of the electrode. Two or more faint rings of about the same size seem to be connected to it at its bottom left-hand corner. There also seem to be other rings scattered around. Fig. 5 from Ref. 4. Figure 4. **Ring Mark on Titanium Plate Anode of Ni/Plastic Run #8**. Magnification 400x. The dark ring mark is on the bottom of a pit on the side of the anode facing away from the microspheres. Many other micrometer-sized pits are on this side, and there are relatively few on the side that faced the microspheres. The pit itself is about 200 micrometers wide at the surface of the anode, but narrowed down to the white area that is about 100 micrometers in diameter. The ring mark is about 20 or 30 micrometers wide, which is the regular size of BL marks in electrolysis cells reported by Matsumoto. The groove or ditch marks may be due to BL, and are also like grooves left by tornadoes[5]. The grooves are about 10 or 20 micrometers wide. At lower magnifications, the pit looks like a dark spot. Fig. 17 from Ref. 3.

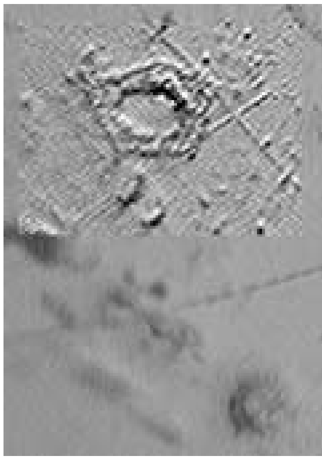
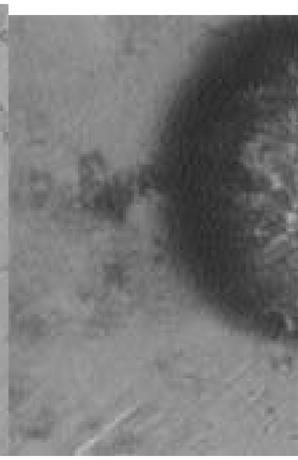
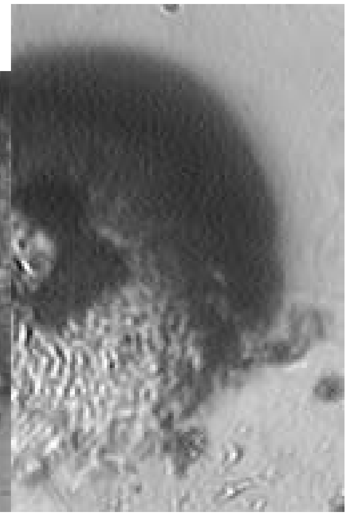




Figure 5. **Lexan Plastic Casing #1 of Ni/Plastic Run #8.** Magnification 400x or 200x. Shows two rings. The top ring was computer processed to define edges. Fig. 8 from Ref. 4. Figure 6. **Lexan Plastic Casing #2 of Ni/Plastic Run #8.** Magnification 200x. Shows a group of small rings. The markings are seen from the outside of an intact casing. The picture shows the convex impression left by a microsphere that was in contact with the inside of the casing. The bead developed both ridges and ditch markings. To the left of the bead impression are the faint marks of rings that are about 20 micrometers wide. Perhaps one BL hopped around, or a group of similarly-sized BL was emitted. These markings look like Fig. 8, which was taken by Matsumoto. Fig. 2 from Ref. 4. Figure 7. **Lexan Plastic Casing #2 of Ni/Plastic Run #8.** Magnification 200x. Shows a ring mark to the right of the bead impression. The picture shows the convex impression left by a microsphere that was in contact with the inside of the casing. The bead developed both ridges and ditch markings. A BL may have left a trail mark in the plastic or bored through. The ring mark is about 25 micrometers in diameter. Fig. 4 from Ref. 4.

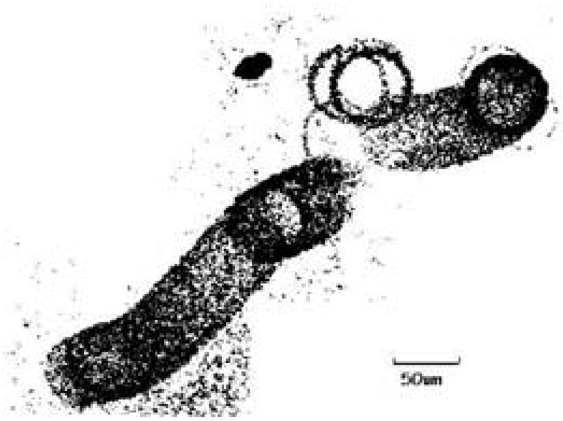
The photographs shown here were taken by E. Lewis of various components of Ni-Plastic Run #8 in the Laboratory of Professor G. H. Miley at the University of Illinois at Urbana-Champaign in 1996. His cooperation in allowing this work is gratefully acknowledged.

2.2 Markings from Matsumoto, Shoulders, and Savvatimova

Photographs taken by Matsumoto, Shoulders, and Savvatimova are reproduced here. Their permission in allowing me to reproduce these photographs is gratefully acknowledged.

The photograph in Fig. 8 was taken by Matsumoto of markings on thin sheets of Acrylite plastic set up as targets outside the 1-mm-thick Acrylite plastic bottom of a glass container. This picture is of a mark that was found on the front side of the second sheet of a series. This suggests that the object may have traveled through both the bottom of the container and the first sheet of Acrylite or through the glass and between the plastic sheets. This is clearly reminiscent of BL behavior[5]. The hopping characteristic is like that of BL and whirlwind behavior[5].

The photographs in Fig. 9 were taken by Savvatimova of markings that were both inside and outside her discharge device. She reported discovering many markings that are like those reported by Matsumoto on X-ray films around her apparatus and that there was a correlation between number of markings and isotopic and chemical changes.



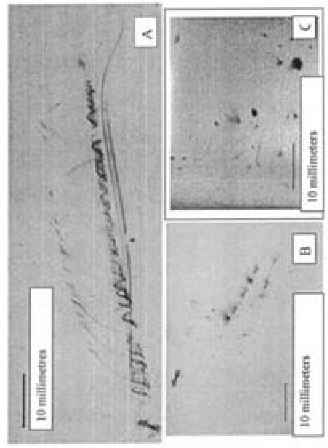
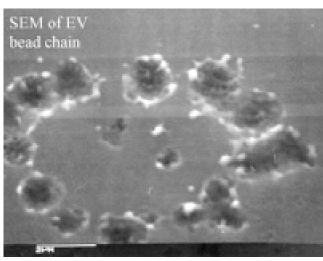
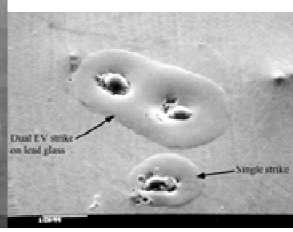


Figure 8. **Markings on Acrylite Sheets Set Outside of Discharge Device.** From Fig. 5 of Ref. 6. Figure 9. **X-ray Film Outside (A, B) and Inside the Vacuum Chamber after Deuteron Irradiation in Glow Discharge**. Fig. 3 from Ref. 7.

The objects in Shoulders' experiments that he calls EVs behave in ways similar to BL. They are a type of BL.





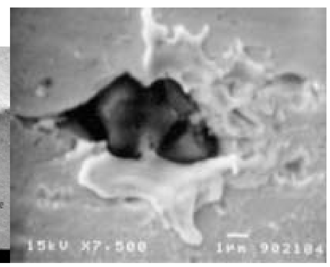


Figure 10. **Ring Mark in Witness Plate**. This is a typical type of ring marking. Fig. 1 from Ref. 8. Figure 11. **Strike Marks on Lead Glass**. These marks show the heatless motion of atoms. Shoulders reports that there is no evidence of heat. Fig. 7 from Ref. 8. Figure 12. **Impact Site.** Shoulders reports that chemical analysis of this spot showed many transmuted elements. Fig. 12 from Ref. 9.

2.3 Conclusion

Matsumoto and K. Shoulders have analyzed sites of BL and EV markings and found that they contain elements that they think are due to transmutation. Ni/Plastic Run #8 exhibited both the most markings and the most excess heat of the two or three cells I studied from the lab. Savvatimova(7) wrote that there was a correlation between the number of markings on X-ray film that were placed both inside and outside the apparatus and the isotopic and elemental change in her experiments. These are evidences that BL is involved in low-energy transmutation effects.

3 Discussion

This research is based on the premise that ball lightning is related to cold fusion. Four conjectures are possible:

1) Ball lightning causes transmutations.
2) A state of atoms, of matter and energy, exists that is different from physicists' expectations.
3) In the presence of ball lightning phenomena, atoms exhibit unusual abilities to travel, divide, or clump.
4) Atoms may enter a state in which they behave like ball lightning.

If the presupposition that everything consists of different forms and sizes of the same basic phenomena and is like ball lightning is valid, then it follows that what we call gravity and matter are not different from everything else–that is, that gravity is an effect of more basic postulates of physics, not a postulate itself, as in the last paradigm.[a] It is evident that BL occurs as a ball (and often in other shapes) and is structured and organized. The presupposition would mean that what we call gravity is an effect of electricity (it is known by experience that plasmoids such as BL may convert entirely to electricity), but that the definition of electricity and magnetism must be changed from that of the 20th century paradigm. In the Q.M.-Relativity paradigm, space-time and mass-energy were basic ideas, or postulates. The mass-energy *caused* changes in space-time. Gravity was a distinct postulate, which is why there could not be a unification of gravity and other ideas.

Evidence for the anomalous behavior of atoms is the fluidlike heatless flow of material associated with moving ball lightning, i.e., Fig. 11. Ken Shoulders found no evidence of heat there, though the material with a high melting point clearly moved on the surface. Several hundred years ago, Benjamin Franklin researched an effect he called "cold fusion." He meant by this term the strange heatless melting or fusing of metal objects struck by lightning or exposed to electrical discharge. He wrote that coins held in a pocket that was struck by lightning were found merged together without scorching the pocket and that a sword melted without scorching the scabbard that held it. Under certain circumstances, lightning, electricity or BL may cause atoms to change state. I call it a ball lightning state.

There are many anecdotal reports like Franklin's. It has been said that during tornadoes, soft things such as charred wood have penetrated hard things without damaging the softer thing. No matter what the wind speed, how can something penetrate something else without damage within the Q.M. and Relativity paradigm. But if one considers that ball lightning and tornadoes[5][b] are both events in which matter behaves in this manner (unusual motion without heat), then such effects are understandable. In addition, there are reports of unusual isotopes or rare radioactive elements found in deposits left by BL-like objects.

4 Characteristic and Effects of Ball Lightning

Ball lightning exhibits a variety of characteristics and effects. Ball lightnings occur in various kinds and sizes. They explode, bore tunnels, dig ditches in materials or in the ground, or pass through glass and plastic without visible effects on the materials. Some exhibit gravitational and magnetic effects. In nature, some BLs move or transport metallic objects and even nonmetallic objects such as leaves and branches. As was shown in this article, they leave ring marks, tracks, pits, grooves, and regions of unusual motion of atoms. Some books[10] and articles have reported on these anomalous behaviors and effects.

5 Conclusion

In conclusion, it was shown that the experiments of four groups that were reported to be associated with excess energy or transmutation were also associated with markings made by microscopic ball lightning. Characteristics common to natural ball lightning and microscopic ball lightning were described. Hypotheses and ideas about matter and gravity were presented.

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[a] See the discussion of how postulates of physics change periodically and of how postulates in a physics paradigm's premise are causal in the paper in this Proceedings entitled "'Cold Fusion' May Be Part of a Scientific Revolution."
[b] The referenced article explains that ball lightning and tornadoes are versions of the same phenomena.

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