PHOTOGRAPHS OF SOME COMPONENTS OF AN ELECTROLYSIS CELL

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For additional information, see: <u>Subjects / Plasmoids</u>.

Introduction

Are These Plasmoid Marks?

Plasmoid theory and modeling has a long history since at least the 1950s with the experimental and theoretical work of Noble prize winner Alfven and W. Bostick. Research was carried out to use plasmoids for atomic fusion, and it was found that discharge devices producing plasmoids would induce fusion, but on a very small scale relative to the energy expenditures. In the early 1990s, I developed a plasmoid theory resolving both cold fusion and ball lightning based on the experimental evidence of Matsumoto, Bostick, and K. Shoulders, and this theory has proved accurate and exactly predictive so far. One of the main experimental evidence that is necessary to show that the phenomena that is called cold fusion is a plasmoid phenomena is the verification of Matsumoto's production of plasmoid marks by heavy water- palladium, and regular water - nickle electrolysis cells. By microscopic observation of components of various regular water electrolysis cells at the Fusion Engineering Laboratory at the University of Illinois, I was able to find copious micrometer size plasmoid markings like those produced by Matsumoto, Shoulders, and Bostick and Nardi. An electronic camera that was attached to the microscope was used to photograph many markings, and pictures are shown here as examples. Though it may be that there is some chemical or mechanical cause for the markings that is unknown, it is more likely that these are actually plasmoid markings, showing a relationship of plasmoid production to transmutation, and providing further evidence of the validity of my plasmoid theory. I predicted that such markings as these would be produced by "cold fusion" devices.

In earlier articles(1,2), I proposed that atoms and particles are plasmoids, ball lightning is a kind of plasmoid and may be very tiny, and that there are very tiny ball lightning that are plasmoids emitted from electrolysis and discharge devices and other devices associated with excess energy and transmutation. But until now no one has reported confirmatory evidence of the production of tiny ball lightning in electrolysis cells. In several articles in **The Journal of Fusion Technology**, Matsumoto showed pictures of micrometer size trail, ring, pit, and other markings on components of both heavy water(3) and light water electrolysis cells(4) and on very thin sheets of plastic that are used to register particle emissions that are called nuclear emulsions. I recognized that the markings he showed were like those produced by plasmoids on materials(5) and like ball lightning marks. I found similar markings last year on the components a different kind of light water electrolysis device produced by the Ceti Company in which little beads are positioned between the anode and cathode. These markings may be confirmatory evidence that the production and emission of tiny ball lightning is part of the transmutation and excess current or heat reported from many such devices, that atomic phenomena is plasmoid phenomena, and that much material may be leaving parts of devices and traveling as moving plasmoids and depositing as plasmoid residues in various places both inside and outside of devices. The plasmoid residues may generally contain new elements or isotopes. Plasmoid residues have been found to contain new elements by both K. Shoulders and T. Matsumoto(6).

1)E. Lewis, "A Description of Phenomena According to My Theory and Experiments to Test It," manuscript article submitted to **Fusion Technology**, December 1992.

2)E. Lewis, "Concerning Production of Elements and Plasmoids," Extraordinary Science, 8, issue 3/4, (July, Aug, Sept, 1996).

3)T. Matsumoto, "Observation of Gravity Decays of Multiple-Neutron Nuclei During Cold Fusion," Fusion Technology, 22, no. 1, 164 (August 1992).

4)T. Matsumoto, "Cold Fusion Experiments with Ordinary Water and Thin Nickel Foil," Fusion Technology, 24, 296 (Nov. 1993).

5) V. Nardi, W. Bostick, J. Feugeas, and W. Prior, "Internal Structure of Electron-Beam Filaments," Physical Review A, 22, no. 5, 2211 (November, 1980).

6)T. Matsumoto, "Artificial Ball-Lightning -- Photographs of Cold Fusion," manuscript dated Jan. 17, 1995 presented at the ICCF-5, April 9-13, 1995, Monte Carlo, Monaco.

Body

These markings are found on various parts of an electrolysis cell that has been reported to cause elemental transmutation. I strongly suspect that they are marks left by what I call "plasmoids." But can any one offer another explanation for the ring markings and the other markings? Is there a chemical or mechanical cause?

These are pictures of a titanium cathode and two Lexan cell casings from nickel-plastic Run #8. An unused nickle on glass microsphere is shown in Picture #1, and two pictures by Matsumoto are included. Electrolysis was performed using little plastic beads that were coated with about 650 angstroms of nickel by a special, patented electrode sputtering technique. This cell and the anomalous appearance of a wide range of novel elements has been extensively described by Prof. George Miley in several articles(1)(2). The electrolysis was performed in his laboratory at the U of I. The pictures were taken by using a digital camera that was attached to a good optical microscope. I've found a variety of interesting and even very beautiful features on the various parts that I've looked at, and the marks strongly suggest the occurrence of a number of phenomena that most people would consider to be anomalous.

I would like to ask for comments about what the features in the photographs of this essay may be. I photographed these pictures and selected them to be put up on this web page because I strongly suspect that they are features of what I call plasmoids that are tiny micrometer size ball lightning phenomena. I have never heard of marks like these explained in another way, so I don't know what else these marks may be. The presence of these marks is a partial confirmation of my theory about plasmoids and my original ideas that T. Matsumoto at Hokkaido University produced tiny ball lightning phenomena during electrolysis of a palladium cathode that was associated with the apparent production of a wide variety of new elements(3) and the formation of micrometer sized voids between grains of his cathode, and grain-shaped voids(4) that were found upon analysis with EDX to contain deposits and even crystals of new elements. When I first read Matsumoto's article, I could see that his explanation that something was emitted and left the voids made sense, since there is no sign of any squishing or displacement of the metal grains around the voids inside the cathode. So after reading some books about ball lightning and reading his article, I suspected that there was the formation and emission of tiny ball lightning, and I suspected that atoms convert to light and electricity.

Many of the marks look very much like marks that T. Matsumoto has produced by both electrolysis and electrical discharge(5), and they also look like marks that K. Shoulders has produced by electrical discharge and that he has described(6) and shown to me(7). The marks that Matsumoto had produced by electrolysis look like marks produced by objects produced by V. Nardi and W. Bostick during electrical discharges through electrodes in gas(8). Bostick called these objects "plasmoids," using a term that used before him, and so I picked up the use of this term. The various pictures of plasmoid marks in Nardi and Bostick's article that are so similar to those produced by Matsumoto confirmed my idea(9) that Matsumoto had produced anomalously behaving ball lightning objects during electrolysis that were similar to those produced by electrical discharge.

The various parts of the cells including the beads show so many markings like these that the parts could be said to be covered with markings like these. I suspect that most or all devices associated with the phenomena of the appearance of elements may also exhibit similar features.

Jim Reding verbally gave me permission to publish my ideas and the pictures I have taken in any way I want to. But I was told to write that the CETI company does not support or back the publishing of my ideas. They don't approve of or accept my ideas. I have scores of high quality microscopic pictures of various markings of various cells that show a variety of important phenomena. I would like to put up many of these pictures. Would anyone be interested in putting up articles or pictures?

Citations

1)G. H. Miley and James A. Patterson, "Nuclear Transmutations in Thin-Film Nickel Coatings Undergoing Electrolysis," **2nd International Conference on** Low Energy Nuclear Reactions, College Station, Texas (September 13-14, 1996).

2)G. H. Miley et al., "Quantitative Observation of Transmutation Products Occurring in Thin-Film Coated Microspheres During Electrolysis," **Proceedings** of the ICCF-6, Hokkaido, Japan, (October 14-17).

3)T. Matsumoto, and K. Kurokawa, "Observation of Heavy Elements Produced During Explosive Cold Fusion," Fusion Technology, 20, 323, (1991).

4)T. Matsumoto, "Microscopic Observation of Palladium Used for Cold Fusion," Fusion Technology, 19, 567 (May, 1991).

5)T. Matsumoto, "Observation of Tiny Ball Lightning During Electrical Discharge in Water," sub. to **FT**, Jan. 23, 1994.

6)K. Shoulders, "Energy Conversion Using High Charge Density," Patent Number 5,123,039.

7)K. Shoulders, conversation at the **2nd International Conference on Low Energy Nuclear Reactions, College Station, Texas (September 13-14, 1996)**, Sept. 14, 1996.

8) V. Nardi, W. Bostick et al., "Internal Structure of Electron-Beam Filaments," Phys. Rev A, 22, no. 5, 2211 (Nov. 1980).

9) E. Lewis, "A Description of Phenomena According to My Theory and Experiments to Test It," manuscript article submitted to **Fusion Technology**, December 1992.

I would like to thank P. Bailey, president of the Institute for New Energy for helping me put up my articles, Prof. Miley for allowing me to photograph and publish these pictures, and Prof. T. Matsumoto for allowing me to post two of his pictures in this article.

Picture 1: Uncooked Glass-Nickel Bead

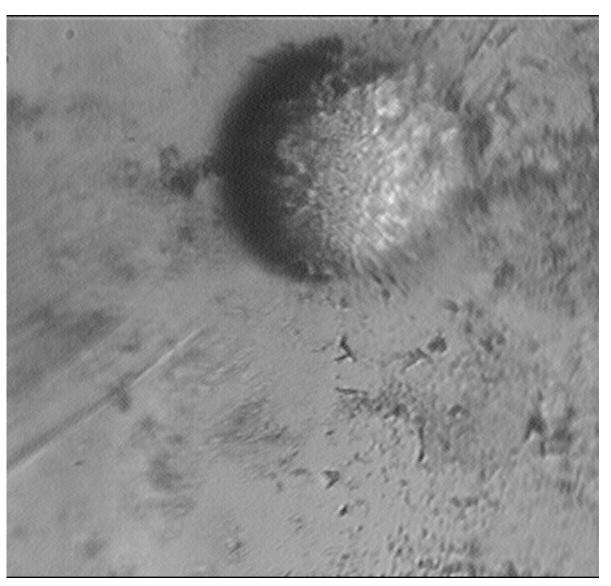
Color photograph of an uncooked glass-nickel bead, Magnification x400



The bead is strangely grooved, as if it was produced by plasmoids. I mean that the grooves seem to be like grooves that various kinds of ball lightning phenomena leave, and this suggests that the material of the thin film may have been laid down by the motion of plasmoids on the surface of the bead during the electrode sputtering procedure used to make the beads. Plasmoids are produced by electrical discharge devices.

Picture 2: Bead Impression on Lexan Casing and Emission Mark

Ni/Plastic Cell #8, casing #2, Magnification x200



This is a photograph of a part of one of the Lexan casings of the nickel-plastic run #8(1)(2). The markings are seen from the outside of an intact casing. The picture shows the convex impression left by a bead that was in contact with the inside of the casing.

There seems to have been much anomalous activity. The bead seems to have developed both ridges and ditch markings, and it seems to have emitted at least one plasmoid that left a trail mark on or in the casing to the left of the bead impression. The mark of an emission of one or more plasmoids seems similar to the one in Picture 3.

According to the phenomena produced by W. Bostick, T. Matsumoto and K. Shoulders, organized objects that I call plasmoids are emitted from electrodes in various kinds of electrolysis and discharge devices. The plasmoids are identical to ball lightning, since they behave like them in many ways(3). I proposed(3) that the phenomena produced by Matsumoto and K. Shoulders(4) were plasmoids, very similar to the plasmoid research of previous decades such as that of W. Bostick that encompassed astrophysical phenomena, and that the plasmoid phenomena and the plasmoid identity of substance was responsible for the presence of newly produced elements that were being reported then. Both the ideas of micrometer size ball lightning as well as the explanation of the anomalies associated with ball lightning and the anomalies associated with various electrolysis devices such as those used by Matsumoto as similar plasmoid phenomena are original ideas of several years ago. Matsumoto and others have accepted these ideas.

Like ball lightning, plasmoids may hop, skim on surfaces, travel through liquids, solids and gas, bore through materials leaving tunnels, or move on surfaces leaving ditches, residues including newly produced elements, or chemical discoloration in their path. This may be the first confirmation of Matsumoto's observation of anomalous traces from electrolysis devices involved with anomalous radiation and transmutation(5).

To the left of the bead impression are the faint marks of at least five rings that are about the same size, about 20 micrometers wide. They seem to be somewhat superimposed, and don't seem to be complete rings. They seem to be along the same plane of plastic, perhaps they are simply on the inside surface. But perhaps one of more plasmoids which were about the same size left markings the same distance from the inner surface. These ring marks seem to be similar to the one in the next photograph by Matsumoto. They remind me of a photograph of markings on plastic shown by Matsumoto in 1994 (this photograph is photo. 5 of Ref. (6)) in that the ring markings on the plastic also are about the same size and shape (about 55 micrometers wide), suggesting that a ring plasmoid hopped and skimmed. The plasmoids that left the marks that he showed were able to move through layers of plastic. The partial rings remind me of a partial, "broken" ring shown in Figure 7(7). The significance of such partial plasmoid rings is that it is evidence that the ring isn't rotating. It may be that the reason the marks on the casing are about the same size is that a single plasmoid ring hopped and left more than one ring mark.

By focusing the microscope, I could determine where in the depth of plastic a marking was. These ring markings seem to be somewhat near the inside surface of the plastic, or on the inside surface of the plastic.

The discoloration of both the rings and the trail-like mark connecting the ring area and the bead impression may be due in part to residue or to conversion of the plastic to new elements. If the ring markings are actually inside the plastic, then this is some of the anomalous behavior exhibited by the plasmoids produced by K. Shoulders and Matsumoto. They have also found chemical residue and apparent production of elements along the paths of plasmoids.

There are also linear markings extending out from around the bead impression that seem to be continuations of ditch markings on the electrode. Look especially along the bottom right and top right sides. Darker linear markings extend out from lighter colored linear markings of the bead impression. I suspect that these are tunnels or grooves left in the material by moving plasmoids. K. Shoulders has shown a picture(8) of a tunnel left in material that was lined with elements not originally present in the material. To the bottom left of the impression are small and faint trail marks and perhaps ring marks. There are other plasmoid marks scattered around also. Whatever happened here, this phenomena must be fairly common since I found another similar looking mark shown in picture 4, though I didn't spend much time looking at the bead impressions. There are other plasmoid ring marks scattered around in this picture also.

Citations

1)G. H. Miley and James A. Patterson, "Nuclear Transmutations in Thin-Film Nickel Coatings Undergoing Electrolysis," **2nd International Conference on Low Energy Nuclear Reactions, College Station, Texas (September 13-14, 1996)**.

2)G. H. Miley et al., "Quantitative Observation of Transmutation Products Occurring in Thin-Film Coated Microspheres During Electrolysis," **Proceedings** of the ICCF-6, Hokkaido, Japan, (October 14-17).

3)E. Lewis, "A Description of Phenomena According to My Theory and Experiments to Test It," manuscript article submitted to Fusion Technology, December 1992.

4)K. Shoulders, "Energy Conversion Using High Charge Density," Patent Number 5,123,039.

5)T. Matsumoto and K. Kurokawa, "Observation of Heavy Elements Produced During Explosive Cold Fusion," **Fusion Technology**, 20, 323, (1991). 6)T. Matsumoto, "Artificial Ball-Lightning -- Photographs of Cold Fusion," manuscript dated Jan. 17, 1995 presented at the **ICCF-5**, April 9-13, 1995, Monte Carlo, Monaco.

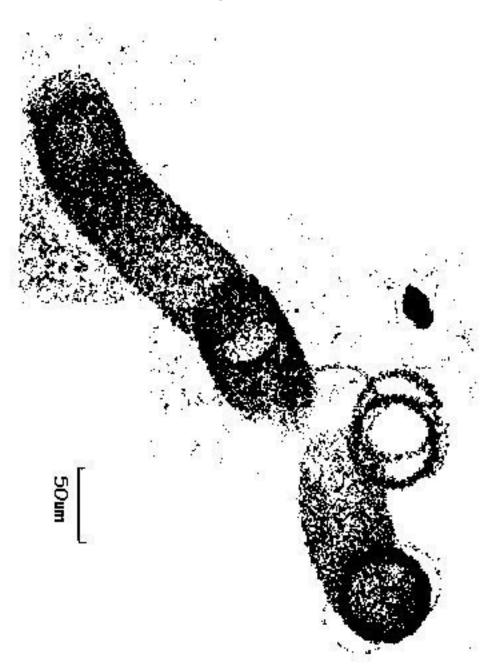
7)T. Matsumoto, "Observation of Gravity Decays of Multiple-Neutron Nuclei During Cold Fusion," Fusion Technology, 22, no. 1, 164 (August 1992).

8)H. Fox, R. Bass, and S-X Jin, "Plasma-Injected Transmutation," manuscript article on ine web page www.padrak.com/ine . Nov. 11, 1996. Figure 4.

Acknowledgment:

L. Foresly suggested looking at the Lexan casing plastic under a microscope to find emission tracks or markings that I was looking for.

Picture 3: Plasmoid Ring Marks on Plastic Produced by Matsumoto



Compare this mark with Picture 2. This is evidently the mark left by a single plasmoid(Ref. (1), Fig. 5f; also, this photograph is photo. 5 of Ref. (2)) that hopped and skipped on the surface of sheet of Acrylite, which is a type of acrylic plastic. The sheet of plastic was about 100 micrometers wide by 50mm by 50mm and was one of a set of such sheets set in parallel with about a 3mm gap in between each sheet. These emulsions were set outside a cylindrical glass cell which had an Acrylite bottom 1 mm thick. They were set outside this plastic bottom. This suggests that the plasmoid phenomena traveled through the Acrylite, which matches the behavior of the plasmoids produced by the electrolyis cell that traveled through the Lexan. The cell was an electrical discharge device. This is the first report, as far as I know, of such hopping and skimming phenomena of plasmoid phenomena. In a revision of an article(3), I predicted the finding of hopping marks, because I identified plasmoids and ball lightning and ball lightning had sometimes been reported to hop. It is a major discovery.

Matsumoto found several combinations of trail and ring marks such as these, along with a lot more ring marks. It may be that the plasmoids that produced the marks traveled through the glass and flew to the emulsions, but it seems more likely that the plasmoids went through the Acrylite, since there is evidence that the plasmoid that left the marks that are pictured in this photograph traveled through a 100 micrometer Acrylite sheet.

This mark was found on the front side of the second sheet in the series. Matsumoto supposes that an object traveled through the first layer of Acrylite and hopped on the second sheet. He also supposes that this same object was responsible for another set of ring and trail marks just in front of this set on the back

side of the first sheet. He has matched the two sets and shown almost the same size rings and described how it could be that an object was hopping and skimming between the two sheets. The rings on the back side of the first sheet are smaller by about 5 micrometers. Since the two sets are side by side, but the ones on the back of the first sheet are smaller, this may be because the plasmoid was a cylinder, not a toroid, with a smaller end. I have written about examples of cylindrical atmospheric plasmoid phenomena.

Marks like this one are major evidence of an identity of ball lightning and plasmoid phenomena produced by electrolysis and discharge apparatus. Except for the hopping and skimming phenomena, the rings look like marks Matsumoto had produced earlier by various types of electrolysis devices in which he also reported massive elemental production(4) effects.

1)T. Matsumoto, "Observation of Tiny Ball Lightning During Electrical Discharge in Water," submitted to Fusion Technology, January 23, 1994.

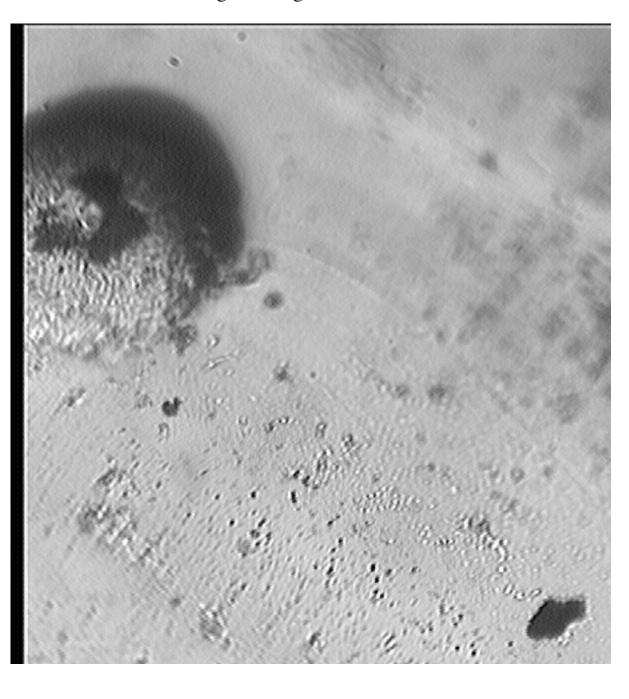
2)T. Matsumoto, "Artificial Ball-Lightning -- Photographs of Cold Fusion," manuscript dated Jan. 17, 1995 presented at the ICCF-5, April 9-13, 1995, Monte Carlo, Monaco.

3)E. Lewis, "A Description of Phenomena According to My Theory and Experiments to Test It," manuscript article submitted to **Fusion Technology**, December 1992, Revised and Resubmitted May 1993.

4)T. Matsumoto and K. Kurokawa, "Observation of Heavy Elements Produced During Explosive Cold Fusion," Fusion Technology, 20, 323, (1991).

Picture 4: Plasmoid Ring Emission Mark and Bead Impression

Ni/Plastic Cell #8, casing #2, Magnification x200



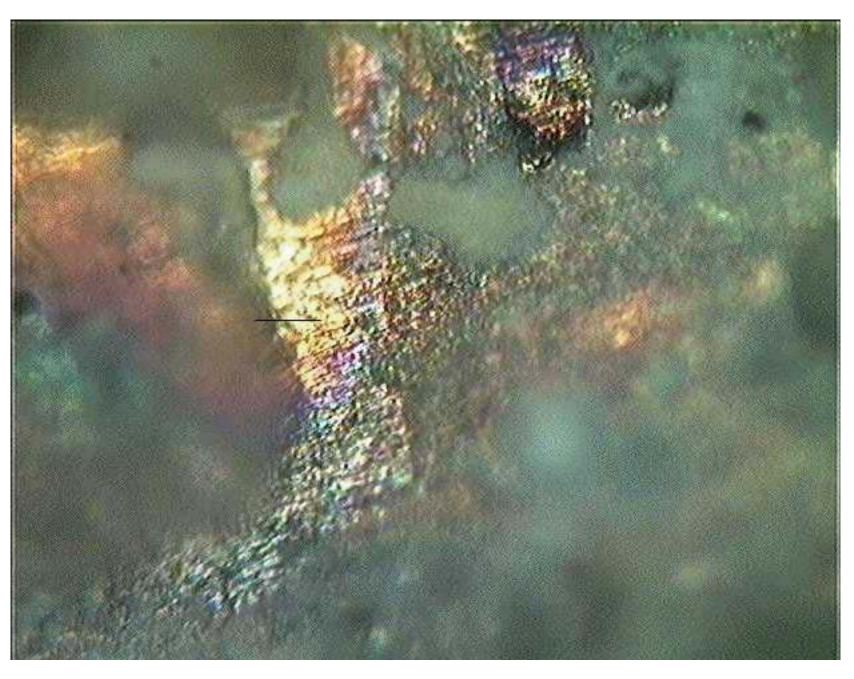
This mark is much like the one shown in picture 2. Shows another bead impression with similar features as the one in picture 2. If I remember correctly, this bead impression was near the one in picture 2. However, the mark on the right is a lot more defined. This may be the mark of an emission of a plasmoid showing the trail or tunnel of the plasmoid mark. It seems that the plasmoid may have moved upwards through the plastic, but this is unclear. Since the stem increases in width the greater the distance from the bead mark, it may be that the object enlarged as it traveled suggesting the incorporation of the substance of the casing. There have been reports of ball lightning phenomena increasing in size as it bored a hole in the earth and incorporated the material. The stem looks to be layered and in the middle of the stem there is a dark spot that could be the mark of another plasmoid or a deposit of material on or in the plastic. Perhaps the stem may be a tunnel. The ring-like mark is about 25 micrometers in diameter.

There is some speculation that this marking is more like a growth on the bead than the emission of a discreet phenomena. This feature looks somewhat like two dendrite-like growths in Fig. 8 of an article(1) by Dash et al. Certain minerals such as silver often occur in nature in the form of strands or filaments like the ones shown in his article. As far as I could tell, Dash did not perform elemental analysis on the strands, but he did perform EDS on the crystal or grain-like formation on which the strand sits, and he reports that it was mainly silver. The feature next to the bead impression in the plastic does not look as dark as a solid filament on or in the casing would look.

1)J. Dash, G. Noble, and D. Diman, "Surface Morphology and Microcomposition of Palladium Cathodes After Electrolysis in Acidified Light and Heavy Water: Correlation with Excess Heat," **Transaction of Fusion Technology**, 26, 299 (Dec. 1994).

Picture 5: Plasmoid Ring Mark on Electrode

Cooked Titanium Plate Cathode of Ni/Plastic Run #8, Magnification x400



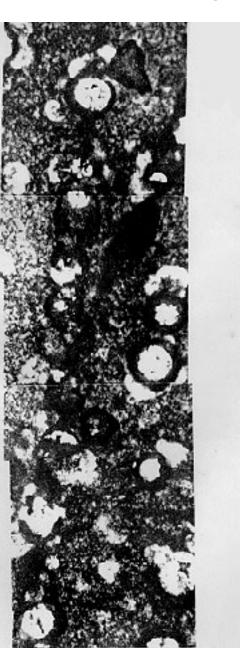
There are many colorful and beautiful features on the electrodes and beads. The colors and the various crystalline forms suggest the presence of various metallic layers and of minerals of various kinds.

A ring mark is right in the center of the big colorful area of this photograph. 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 this used electrode. Two or more faint rings of about the same size seem to be connected to it at its bottom left hand corner. And there seem to be other rings scattered around. I am wondering whether there was perhaps a chain of ring chains of plasmoids.

There is also a grove mark in the upper right hand corner that may be due to a plasmoid, as well as other linear lighter colored lines to the right of it that are the same width that may show the flow of plasmoids. The trails and groves all over this part of the electrode seem to be about 2 to 4 micrometers wide.

Picture 6: Plasmoid Ring Marks on Anode Produced by Matsumoto

50 Mm



To compare these rings (photo 6, (1)) produced by Matsumoto with the ones in picture 5, a picture of a part of an anode which he used for discharge is shown here. The rings marks seen to be about 25 to 50 micrometers in diameter. I would say that the discoloration is due to chemical or elemental deposit or change. Matsumoto wrote that the rings are arranged along a "dislocation line," which I suppose is a crack. K. Shoulders(2) has also talked about such rings arrayed about a crack on an electrode or some other material.

1) T. Matsumoto, "Artificial Ball-Lightning -- Photographs of Cold Fusion," manuscript dated Jan. 17, 1995 presented at the ICCF-5, April 9-13, 1995, Monte Carlo, Monaco.

2) K. Shoulders, Presentation at the 2nd Texas Transmutation Meeting, Sept. 13, 1996.

Picture 7: Interesting Feature on Electrode

Cooked Titanium Plate Cathode of Ni/Plastic Run #8, Magnification x400



This looks like a metallic plate and is above the rest of the formations shown in this photograph, as I could tell from focusing. It shows many more ditch or trail marks that are about 2 to 4 micrometers wide.

There are several other features that are like rings or perhaps craters or cones in the upper left hand corner. Features that look like craters and cones have been found at other places.

Several years ago I identified earthquake and volcano phenomena with plasmoid phenomena occurring in apparatus(1). Earthquakes and volcanoes are also plasmoid phenomena during which new elements may be produced, substance is converted, and moving plasmoids may be emitted. Ball lightning phenomena is often observed during earthquakes and volcanoes, and people have reported seeing the emission of luminous phenomena more than half a kilometer long that hovered or flew at supersonic speeds or behaved in other anomalous ways. Recently, Matsumoto reported(2) the observation of tiny micrometer size ball lightning markings on nuclear emulsions similar to those shown here and those produced during electrolysis and discharge during an earthquake. This is substantial evidence for my original ideas about earthquakes and volcanoes and my plasmoid theory.

If the phenomena are cones or craters like those shown by Ohmori, Mizuno, and Enyo on gold electrodes(3), then these may be the site of emission of micrometer size plasmoids. It may also be that plasmoids form in the liquid betwen the beads or in other parts of the cell, and leave craters as damage.

1)E. Lewis, "Gorgons, Tornadoes, and Plasmoid Phenomena," Space Energy Journal, 7, no. 2, 24 (June, 1996).

2)T. Matsumoto, "Extraordinary Traces on Nuclear Emulsions Obtained During the Matsumae Earthquakes in 1996," distributed at the ICCF-6, Toya, Hokkaido, Japan, (October 14-17).

3)T. Ohmori, T. Mizuno, and M. Enyo, "Isotopic Distributions of Heavy Metal Elements Produced During the Light Water Electrolysis on Gold Electrode," manuscript article presented at the **2nd Int. Conf. on Low Energy Nuclear Reactions, College Station, Texas, 9/13/96**.

Photograph 7b: Clearer Trail Marks

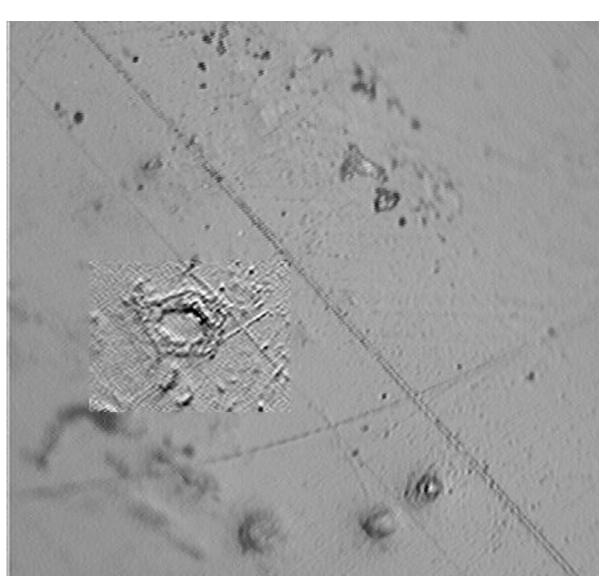
Cooked Titanium Plate Cathode of Ni/Plastic Run #8, Magnification x400



The grooves are clearer in this picture.

Picture 8: Plasmoid Ring Marks

Ni/Plastic Cell #8, casing #1



Shows several ring marks on the Lexan casing used for electrolysis of ni/plastic microspheres for the same run as the one in pictures 2 and 4. One which looked like a hollow ring was computer processed to define edges. The others seemed to be solid rings. I did not mark down the microscope setting, but I am guessing that the magnification was x200 or x400 and that the rings are about 30 to 40 micrometers wide.

I could not find many big and dark ring marks like these. Most of the ring marks and other plasmoid marks such as chains are smaller or slighter in that they didn't leave dark spots. They are often chains or rings of faint markings. Examples of lighter ring marks can be found in Photograph 4. In several of Matsumoto's articles, the easy to see markings that he is explaining are next to many dozens of smaller or fainter plasmoid markings such as ring markings or tiny plasmoid trail markings.

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