Carnicom Institute Research

2011

Acknowledgements

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Table of Contents

Feb

Webinar

Feb 20, 2011

Recorded Webinar : Sunday, February 20th, 2011
Host : Clifford E Carnicom
7PM – 8PM MST

Windows Media Player Format
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[works in VLC]

Webinar Topics:

1. Discussion of a recent research paper that discusses an environmental filament sample collected within the last few months. The relationship of the sample to examinations of the “Morgellons” condition will also be discussed.

2. A brief summary of the Carnicom Institute status and needs will be presented.

3. A question & answer session will be provided.

Mar
THE BIGGEST CRIME OF ALL TIME
Mar 1, 2011

THE BIGGEST CRIME OF ALL TIME
Clifford E Carnicom
Mar 01 2011

Note: I am not offering any medical advice or diagnosis with the presentation of this information. I am acting solely as an independent researcher providing the results of extended observation and analysis of unusual biological conditions that are evident. Each individual must work with their own health professional to establish any appropriate course of action and any health related comments in this paper are solely for informational purposes and they are from my own perspective.

It can now be shown with conviction that environmental filament samples and the filaments that are characteristic of the “Morgellons” condition are of one and the same nature. This has been demonstrated visually at the microscopic level on two prior occasions (please see An Environmental Source and The Breath of a Decade) but there has been a reluctance on the part of the general public to engage in the truths of this issue.

The case that they are of one and the same nature can and is also now being made analytically through the use of spectral analysis. This paper will progress through a series of spectral analyses that have been made, both on the control side as well as on the investigative side. The end conclusion that is reached from the work is that at least one source of the so-called “Morgellons” condition has been identified. The fact that this traces itself to a repeatedly occurring environmental sample represents, in my opinion, the worst crime in human history. There have been repeated attempts to have the full nature of these environmental samples disclosed for more than a decade but they have failed.

The primary party that is responsible for the failure of the identification and disclosure is the United States Environmental Protection Agency. The United States Centers For Disease Control and Prevention shares in the culpability of health neglect. The United States Air Force and the United States Congress share in the complicity of dismissal. I claim the right to speak honestly as I see appropriate.

The general public will at one point or another confront and reconcile with this reality, no matter how difficult the prospect will be. Progress in addressing the seriousness of the problem is not going to take place until this recognition by the public does take place. However unfortunate the task, this researcher will continue to put forth the evidence that forces this confrontation to the point of understanding.

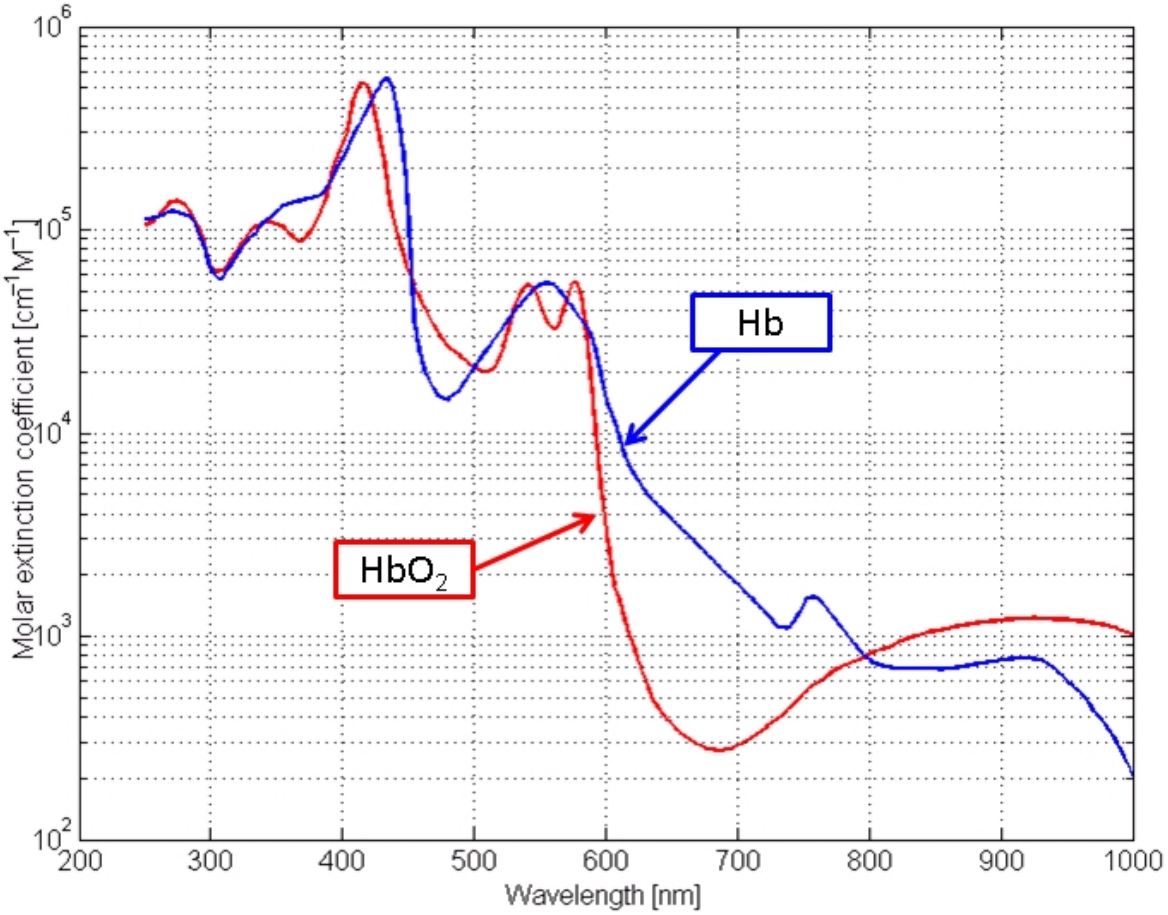
Let us now proceed with the work that is to be described.

Through the course of the last year, a Beckman dual-beam spectrophotometer has been acquired under the auspices of the Carnicom Institute. It has been put to introductory use through the course of last year and familiarity with the capabilities and the principles of the instrument has been acquired. There remains a need for much additional equipment, a facility and a more contemporary version of the current spectrophotometer but some progress, nevertheless, has taken place. The current project involves the calibration of the spectrometer through a series of controlled studies and then the application of the instrument to unique and unidentified biological entities.

The Beckman model that has been acquired is rather elderly and it is based upon tube technology. All tubes have been replaced and control studies have been completed to give a reference point on the serviceability and the reliability of the instrument. These tests have been passed with sufficient confidence and the results of these tests will be presented first in this discussion.

The first problem is to acquire known spectral analyses and to see if the results can be duplicated with the equipment at hand. Spectral analysis is its own profession deserving of sufficient staff and resources, but the principles of operation and result are not so difficult that they cannot be understood by the majority of us. Levels of refinement in the process can continue as the understanding of the need for further support avails itself to the cause.

The first example chosen will be a spectral analysis of human blood, or hemoglobin as the case may be. This was one of the early studies in the application of the instrument and a level of confidence in those early results was achieved some time ago. Let us look at such a chart:

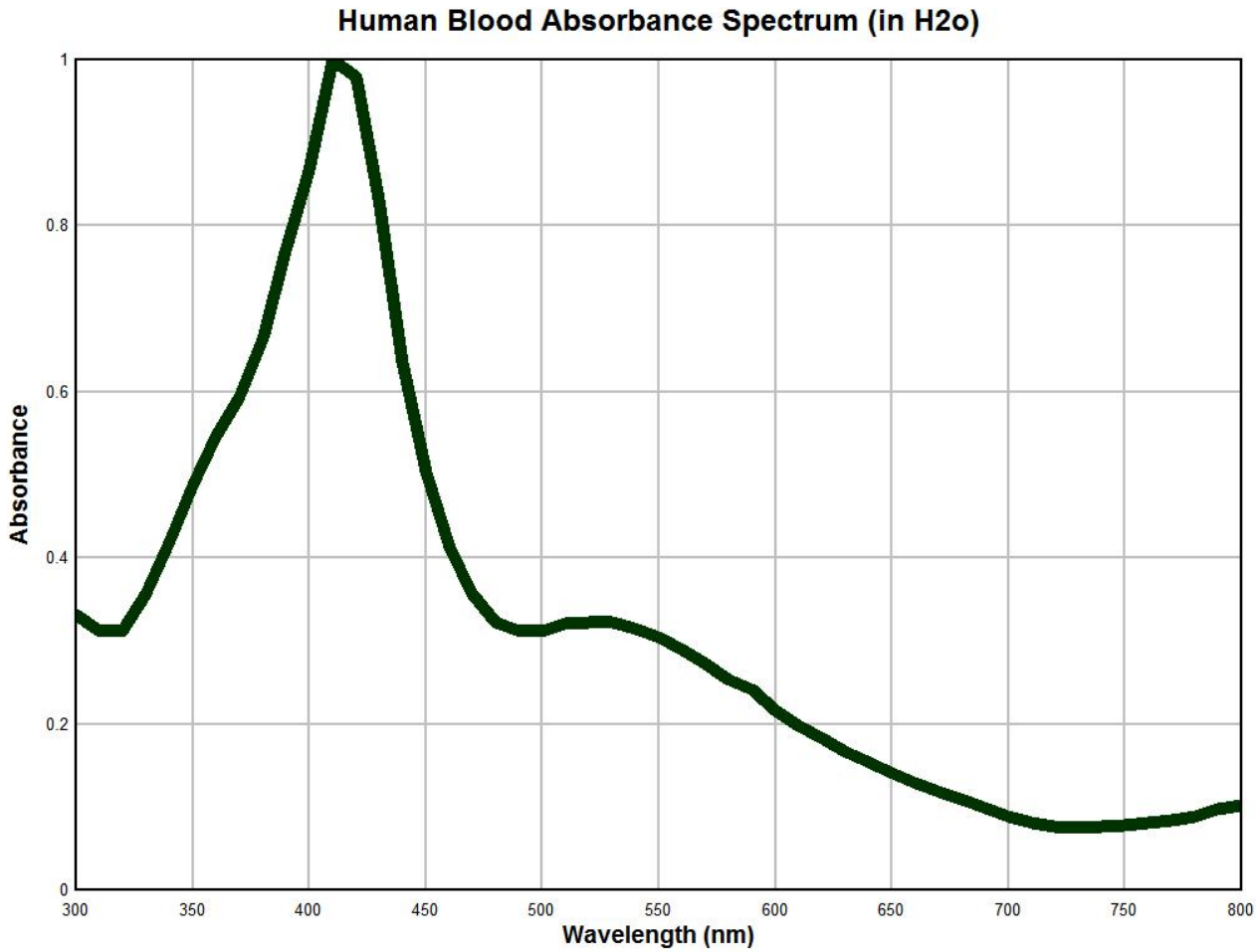


http://omlc.ogi.edu/spectra/hemoglobin/

A spectral analysis is essentially a fingerprint, or a unique signature, of a chemical substance or species within a particular range of frequencies. There are many ranges of energy that can be used if the required instrument and detectors are available; our particular interest here is in the range of visible light. The particular spectrum shown here from the reference designated above shows the absorbance of energy of hemoglobin (two variants, one combined with oxygen) as it is subjected to visible light energy; there is also some extension on each end into the ultraviolet and infrared portions of the spectrum. Visible light runs from approximately 400 to 700 nanometers in wavelength and it is represented along the horizontal axis of the graph. The Beckman instrument being used has a useful range of approximately 300 to 800 nanometers and that will be the band of comparison in the graphs that are presented.

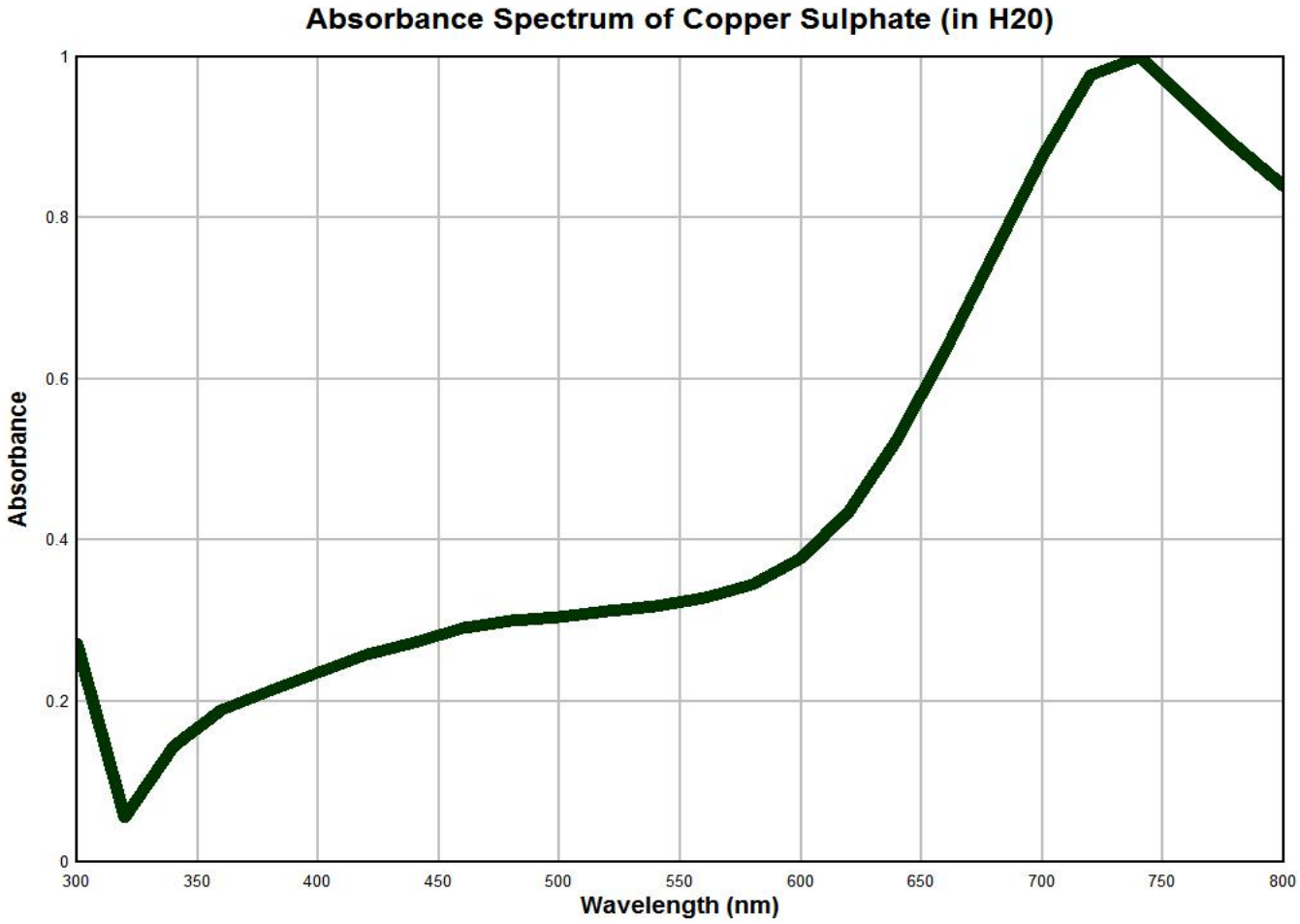
Our main interest in the study at this time is the location of the peaks and troughs of the spectrum, as these locations are a key feature in establishing the unique signature of a particular species or substance. The magnitudes of the peaks and troughs (local maximums and minimums) can vary depending on concentration levels and is not our primary concern at this point; locations can also vary by the solvent involved. What we are looking for is a reasonable comparison between the minimums and maximums of a known substance in solution and that same substance in solution measured directly with the Beckman spectrophotometer. Some variations are to be allowed for, however, the locations of the maximums and minimums at specific wavelengths should compare reasonably well. Recall that we shall confine our examination to between 300 and 800 nanometers. For the graph above it is reasonable to use an average of the two graphs; our sampling methods do not allow for the distinction between pure hemoglobin and that combined with oxygen. At this point, we are simply attempting to establish a reasonable control on the reliability of the instrument that is being used.

In the control chart above, we see a minimum at approximately 310 nm, a maximum at approximately 420 nm, minimums at 480-505 nm, a maximum at approximately 550 nm and finally another low in the range of 700-750 nm. This provides us with several reference points to see if these inflection points can be reasonably reproduced.



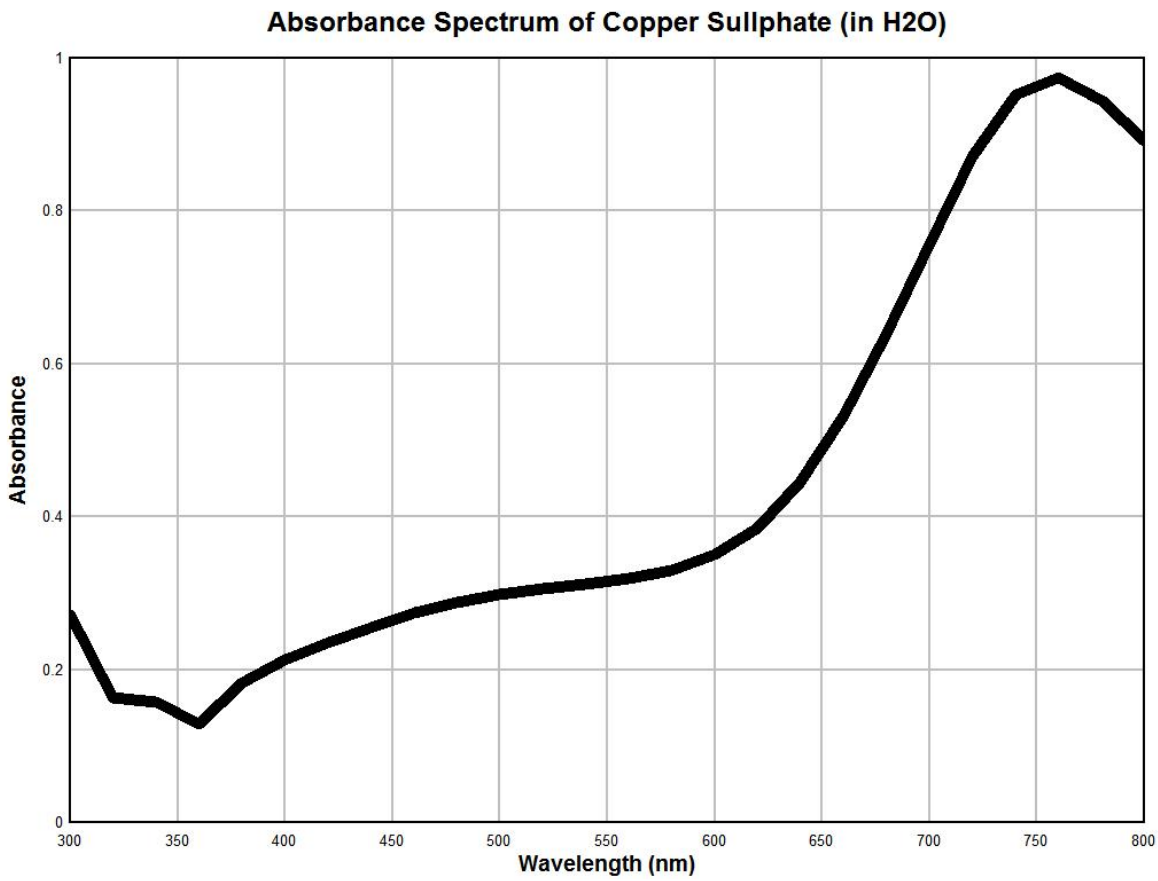
A graph of human blood in water obtained with the approximately 50 year old Beckman dual-beam spectrophotometer is shown above. This particular instrument has no automatic recording features, and all data must be observed by visually sampling meter readings at periodic intervals and then producing them on the graph above. In this case, the sampling has been done at 20 nm increments from 300 to 800 nm. Blood is a complex substance but we expect to see at least some reasonable concurrence in the data to continue the work further. Remembering that we are to dismiss magnitudes at this point and focus on the inflection points, we find a minimum at approximately 320 nm, a maximum at approximately 420 nm, a minimum at approximately 480 nm, a maximum at approximately 525 nm and a final minimum at approximately 725 nm. This indicates that we have in some reasonable fashion captured the characteristic signature of hemoglobin and that at this point there is no reason to doubt the integrity of the instrument.

It may be fair to presume that the resolution of detection within an older instrument is not expected to be the same as that of a modern instrument, but the locations of inflections should compare reasonably well. This has been achieved with the example above. It is also noticed that the varying light colors are easily and directly visible within the sample container of the instrument and that they correspond to the expected meter readings as the wavelengths are varied; this adds to the confidence in the instrument being used. A modern recording instrument would indeed be valuable but it is simply not available. Incidentally, dual beam spectrophotometers are considerably more complex but easier to use than single beam instruments, as they eliminate many of the variations that can occur with the swapping of a reference solution with the substance dissolved in another container of that same solution.

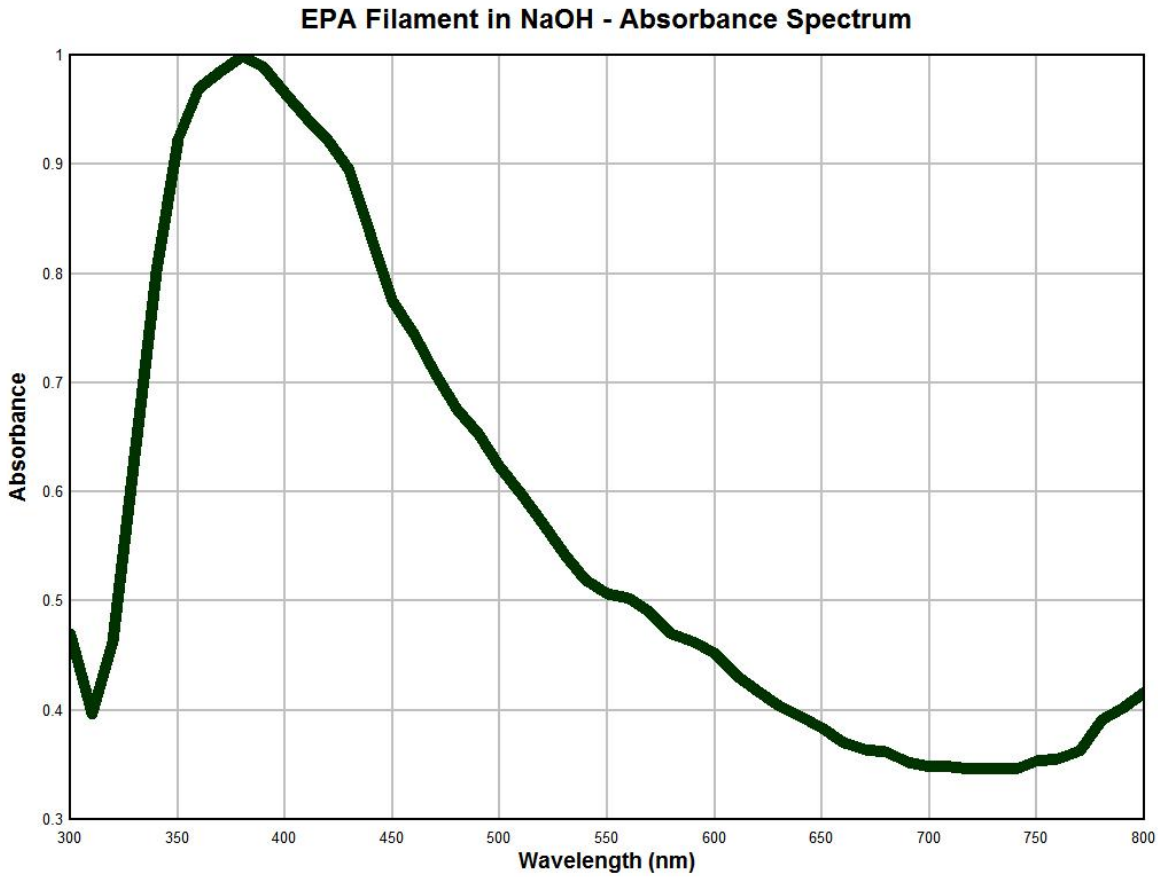


http://www.bjarke.com/upload/P1_done.pdf

Our next example of a control test is that of a solution of copper sulphate (CuSO4); the graph above will serve as our reference. In the example above, the point is made that the concentration of the solution can directly affect the magnitude of the spectrum. The general shape of the characteristic curve remains generally consistent, however, we can see that the major peak at approximately 750 nm is not revealed until sufficient concentration exists. This is another reason that we must constrain ourselves to generalized interpretations of the spectrums at this point. More detailed instrumentation and constraints on the solutions will yield correspondingly more precise information for interpretation. Our objective here is simply to assure the reliability of the instrument being used for this report. The general features of this example are to notice a relatively sharp decrease in absorbance from the 300 to 400 nm range, a generally and relatively low and level absorbance in the range of 400 to 550 nm, a rather sharp increase in absorbance in the 600 to 800 nm range, and with sufficient concentration, a sharp local maximum at approximately 740-760 nm.



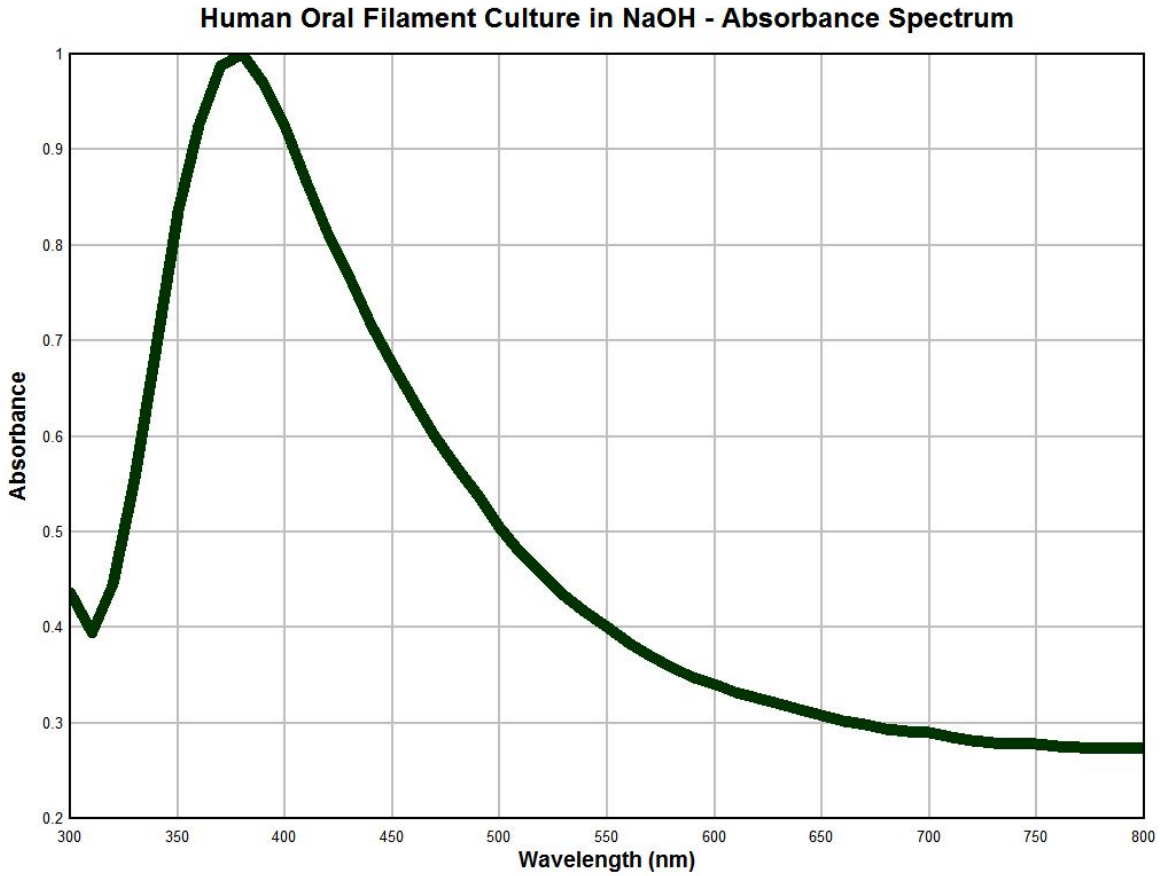
Above is the graph of solution of copper sulphate (concentration unknown) made with the Beckman dual-beam spectrophotometer. Once again, the general reliability of the instrumentation is established here. We notice a decrease in absorbance in the 300 to 360 nm range, a relatively modest to slightly increasing absorbance in the 400-600 nm range (mild increase in slope over the control sample, however), a sharp increase in absorbance over the 600-800 nm range, and a very pronounced maximum at approximately 750-760 nm. The more generalized resolution of the instrument on hand also remains apparent, but the uniqueness of the spectrum is once again established with reasonable confidence and reliability. A third control test was conducted using food dyes and the results again remain reasonable. It is at this point that we are sufficiently prepared to apply the spectral measurement instrumentation and techniques to an unknown substance. This will be discussed in the examples below.



It is at this point that we begin to gain valuable new insight into a long standing problem. Above is a spectral analysis graph of an important and unique filament structure. The filament sample above is the same airborne environmental filament sample type that was sent to the United States Environmental Protection Agency. It was requested that the agency identify the nature of this filament structure on behalf of the public welfare and health interest. The agency refused to conduct this analysis and disclosure and stated that it was not their policy to do so. This filament structure has been described in detail on this site as it has been subjected to extensive microscopic analysis; please see the many reports in this site on this matter.

It has been learned from much testing that the exterior of the filament appears to be primarily an encasing structure and that it appears to consist of a keratin-like substance that is extremely resilient and difficult to penetrate or break down. Over recent years my focus has been on the internal nature of the filament as there are complex structures and biological developments that occur within. These observations have also been reported on extensively in this site. One of the most successful methods of penetrating the filament has been with the use of sodium hydroxide and heat; several experiments of that sort have been described.

The graph above shows a spectral analysis using primarily visible light wavelengths in a solution of sodium hydroxide after heat was applied; the sampling rate is 10 nm. The most salient features of this absorbance spectrum analysis include a very sharp peak at approximately 375 nm, a sharp increase prior to this maximum and a fairly sharp and steady decline in absorbance out to the end of the spectrum at 800 nm. As such, the spectrum is not inordinately complex but by nature it is unique and distinctive. This is, to my knowledge, the first time that this spectral information has been made available to the public using this particular analytical technique.



The graph immediately above is also remarkable for what becomes an obvious reason. The graph above is an absorbance spectral analysis of a culture that has been developed from human oral filament samples that are representative of, and characteristic of, the so-called “Morgellons” condition. The description of these cultures and the many microscopic examinations of these cultures have been presented throughout this site. This particular culture material is approximately one year old and was subject to drying and pulverization and it also was also placed into a sodium hydroxide solution with heat. The relative smoothness of this graph is likely due to the homogeneity that can be achieved in the preparation of this sample state. The biology of the *organism* appears to allow existence indefinitely in a dormant state if the environmental conditions demand it.

It is apparent that the latter two graphs are essentially identical. As the reliability of the instrument under use has been established with reasonable confidence, the following conclusion becomes evident: This conclusion is that the nature of a repeatedly occurring environmental filament sample is identical in nature to that filament entity which is representative and characteristic of the “Morgellons” condition. This equality in nature has now been established unequivocally through three different methods: visually, metrically, and analytically. There are potential therapeutic ramifications to the strong absorbance peak at approximately 375 nm and any strategies are to be treated with caution and respect; these will need to be developed in later reports.

As such, at least one source of the *Morgellons* condition has been identified and it is a repeating environmental source. It is now up to us as the inhabitants and stewards of this planet to comprehend the consequences and the significance of the conclusions herein.

Sincerely,

Clifford E Carnicom
Mar 1, 2011

A NEW FORM : FREQUENCY INDUCED DISEASE?

Mar 8, 2011

A NEW FORM : FREQUENCY INDUCED DISEASE?
Clifford E Carnicom
Mar 08 2011

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A new, or modified, form of cultured growth has been developed from human oral filament samples that are characteristic of the so-called “Morgellons” condition. Three unique features characterize this particular filament type of culture growth:

1. The growth rate is explosive, transforming itself from a film layer to a dense sheet of filaments as shown below within a 24 hour period.

2. The growth type, and/or the growth rate, appears to be dependent upon the introduction of a specific visible light frequency range into the culture process.

3. The size, i.e., diameter, of the “filaments” is much greater than that previously studied in detail on this site.

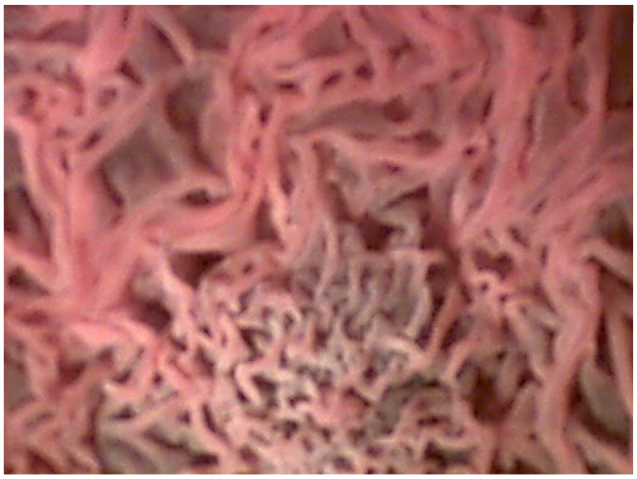
The photographs from the laboratory session will now be described in greater detail below:

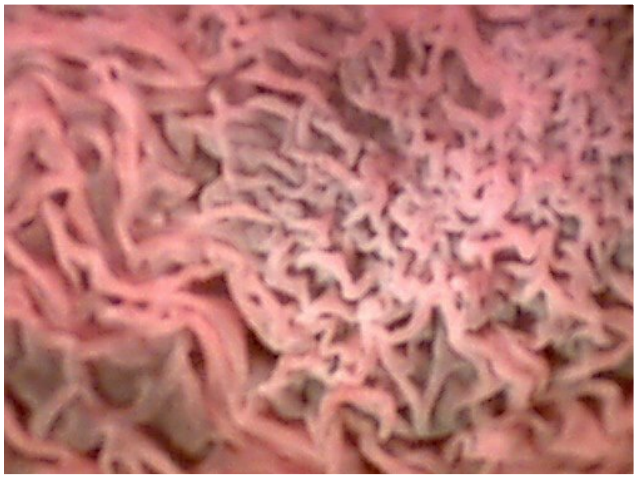
The new, or modified, filament growth culture that has developed. The origin of the culture is a human oral filament sample. The culture medium is red wine. The bulk of the growth that is shown here

occurred within a 24 hour period, with an incubation period of approximately 5 to 7 days. The only known variation in the culturing process, relative to previous culture work over recent years, is subjecting the culture to a specific frequency range of visible light. The frequency (blue light) has been chosen as a result of spectral analyses that have recently been conducted and reported on in this site.

One of the more important findings of this current research is that the application of certain frequencies, or their harmonics, may play a highly significant role in the various manifestations that the underlying "*organism*" may assume. This may act in a highly detrimental fashion to the host; in this case, the human being. The rate of growth of the *organism* under the conditions investigated here may also seriously hinder any efforts to mitigate or inhibit its influence within the human body. The research also points out the extreme risks that may exist in "experimenting" with the use of frequency protocols without proper controls and without knowledge of the underlying physiological and physical processes involved.

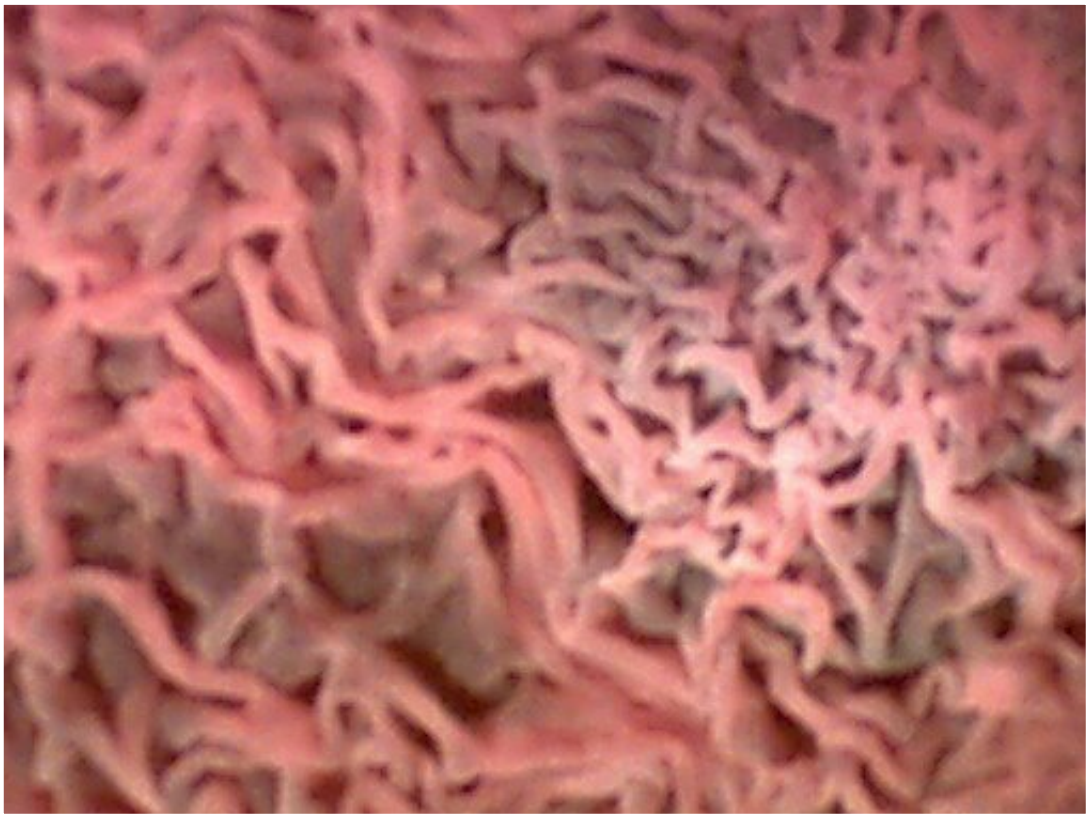
As one example of consideration, the speed of an electromagnetic wave within the body is a variable and therefore any frequency or its harmonic that is under consideration is also expected to vary by target location. The discovery reported here adds a new layer of complexity to the research that has been discussed on this site.



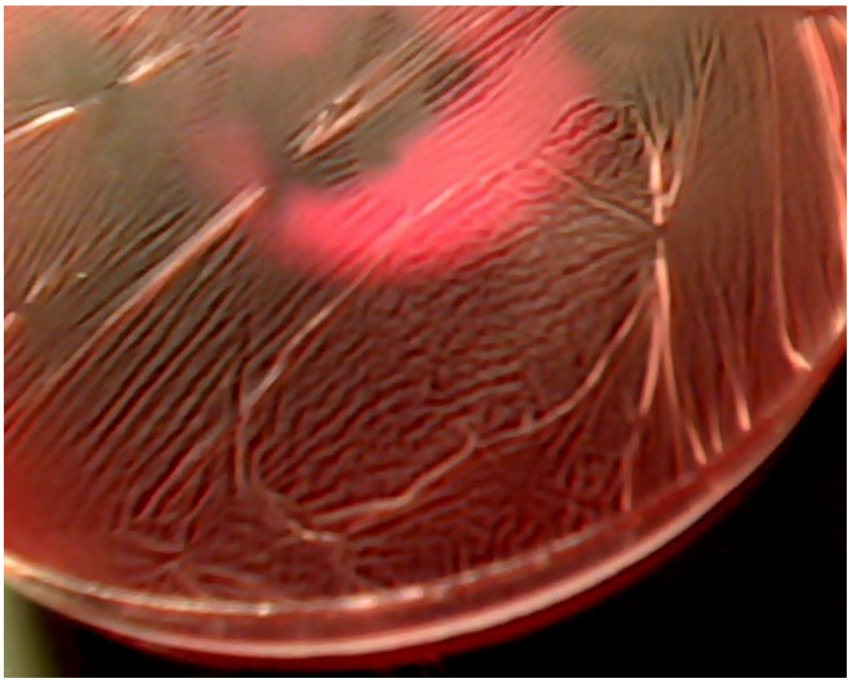


A close-up view of the modified growth form that has been developed. The growth rate of this form is remarkable and the topology of the culture is quite complex under higher magnification. At this point, no additional information on the internal nature of the growth is known. Additional microscopic and spectral analyses will need to be conducted in the future to determine if there is correspondence with previous growth forms that have been analyzed in detail. The circumstances of growth are identical to that of previous work, i.e., the introduction of human oral filament samples within a red wine base; what differs is the illumination of the petri culture dishes with light of a specific frequency chosen from earlier absorption analysis. It will be noticed that a strong and sharp absorption peak at approximately 375 nanometers (nm) has been identified in the previous report; this corresponds to the blue portion of the visible light spectrum. Tentative work some months past involving the use of this frequency range was applied and observed effects upon culture growth were observed. As a result of the more exact, detailed and verified spectral analysis of recent weeks, the determination of the influence of this frequency has

been pursued with greater vigor. Magnification 10x.



Another close-up view of the modified growth form that has been developed. To find a commercially available source at the appropriate wavelength of approximately 375 nanometers, it is found that an “actinic” lamp is sufficiently close to merit application. Actinic fluorescent lamps are commonly available for aquarium lighting, as they reproduce the light range that is suitable for coral growth. Notice the absorption spectrum presented remains sufficiently pronounced and localized to accommodate the 420 nm wavelength; practice has shown that a measurable effect is apparent with its use. Magnification 10x.

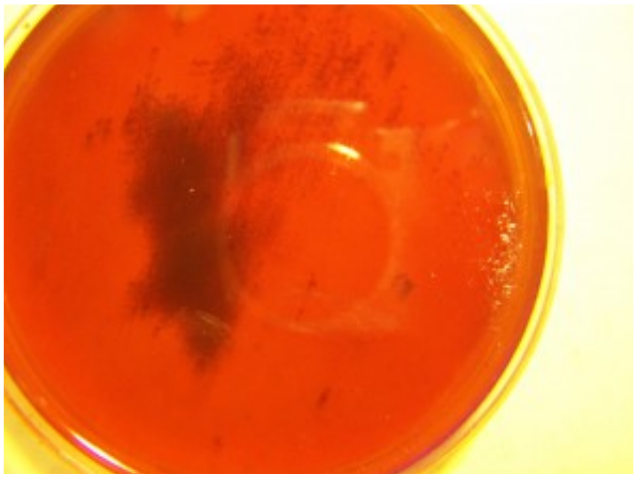


A photograph of the sheen, or film-like layer that develops on the wine culture surface immediately prior to the explosive growth stage that takes place. The early stages of folding and rippling of the surface can be seen. The incubation period to reach this stage is approximately 5 days under the current environmental conditions established. Growth is then extremely rapid, and envelops the entire surface of the dish with filaments as shown above within a 24 hour period. One of the effects that appears to result from the use of the actinic lamp is a very sharp increase in the rate of the culture growths in general. The cultures in the past have usually required several weeks to even several months to develop; all cultures under examination in this report have produced visible results within a week of time. The central lighted region of the dish is the light stage of the microscope underneath the culture dish.

Another close-up view of the modified growth form that has been developed

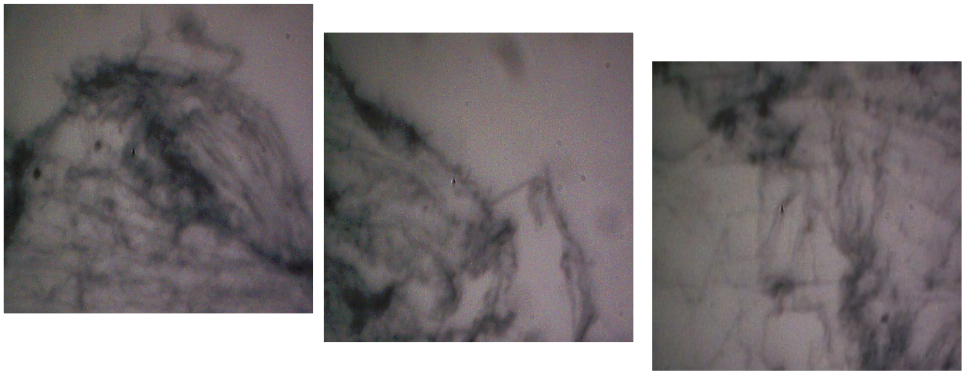
Magnification approximately 3x.

An oral filament sample that has been isolated from the red wine extraction fluid. This isolation occurs by a process of decanting and dilution, and is relatively pure in this state within water. Notice the color of the wine is absorbed by the materials. This sample material provides the basis for further culture work and spectral analysis.



The test tube filament sample, as shown in the previous photograph, can be used to generate further cultures and to conduct spectral analyses. One method of preparing a culture is to simply place the material within red wine as a culture medium. This is the method used in setting up the culture dishes shown earlier in this report. Another method of preparing the sample for further analysis is to heat it (to the boiling point) within a lye (sodium hydroxide) solution. The advantage of this method is that it appears to be reasonably successful in breaking down the exterior casing of the filament and allows for examination of the internal components. It also allows for extraction of the more fundamental(interior) components for use in the culture process.

The images that are shown in this set are a product of the heat and lye degradation process. This allows for extraction of the chlamydia-archaea-bacterial like component that resides within the filament structure. It therefore allows for examination of culture development at a more primitive, or base, level. In addition, these cultures in a red wine solution have been modified with the weak addition of iron sulfate and hydrogen peroxide. It has been found that these additions accelerate the growth rate of the cultures as has been described previously. The hydroxyl radical appears to be a significant fact in this increased growth rate. There is very good reason to believe that the “organism” can use both iron and calcium for its sustenance; this will have to be elaborated upon in later reports. In addition, the introduction of the blue wavelength light appears to be an additional accelerating factor in the culture growth rate. The section reflecting light on the right side of the petri dish is a young network of filaments that are beginning to form within the culture.



This final section of photographs is a close-up of the young filament network referred to in the previous photograph on the right side of the set. The photograph is taken at the surface level of the wine solution. The individual filaments of the emerging network can be identified. The use of accelerating factors in the growth rate of the cultures with the use of Fenton’s reaction and blue light appears to offer significant benefits in the *turnover rate* for future culture research. In the past, the development of the filament network can take weeks to even months to develop; in the case of this report all culture developments have taken place within a week of time. Magnification is estimated at approximately 100x.

May
MORGELLONS : IN THE LABORATORY
May 22, 2011

MORGELLONS : IN THE LABORATORY
Clifford E Carnicom
May 22 2011
Edited Jun 17 2011

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This paper summarizes the status of current projects within a laboratory setting with respect to the "Morgellons" condition. The paper will by necessity be brief; if additional time becomes available the subjects will be elaborated upon. Each of these are worthy of their own discussion, but for the time being the following topics will be briefly discussed:

1. The role that iron appears to play in the growth of the underlying *organism*.

2. The expected impact of the *organism* upon the blood.

3. A set of minimum conditions that allow the growth of the *organism*.

4. A variety of growth forms have been identified; they possess, however, a common spectral signature.

5. The apparent unique spectral signature of the underlying *organism*.

6. Additional frequency analysis and the apparent impact upon the growth of the *organism;* considerations across the electromagnetic spectrum.

7. A spectral method to outline the potential presence of the *organism* within the blood of an individual and the expected impact upon the blood.

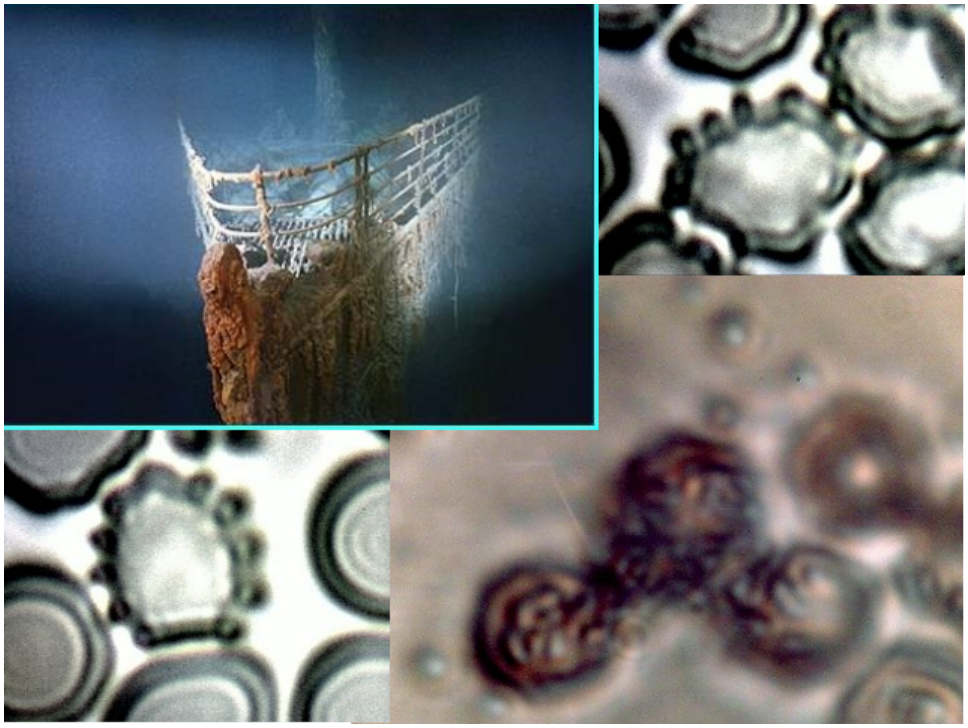
8. Indications of increased acidity in correlation with the "Morgellons" condition. The role of pH in the corrosion rate of iron. The diminished capacity of red blood cells to absorb oxygen in a more acidic environment.

9. The success of growth of the organism in a blood based culture medium.

10. Additional strategies, beyond alkalization and anti-oxidation, to be considered in the mitigation of the growth of the organism.

These subjects will now be discussed in greater detail:

1. The role that iron appears to play in the growth of the underlying *organism*:



See: Titanic, Resting or Reacting[1]
and
A Mechanism of Blood Damage2

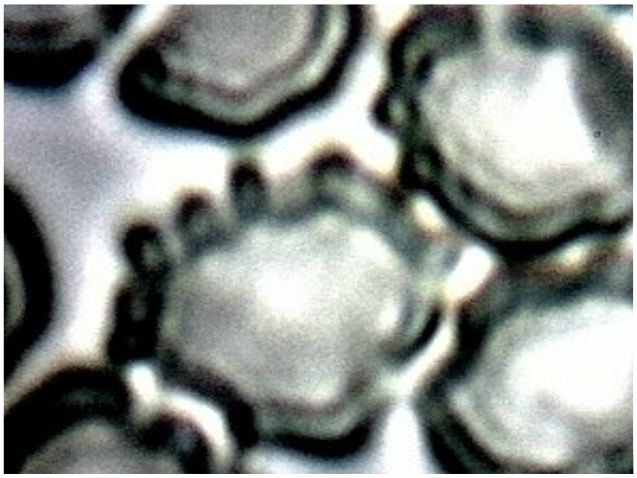
A primary focus of this researcher remains upon the sub-micron bacteria-archaea-like organism that appears to underlie the existence of the so-called “Morgellons” condition. This particular organism is the smallest identifiable feature and growth form of essentially all of the studies on this site related to the *Morgellons* condition over the years. This remains the case in both the environmental samples that have been analyzed as well as the extensive observations of human blood and filament samples. There is no reason known at this time to depart from this course of action as it remains as the primary source of impact upon the body that has been identified thus far. It is acknowledged that other forms or variations may well exist, but until sufficient documentation of such variations is presented I will continue to seek the lowest common denominator within the studies that are in place. My focus of study remains on the influence of the *organism* internal to the body vs. external manifestations.

There appears to be little doubt now that the *organism* can and does feed upon iron. This conclusion is reached by both direct observation and by inference. With respect to direct observation, numerous cultures have now been developed based upon both the use of the bacteria-archaea-like *organism* as well as the from the human oral filament samples. Several variations in the culture mediums have been tried, including agar (beef and blood), wines (red and white), simulated wines, restricted solutions of iron sulfate and hydrogen peroxide, and more recently, dilute human blood. They are all productive to varying degrees.

With respect to iron consumption, rapid growth can now be observed and recorded with the use of water, iron sulfate and hydrogen peroxide alone. This observation refers back to earlier work, such as that presented in the paper entitled, Morgellons: A Discovery and A Proposal[3]. This relationship with iron has been confirmed only more strongly over time. It can now also be posited that an iron oxide form is

created within the organism during the metabolic process as the tell-tale color of rust within the organism is assumed within this restricted growth environment. It is a known fact that many of the archaea species can feed on iron and sulfur in an extremely hostile environment; contemporary research is very active in that regard. The observations of survival of the organism under the harshest of conditions is one of the very reasons for the development of the paper entitled, Morgellons : A New Classification[4]. If is also of interest that genetic research is underway to inhibit the ability of such organisms to consume iron as well as to understand the growth and metabolic processes involved[5,6]. Such research is immediately relevant to the interests of the Carnicom Institute, but sufficient resources to engage at this level of study are not available at this time. In addition, by inference from the extended observation of blood, the use of iron in the growth process of the organism is sustained as a conclusion; this topic will be discussed further in the next section of this report.

2. The expected impact of the *organism* upon the blood:



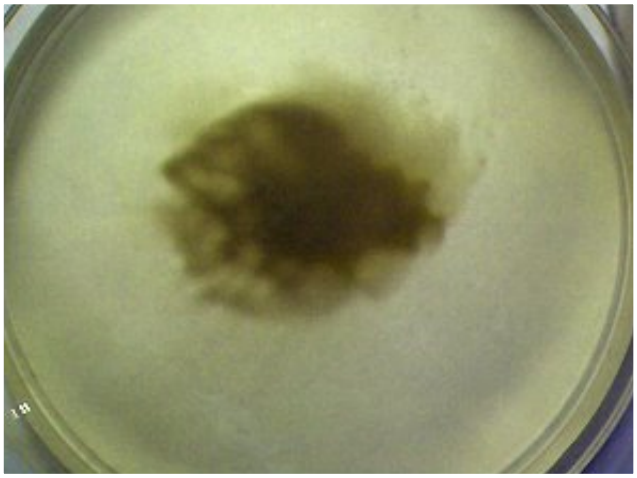
An observed method of blood damage has previously been reported on (A Mechanism of Blood Damage ,). The agent responsible for the damage being spoken of is the bacteria-archae-like *organism* that is at the center of this research. The progression of damage first includes the introduction of the organism into the serum of the blood. The second stage involves the attaching of the organism to the outside walls of the erythrocytes, or the red blood cells. The next stage involves the breaching of the erythrocyte cell walls. The latter stages result in essentially an invasion into the cell and a breakdown in the general integrity of the cell. In some cases this damage is extreme and the blood itself is no longer even recognizable from a conventional viewpoint.

When we combine damage to the integrity of the erythrocytes at the level recorded along with a demonstrated ability to consume iron, it is not any extension of logic to presume that metabolic imbalances of iron content in the human body are likely to occur from this damage. This is in addition to the diminished capacity of the blood to perform the essential functions of oxygen, nutrient transport and waste removal. Each individual must pursue their own evaluation of this issue with the medical professional of their choice; my only purpose here is to present the information which must be considered from a logical point of view in conjunction with direct observation.

Iron is a core element in the formation of hemoglobin[7]. An iron consuming *organism*, in direct conjunction with the manifestation of the Morgellons condition, has been identified. It is to be expected that damage to the blood and that interference with iron metabolism will occur in conjunction with the extensive

presence of this *organism* within the blood. *Again, each individual must consult with their own health professional on any consideration given to this information.*

3. A set of minimum conditions that allow the growth of the *organism:*



Over the past few years, various culture mediums have been used to develop the filament colonies, with emphasis upon the use of oral samples. There remains additional work to be done, as a good portion of the success or failure has been through trial and error in addition to conjecture. The early cultures were developed in an agar medium, with both blood and beef broth as a base. These cultures were successful and introduced some of the more exotic findings involving erythrocytic forms within the growth stages. Numerous papers have been issued on that aspect of the Morgellons issue as well, (e.g., Artificial Blood?[8], Blood Issues Intensify[9], Morgellons : A Status Report[10].)

The next stage of culture development involved the accidental discovery of success using red wine, the very same solution that is commonly used to extract the oral samples. This finding was a complete accident, and resulted from leaving oral extractions undisturbed for several weeks to even months within that solution.

The next discovery was that white wines were also successful for growth of the culture (not so for extraction, however, as there is a dye process attached with the use of red wine). The white wines have the distinct advantage of allowing observation in a translucent medium, which makes the monitoring of growth under a low power scope much easier. They white wines may or may not be as favorable to growth, however, this remains unclear. Simulated wine mediums were also developed to replicate the general chemistry of wine, however, no particular advantage of that effort came about. The chemistry of wines is in general, quite complex, and increases the difficulty of analyzing the metabolic requirements for growth using that medium.

The most recent culture work produces a somewhat surprising result, and this is that the medium of growth can actually be relatively simple. In earlier work(ibid., Morgellons: A Discovery and A Proposal), it has been found that the addition of iron sulfate and hydrogen peroxide enhances growth within the wine medium. This process was described in detail and the issues of alkalinity vs acidity and anti-oxidants vs oxidants were raised on in a serious tone. The importance of those findings remains as influential as ever upon the prospects for mitigation of the “condition”.

It has now been discovered that prolific growth can occur in a medium of only water, iron sulfate and hydrogen peroxide. It is now feasible that growth will occur in even a more restricted medium. It is known, however, that sufficient growth for analysis can easily be established within this simplified medium. This has both advantageous and disadvantageous implications in the research. As an advantage, it simplifies the requirements of analysis. As a disadvantage, particularly as it relates to the importance of iron within human metabolism, it prevents some formidable obstacles to proposals that seek to inhibit or eliminate the growth within the body. Please recall the earlier reference made to the active genetic research seeking the inhibition of iron consumption within certain bacterial or archaeal forms. Unfortunately, the Institute does not have access to such resources at this time; hopefully there are those that desire to support such needs and causes.

In addition, the organism has been subjected to numerous exposures from caustic agents, acids, extremes in temperature and the lack of moisture; these have produced no detriment to its existence. These latter additions only complicate the issue further and raise the bar for recognition of the resources required to approach the problems in earnest.

4. A variety of growth forms have been identified; they possess, however, a common spectral signature.

There are several variants of growth forms that have been identified in the culturing process, but at the microscopic level they appear that they are essentially the same form. Some of these variations include:

1. An original oral or skin filament growth form.

2. The early stages of culture growth, which are somewhat amorphous in structure.

3. The emergence of the primary filament structure on the surface of the medium.

4. The emergence of more substantial filaments, usually colored, at the bottom of the liquid culture medium

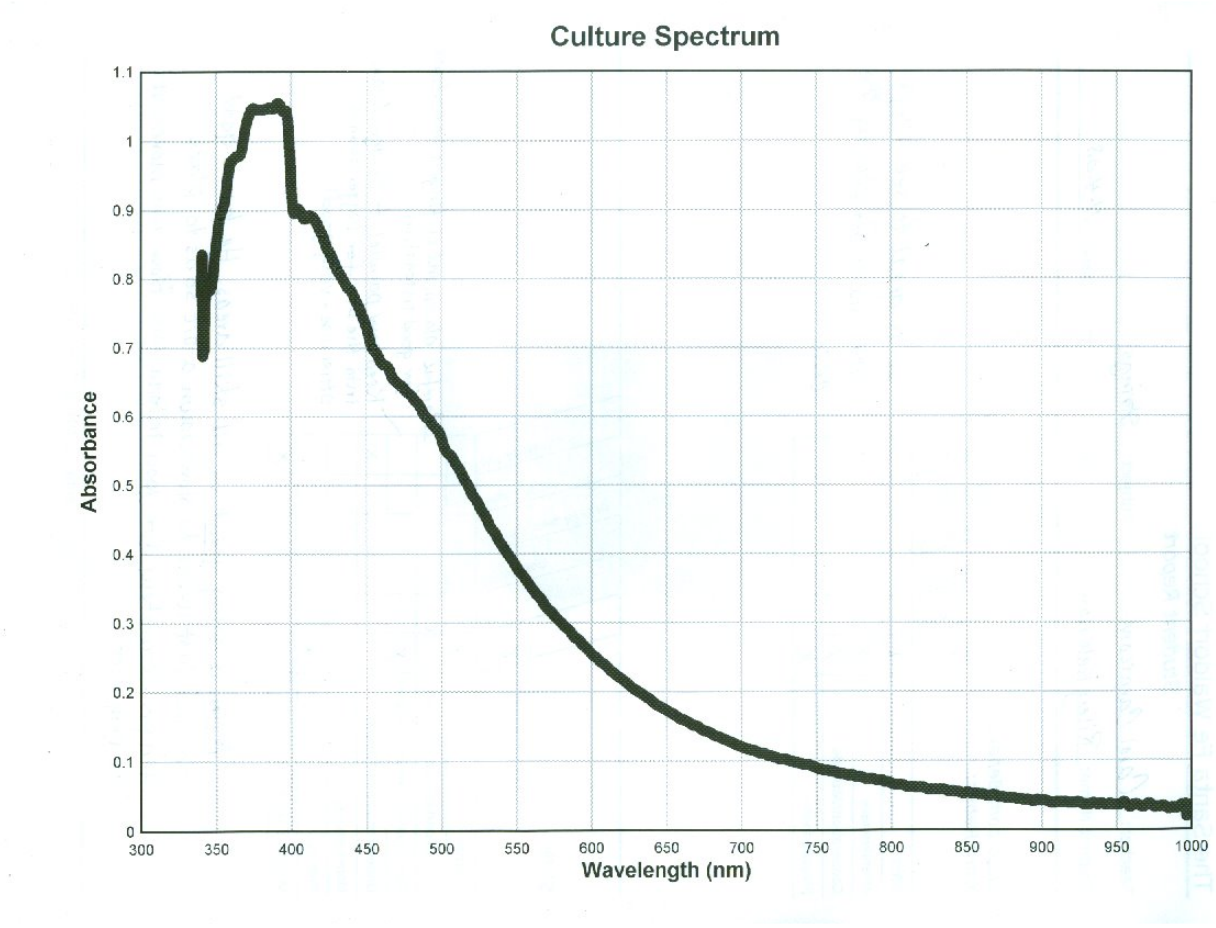
5. The more substantial filament form representative of a maturing culture. The first stage of this growth is pure white in color.

6. Successive stages in the colors of the maturing filament growth, progressing through green and eventually black colors.

7. A newer and unusual form of growth that has recently been reported when subject to blue light energy. Although still filamentous in nature to the visible eye, this is of a much coarser nature that demonstrates an explosive growth cycle.There is reason to believe that many more “exotic” forms of growth are associated with the *Morgellons* condition but these will require more detailed documentation and examination to include them within the current scope of study.

An important observation is that, regardless of the variation in surface morphology, color or structure, the underlying spectral signature of the organism appears to be the same.

5. The measured spectral signature of the underlying *organism*.



The measured spectral analysis of the culture form in the visible light and near-infrared portion of the

spectrum.

A modern and professional spectrophotometer of high resolution has been acquired by the Carnicom Institute. Many thanks are extended to the the donors that have made this possible; additional laboratory equipment and a facility to operate from remain in need. The availability of this equipment has advanced the rate of progress by a factor of months with respect to certain problems to be solved. The instrument has also made numerous accomplishments possible which have not been accessible or available until this equipment came on board.

Essentially a unique signature of the organism has been identified; this has numerous advantages in objectively identifying the existence and presence of the organism. Please notice the similarity of this spectrum to that laboriously obtained with vintage equipment, as described in the paper, The Biggest Crime of All Time[11]. Further discussion on the importance and application of this work will be discussed in time.

6. Additional frequency analysis and the apparent impact upon the growth of the *organism;* considerations across the electromagnetic spectrum.

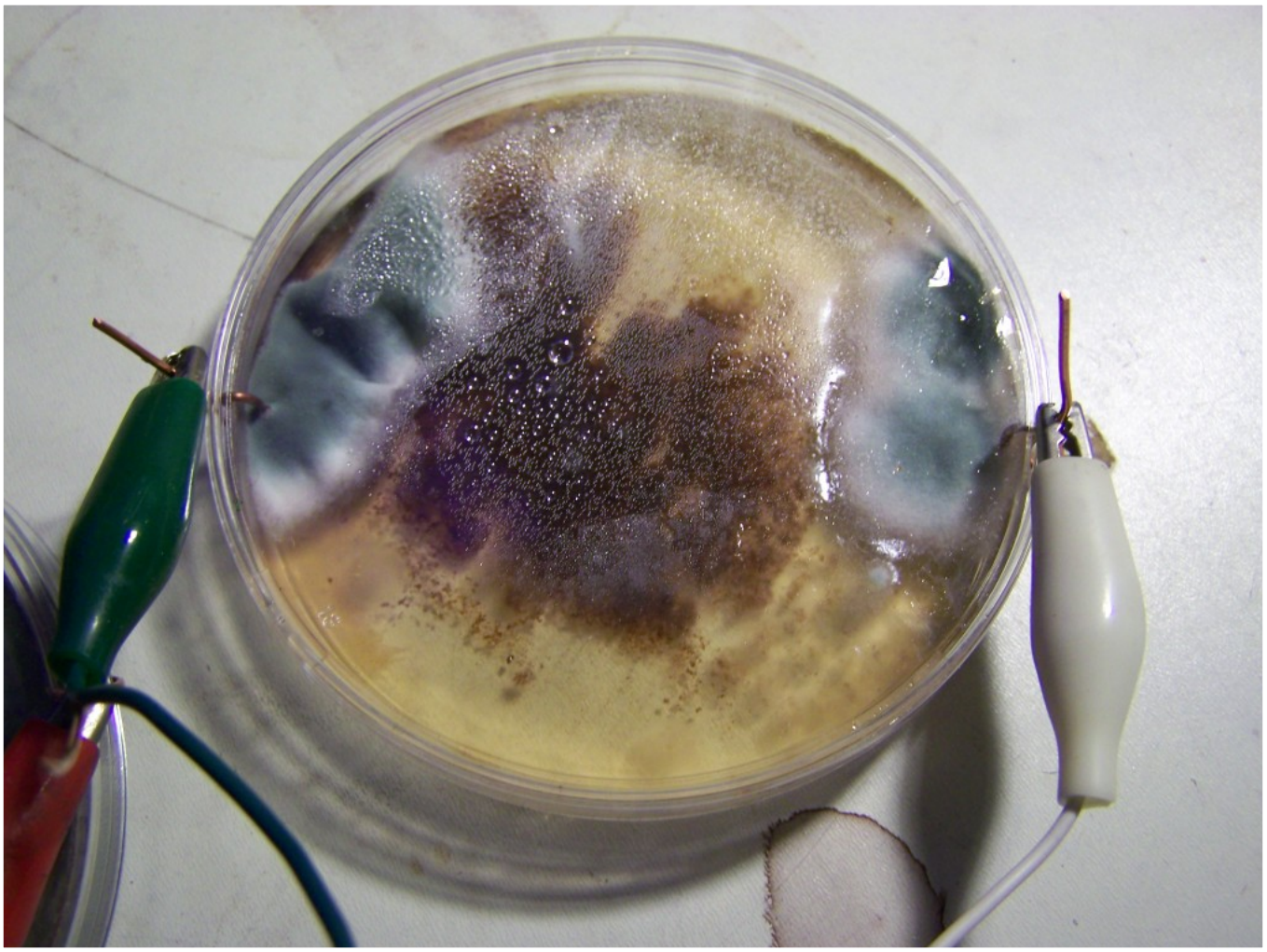
A process of remarkable growth has recently been described within the paper, A New Form: Frequency Induced Disease?[12] The project illustrated below is an extension of that finding and it sets the stage for further work in the future. The spectrum obtained shows that energy absorption by the organism reaches a maximum of approximately 390 nanometers in the visible light range. This characteristic appears to be a factor in the paper referenced immediately above. One question that arises from this work is whether or not harmonic frequencies corresponding to this wavelength may also be involved in affecting the growth of the organism. It may be beneficial, for example, to consider the ideas expressed within the paper entitled “A Look at the Frequencies of Rife-related Plasma Emission Devices” by Charlene Boehm[13].

The general ideas expressed within that paper have been applied in the section that is being briefly described here. One reason to consider harmonic frequencies is that frequencies outside of the visible light range can have either greater or lesser ability to penetrate the skin or internal organs of the human body. The discoveries and controversies of Royal Raymond Rife in this arena are well known by many. Another consideration of such frequencies is their ability to either enhance or inhibit, or even destroy, certain organisms or pathogens. The risks and uncertainties of engaging blindly or in a foolhardy fashion using these methods have been already been clearly stated and will not be repeated here.

See: A New Form: Frequency Induced Disease?

The harmonic frequencies to consider can be arrived at by multiplication or division by increasing powers of two. The speed of the electromagnetic wave within the medium involved (vacuum, air, liquid, human tissue, etc.) must certainly be a part of the analysis. The case below shows the application of an electromagnetic wave at approximately 500Hz to a culture medium. The method of deducing that approximate frequency for application can be discussed at a later time. The current through the medium was measured at approximately one milliwatt.

What is clearly demonstrated below is an increased growth rate in the culture, especially in the electrode regions. An advancement to the filament stage of growth is clearly evident as a result of the current and/or frequency combination. The sensitivity of the process to a change in frequency is simply not known at this time; it is possible that the results may not be as much frequency dependent as they are current induced. Extensive research on this topic remains a prospect; a multitude of harmonic frequencies and or current combinations may be tested if the equipment becomes available.



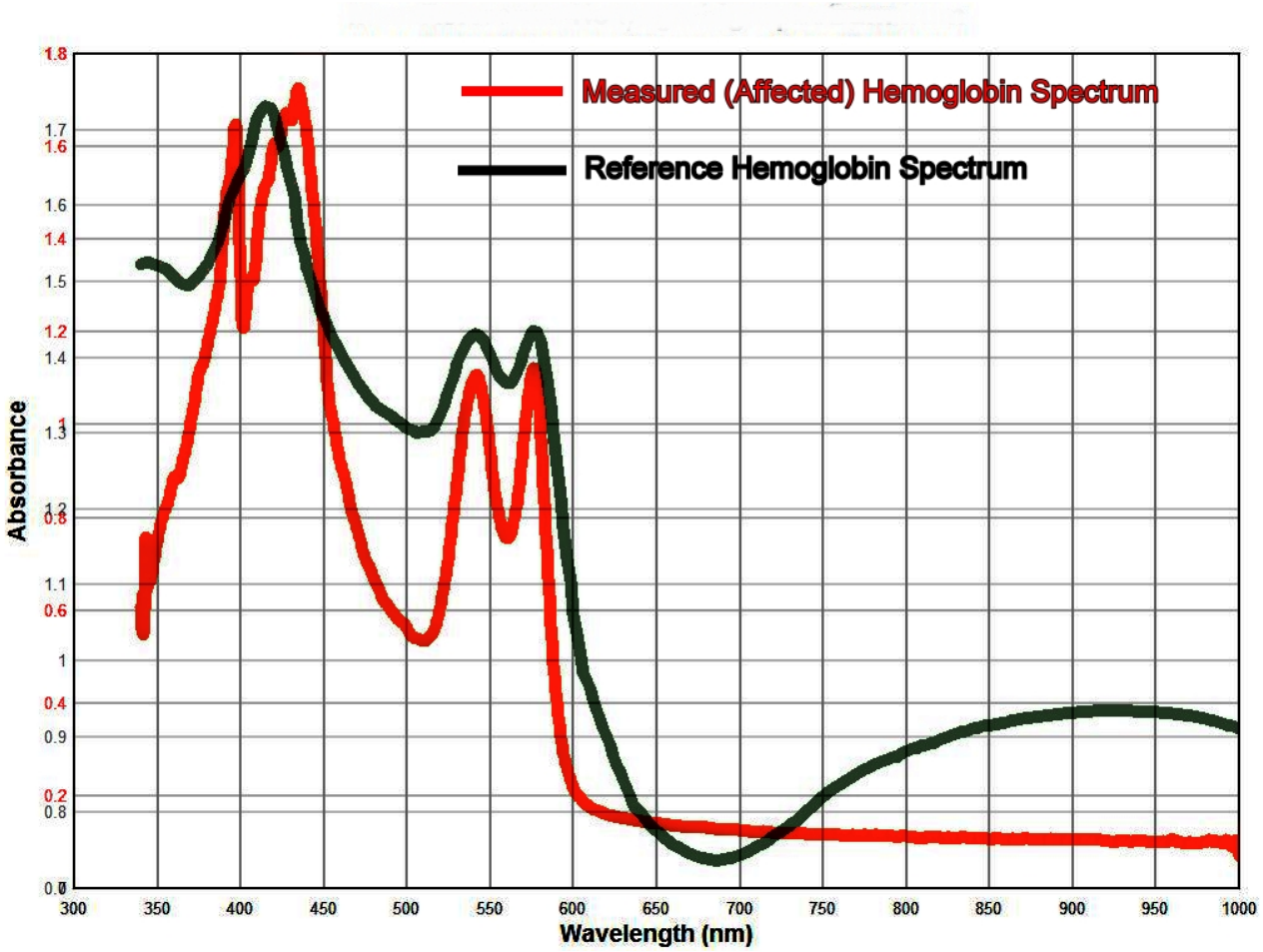
7. A spectral method to outline the potential presence of the *organism* within the blood of an individual and the expected impact upon the blood.

The graphs shown below are of much importance and they will be instrumental to numerous applications in the future. It is now known that the metabolic process of the organism has a strong dependence on iron. It is also known that the organism causes serious degradation to the condition of the blood, and the consumption of iron within the blood is most certainly an obvious important factor within the research.

A thesis is proposed that the influence and impact of the organism upon the blood can be established through the use of spectral analysis. An example of such influence and impact is shown below. Nothing presented here is to be interpreted as a diagnostic procedure of any kind, and the disclaimer above is repeated here for emphasis:

Note: I am not offering any medical advice or diagnosis with the presentation of this information. I am acting solely as an independent researcher providing the results of extended observation and analysis of unusual biological conditions that are evident. Each individual must work with their own health professional to establish any appropriate course of action and any health related comments in this paper are solely for informational purposes and they are from my own perspective.

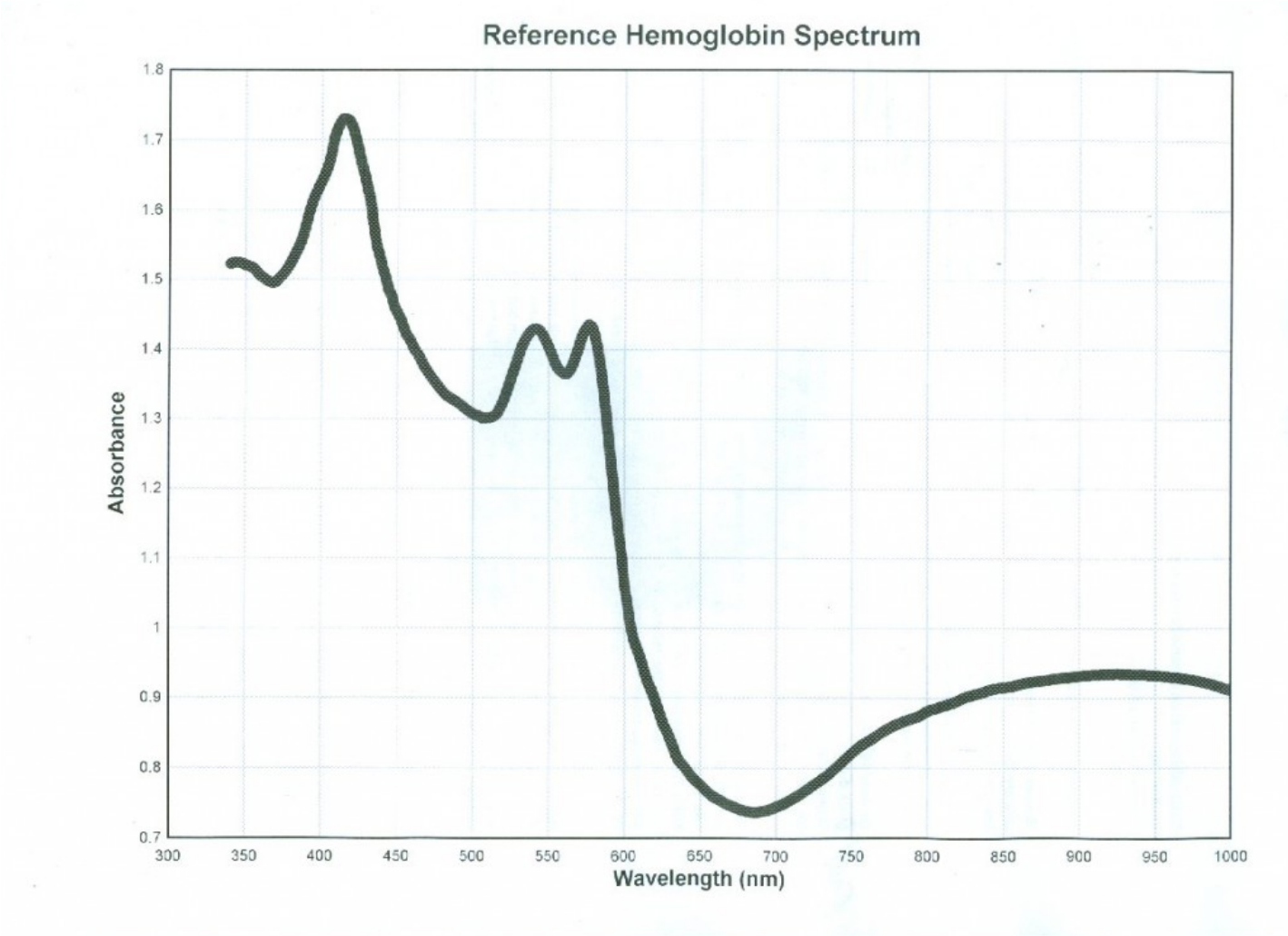
The approach that is presented here is offered freely to the medical community at large for their consideration in future strategies developed for the mitigation, reduction or elimination of this condition. While not diagnostic in nature, the detection of the organism within the blood and the impact upon the blood does appear evident as a result of this research. It will be for the medical community to determine the viability of the method in specific applications. The purpose here is to summarize the methods and findings; further discussion in detail will again need to be reserved for the future.



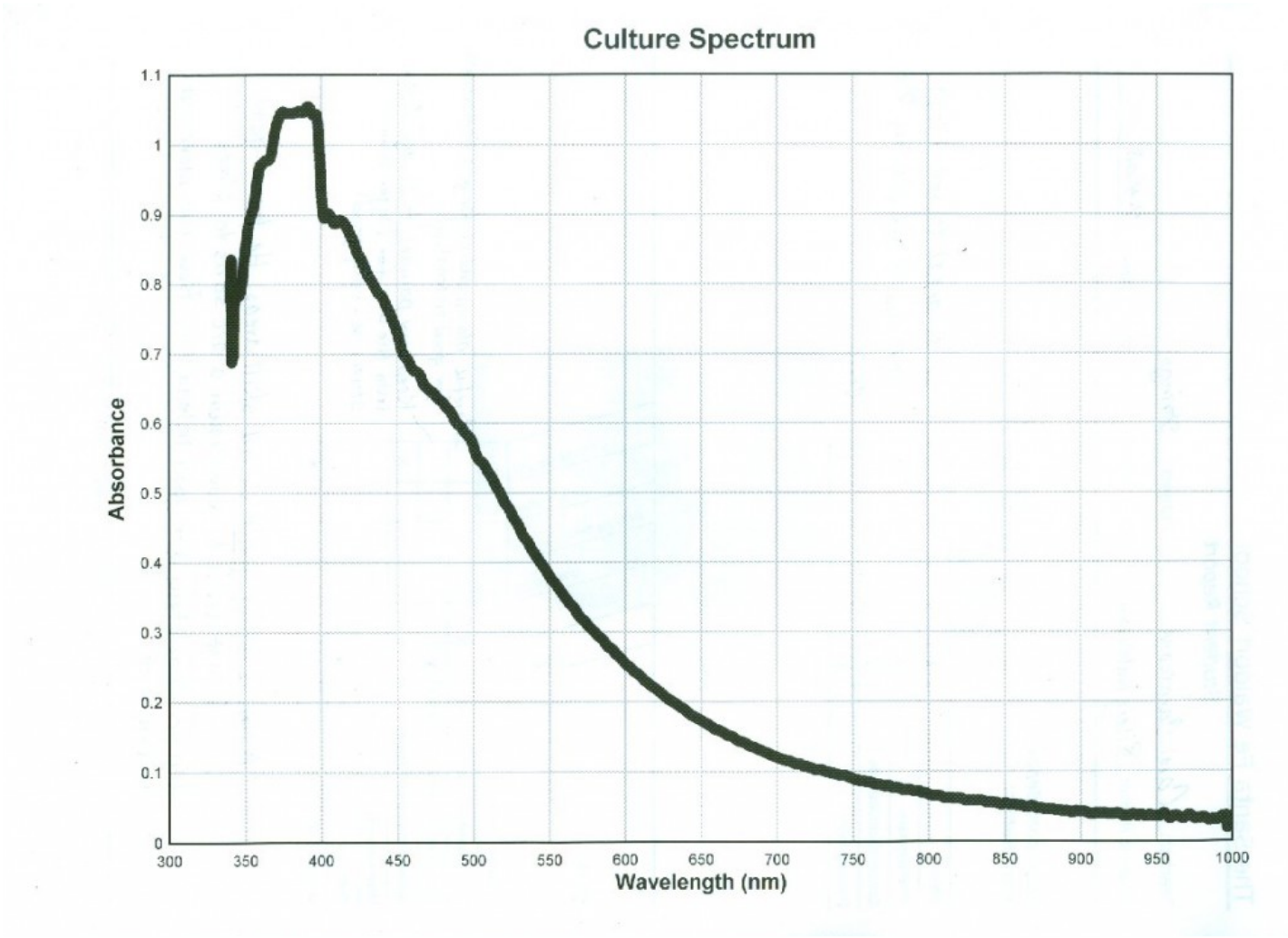
This graph shows an overlay between the expected spectrum of hemoglobin (reference spectrum in black) and the spectrum of an individual that shows the presence of the organism under research within the blood. This organism is the same as that which is subsequently developed into a culture (predominantly filamental) form.

The organism alters the hemoglobin in a very distinctive fashion that is identifiable and repeatable. Most noticeably, the presence of an anomalous, or unexpected sharp peak in the spectrum occurs at approximately 390 nm. **This peak that appears in such prominent fashion within the affected blood is not expected to be a part of the normal hemoglobin spectrum**. This influence, amongst others, presents itself as an important and viable method for the detection of the organism within the blood of an individual. There are additional measurable influences upon the spectrum, such as the sharper decline in absorbance in the 430-500 nm range, as well as the diminished absorbance in the 700-900 nm range. Another consequence of the combination of influences in the spectrum is a shifting of the primary peak in hemoglobin at 414 nm to approximately 425-430 nm. These changes in the spectrum are anomalous, measurable and repeatable; they will be of much value in future research related to the *“Morgellons”*

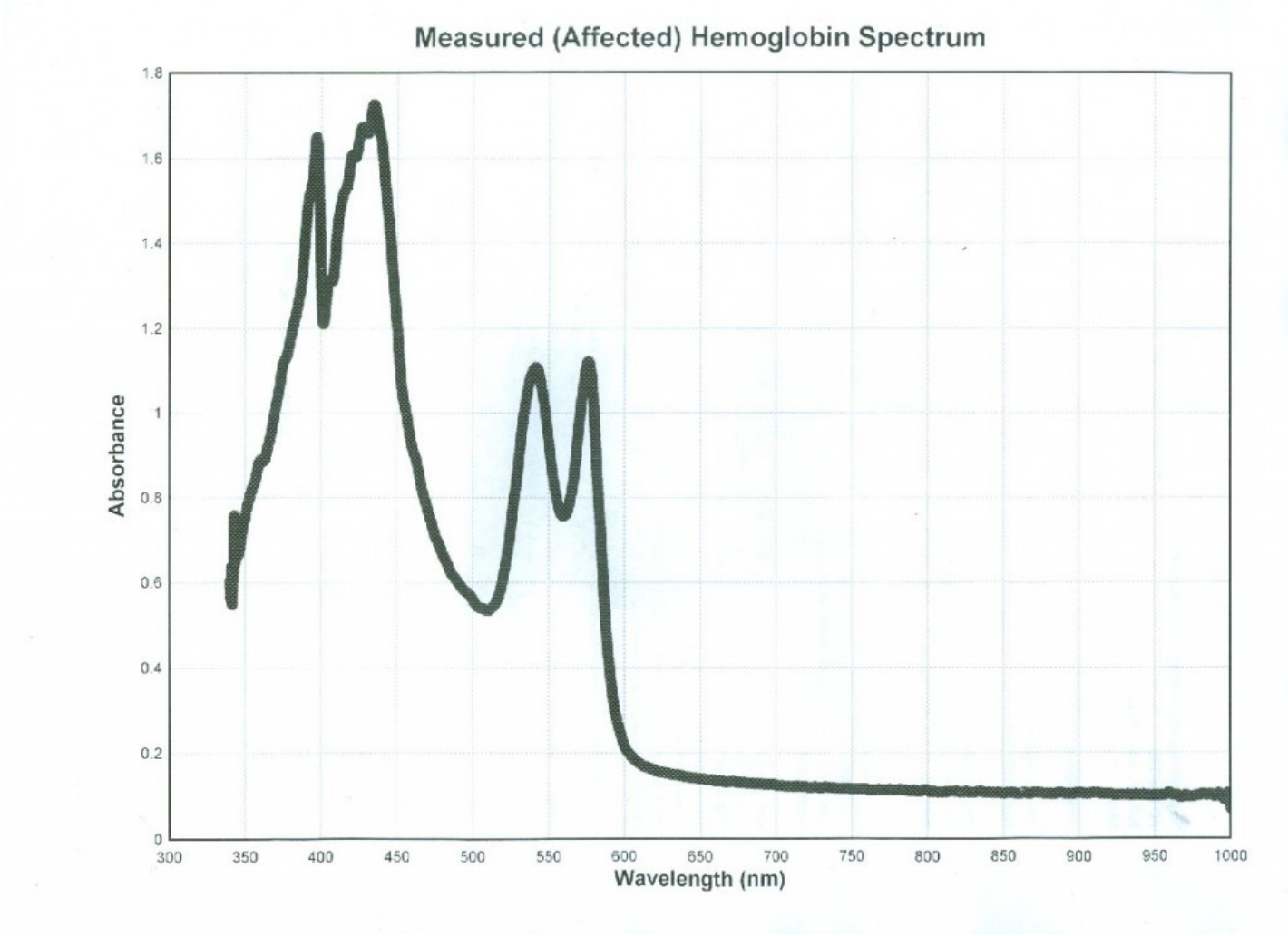
condition.



The theoretical reference spectrum for hemoglobin[14]. Peaks occur at 414, 542 and 576 nm respectively.



The measured spectrum of the organism in culture form. This spectrum is identical to that of the environmental and human biological samples that have been discussed in detail on this site.



A representative measured spectrum of hemoglobin that is affected by the presence of the sub-micron organism under study. Modification of the reference spectrum has been discussed above.

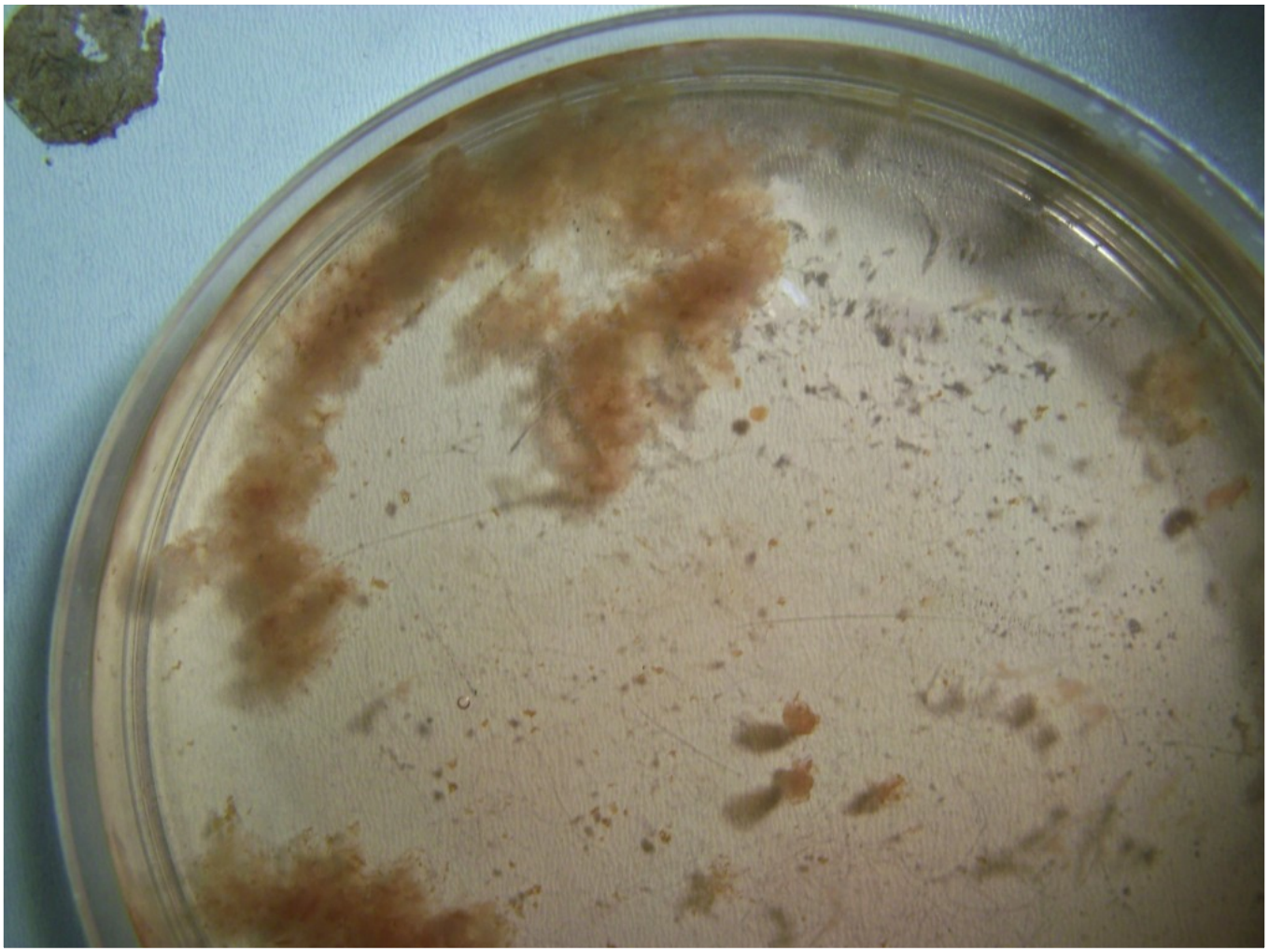
The graphs shown above essentially present the components that combine to produce the altered hemoglobin spectrum discussed above. The spectra shown here will be the basis of much study and examination in the future. It has been stated on many occasions that the condition of the blood and the presence of filaments within the body appear to this researcher to be a more accurate method of assessing the presence of the condition. The use of spectral analyses may allow for a greater level of objectivity in this approach.

8. Indications of increased acidity in correlation with the “Morgellons” condition. The role of pH in the corrosion rate of iron. The diminished capacity of red blood cells to absorb oxygen in a more acidic environment.

It is known that the organism thrives within an acidic environment. There is also reason to consider that the organism itself may increase the acidity of the human biological state. It is also a fact that iron (blood contains iron) corrodes more quickly in an acidic environment. Lastly, in an increased state of acidity within the human body and blood cells have a diminished capacity to absorb oxygen. These factors are in addition to the structural damage of the blood by the organism as it has been repeatedly described.

9. The success of growth of the organism in a blood based culture medium.

It has been established that human blood is a productive medium for the growth of the organism in a cultured form. In the case below, the stock culture solution is prepared using sodium hydroxide (lye) and heat to break down the filaments as has been repeatedly described. Iron sulfate and peroxide was used to begin the culture process. Human blood was then introduced into the culture medium to test further growth. The growth rapidly escalated and immediately established itself in the mature filament form. The rust color of iron-oxide is again visible. All testing in all ways to date strongly supports the contention that iron is a primary source of nourishment to the organism.



A filament culture developed from human blood as the primary source of nourishment to the culture.

10. Additional strategies, beyond alkalization and anti-oxidation, to be considered in the mitigation of the growth of the organism.

The statements below may also be of great importance during future research and analysis. It has already been reported that alkalization of the body and the use of antioxidants may serve a role in the mitigation of the growth of the organism. This has been described in depth within the papers entitled Morgellons: A Discovery and A Proposal and Growth Inhibition Confirmed[16]. Again, no medical advice, diagnosis or therapy of any kind is being provided and all discussions relate to that of observation and analysis only; each individual must consult with their own medical practitioner for health related advice.

The role of the consumption of iron that is now understood more deeply as well as the visible damage

to the blood leads us to consider additional strategies that may be of a more proactive nature in the mitigation of growth of the organism. We are now able to ask additional questions in a more forthright fashion, and seek those answers:

1. What is it that will allow for greater absorption of iron by the body? Conversely, what compounds may act to inhibit the absorption of iron by the body?

2. What is it that might inhibit iron-eating bacterial-archael forms (or modifications thereof) in a manner that will allow existing iron to be more fully utilized in the body?

These questions are the genesis for potentially fruitful discussions in the future, in addition to those of alkalinity and anti-oxidation that have been established. We may, at this point, at least begin the discussion.

One answer to the first question involves Vitamin C. Vitamin C increases absorption of iron in the body[17]. Vitamin C is also essential in the production of hemoglobin[18]. It is also of interest that Vitamin C is also an antioxidant, and plays an important role in paper most recently referenced. But in addition to being an anti-oxidant, Vitamin C also can improve the absorption of iron by the body. There are now two important reasons that Vitamin C may be considered in the development of strategies to inhibit or mitigate the growth of the organism. Facilitators for iron absorption are stated to include ascorbate, citrate and amino acids. Inhibitors in iron absorption are stated to be phytates, tannins, soil clay and antacids for example[19].

Lastly, let us introduce an initial response to the second question; this consideration also leads us to many interesting avenues of discussion for the future. There is indeed a certain protein, commonly found in mother's milk, than inhibits the growth of iron-dependent bacteria in the gastrointestinal tract[20]. The name of the protein is lactoferrin. Although this paper is not to be a discussion on the topic of breastfeeding, the constituents of human milk become immediately relevant to the research at hand. The anti-bacterial properties of human milk, (i.e., especially with respect to the iron situation) are extremely important for our consideration here. The mechanism involved in the defense is the *binding* of the iron with the lactoferrin protein[21], and this prevents the more direct consumption by the iron-eating bacteria (or potential modification thereof). This is the principle of a chelate.

The obvious manner in which to end this discussion for now is to ask whether there are any commonly sources of lactoferrin available to humans beyond the infant stage. The research at this time indicates at least one available source – *whey*[21,22]. Concentration levels in various sources as well as their efficacy will be major points of consideration in the future. Culture trials will eventually measure the impact of this protein and compound upon growth rates, in combination with the additional strategies that have been outlined previously. Initial results are encouraging. A recent comment sent independently to the Institute by a medical professional supports the prospective benefits outlined with respect to lactoferrin, and this suggestion is appreciated.

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Edit Jun 13 2011:

Two additional strategies also now evolve as a result of synthesizing the accumulated observations and analyses of this research. The first of these is to improve the flow of bile and the second is to detoxify the liver. The bile plays an extremely important role in the alkalizing of the body and in the digestive process. The liver is incredibly important with respect to the removal of toxins and the digestion of lipids (fats).

Please refer to the following set of videos for preliminary information on these two subjects:

Gallstones, Liver, Gallbladder, Kidney Cleanse Part 1
Gallstones, Liver, Gallbladder, Kidney Cleanse Part 2
Gallstones, Liver, Gallbladder, Kidney Cleanse Part 3
(no product endorsement or promotion by this site; educational purposes only)

["Gallstones, Liver, Gallbla…" The YouTube account associated with this video has been terminated due to multiple third-party notifications of copyright infringement.12/13/15]

In summary, a total of six strategies have now evolved that may demonstrate or show some degree of effectiveness in the mitigation or reduction in the growth of the organism. They are:

1. Alkalization.

2 Anti-oxidation.

3. Increasing the utilization and absorption of existing iron.

4. The inhibition of the growth of iron-consuming bacteria (and bacterial-archeal like) forms.

5. Improving the flow of bile in the system to further alkalize the body and aid the digestive system.

6. Detoxification of the liver (toxin removal and breakdown of lipids (fats)).

Each of these strategies have developed through direct research, study, analysis, and/or observation within a laboratory environment. They are each offered to the medical and health community for consideration and evaluation as they apply to the human condition.

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This particular paper represents only a summary view of the topics that are deemed worthy of pursuit by this researcher and the Carnicom Institute. Additional discussion or presentation will occur as time and circumstance permit. If you wish to contribute more directly to the research and/or contribute resources to this cause, please contact the Carnicom Institute.

Sincerely,

Clifford E Carnicom
(born Clifford Bruce Stewart Jan 19 1953)

References:

1. Titanic-Resting-or-Reacting, Sarah Don, 2008.

2. A Mechanism of Blood Damage, Clifford E Carnicom, Dec 2009.

3. Morgellons: A Discovery and a Proposal, Carnicom, Feb 2010.

4. Morgellons: A New Classification, Carnicom, Feb 2010.

5. Metal-Eating Bacteria Corrode Pipes in Oil Industry, Access Excellence, 2004.

6. Iron Eating Bacteria Deciphered, Gauntlet, 2004.

7. Blood Diseases : Anemia, University of Maryland Medical Center, 2011.

8. Artificial Blood?, Carnicom, Aug 2009.

9. Blood Issues Intensify, Carnicom, Apr 2009.

10.Morgellons: A Status Report, Carnicom, Oct 2009.

11.The Biggest Crime of All Time, Carnicom, Mar 2011.

12. A New Form: Frequency Induced Disease?, Carnicom, Mar 2011.

13. A Look at the Frequencies of Rife-related Plasma Emission Devices by Charlene Boehm, 1999.

14. Optical Absorption of Hemoglobin, Scott Prahl, Oregon Medical Laser Center.

15. Ultraviolet and Visible Spectroscopy, 2nd Edition, Michael Thomas, John Wiley & Sons, 1996, p. 20.

16. Growth Inhibition Confirmed, Carnicom, Mar 2010.

17. How to Increase Iron Absorption, Kristie Leong, MD.

18. Iron Deficiency Anemia, National Insitutes of Health.

19. Iron Absorption, Harvard University.

20.What's in Breast Milk? American Pregnancy Association.

21. The Truth About Iron While Breastfeeding, Gwen Morrison.

22. Protein Powders, Abstract (informational only-no product support).

Jun
MORGELLONS : ALTERED BLOOD
Jun 17, 2011

MORGELLONS : ALTERED BLOOD
Clifford E Carnicom
June 17 2011

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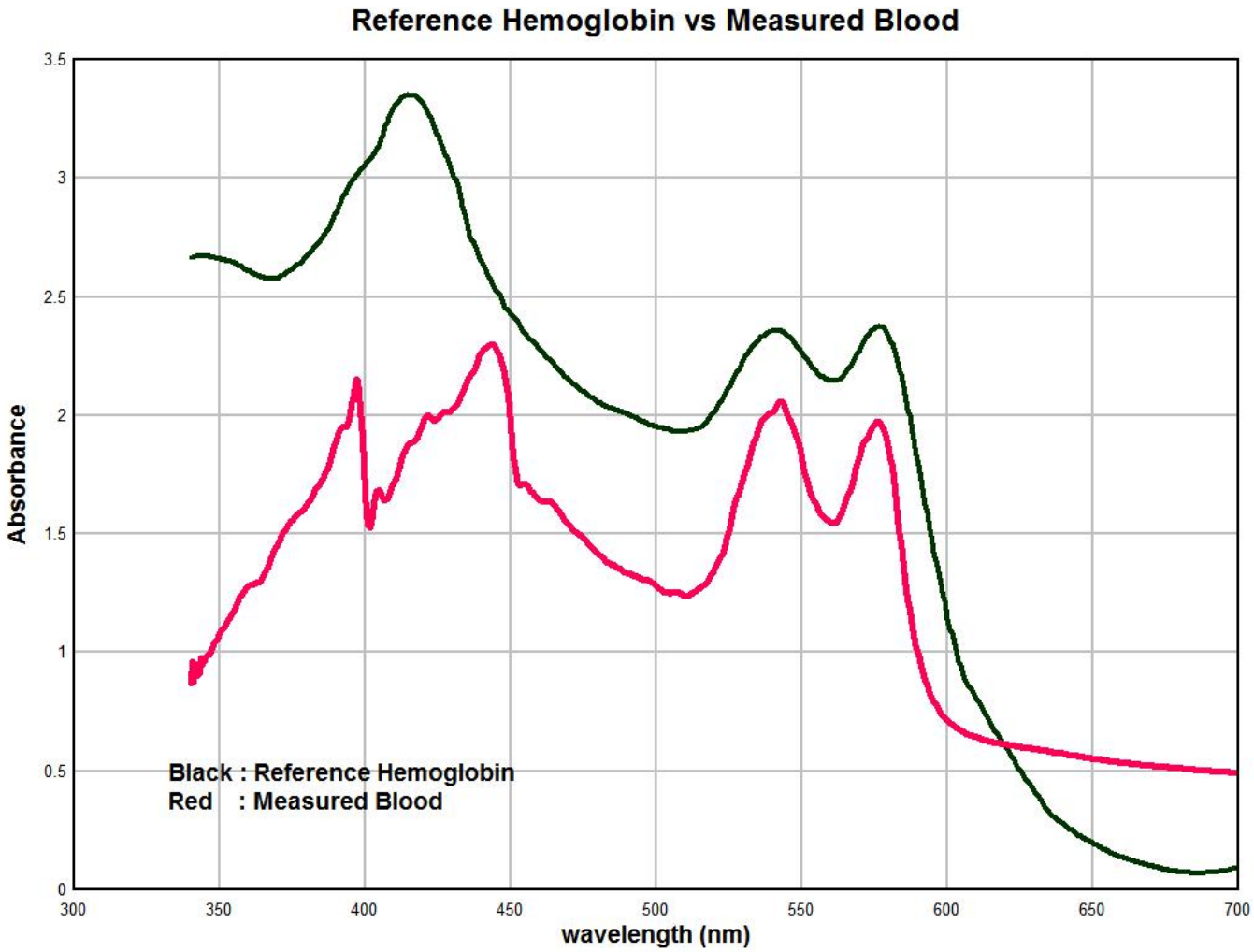
Analysis shows that the primary organism (or pathogen) characteristic of the “Morgellons” condition, as isolated and identified by this researcher, causes a signficant biochemical change in the nature of human blood in which it resides. The dramatic change in the character of the blood has also presented through visible observation for several years, but this change is now objectively and directly measurable through the use of spectral analysis. This change in the general character of human blood, as it has been measured from several individiuals, is regarded as highly significant and expressive of a potential fundamental change in the human condition. The representative change in the character of the spectrum is shown immediately below:



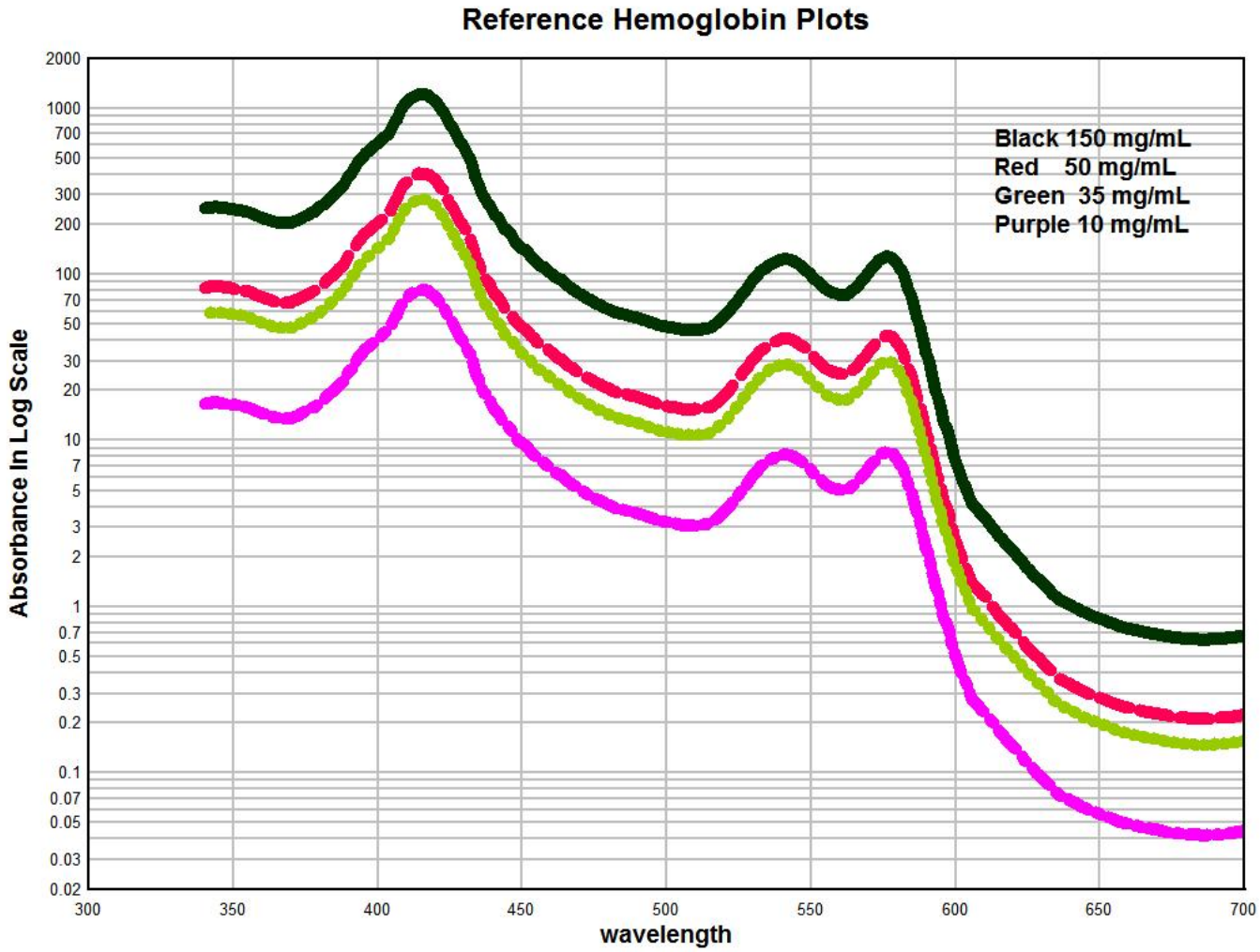
The above shows the nature of the change and of the problem. All matter reacts in a unique fashion to electromagnetic energy which, in this case, is visible light. Hemoglobin, (the primary protein in human blood cells), has such a unique and characteristic spectrum over the visible light range. This expected, normal, or reference spectrum of hemoglobin is shown with the black line in the graph above[1]. This spectrum shows how a substance or element reacts to energy, and the locations of the peaks in the graph are where the hemoglobin absorbs the most energy in the visible range. In this case, this *should be* at approximately 414, 542 and 576 nanometers respectively. There are important variations to this expectation, and they pose serious problems that are to be confronted.

The red line in the graph shows the average hemoglobin spectrum as measured within a set of nine essentially random individuals, ranging from approximately 23 to 70 years of age. The sample size may be increased further in the future but statistical significance is nevertheless already attained. Such a monumental change in the basic nature and character of a fundamental and crucial protein within the human body is a manifestation of significant biochemical changes within that same body. By no measure

of a “normal” state of health would such a change be regarded as within “acceptable” or “expected” boundaries. The fundamental nature of the protein, i.e., blood, has been changed in the case presented. This researcher continues to contend that state of the blood of an individual is one of the most reliable, if not the most reliable, indicators of the existence and severity of the so-called “Morgellons” condition.

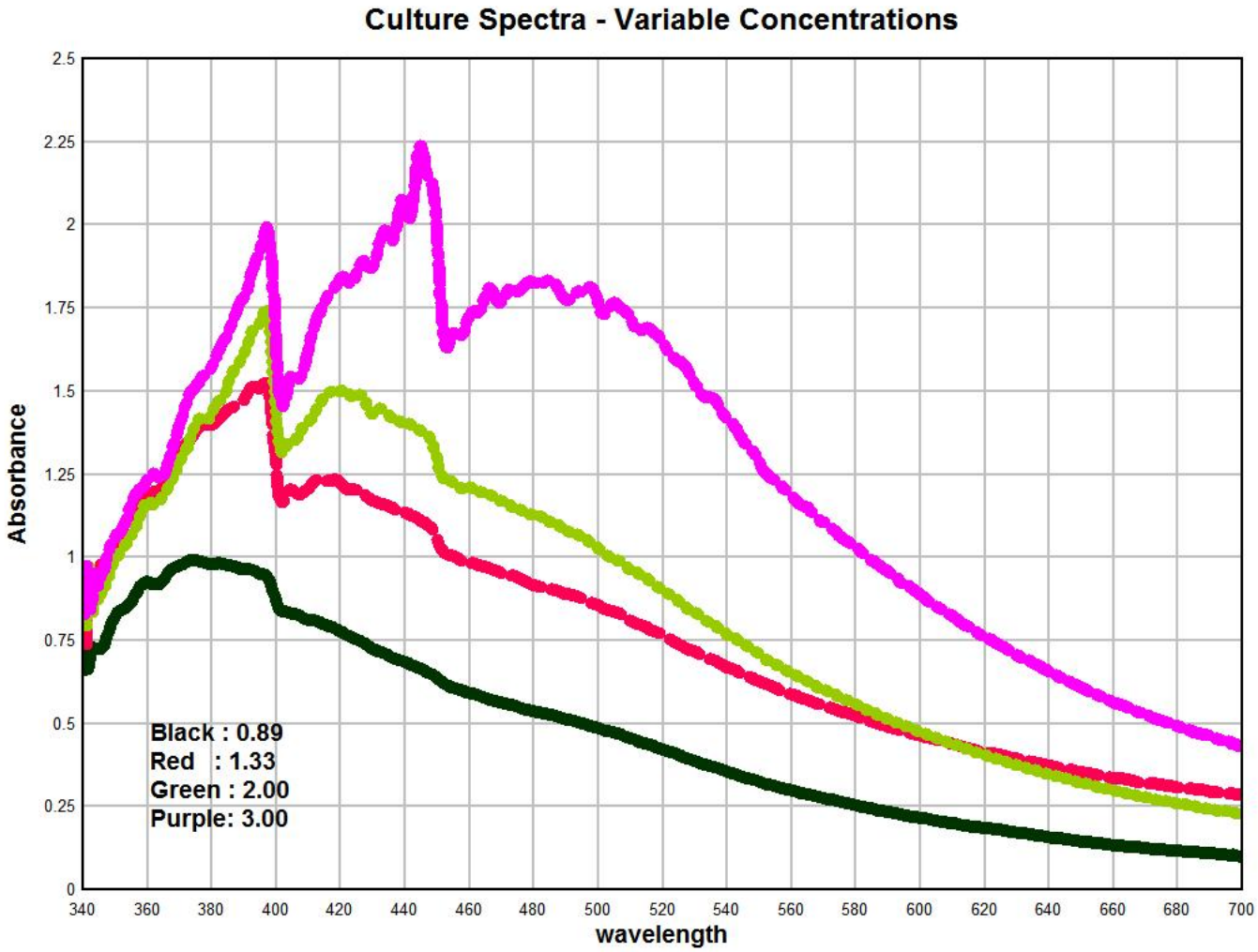
Future work and papers will focus on the interpretation of the nature of this change, and the development of a spectral method to indicate those individuals that may be subject to greater risk of existence of the condition or of more dramatic changes in the blood of the individual. No medical inferences are to be made from this research, and it is considered to be of analytical utility only. The medical community is invited to share in the collaboration or examination of this research as it perceived to be of benefit or not. The spectral methods under development are anticipated to be of value in the monitoring or measurement of change of the condition in a non-invasive manner.

The graphs below will provide further insight into the spectral development process, and they are provided as a supplement to the primary finding reported above.



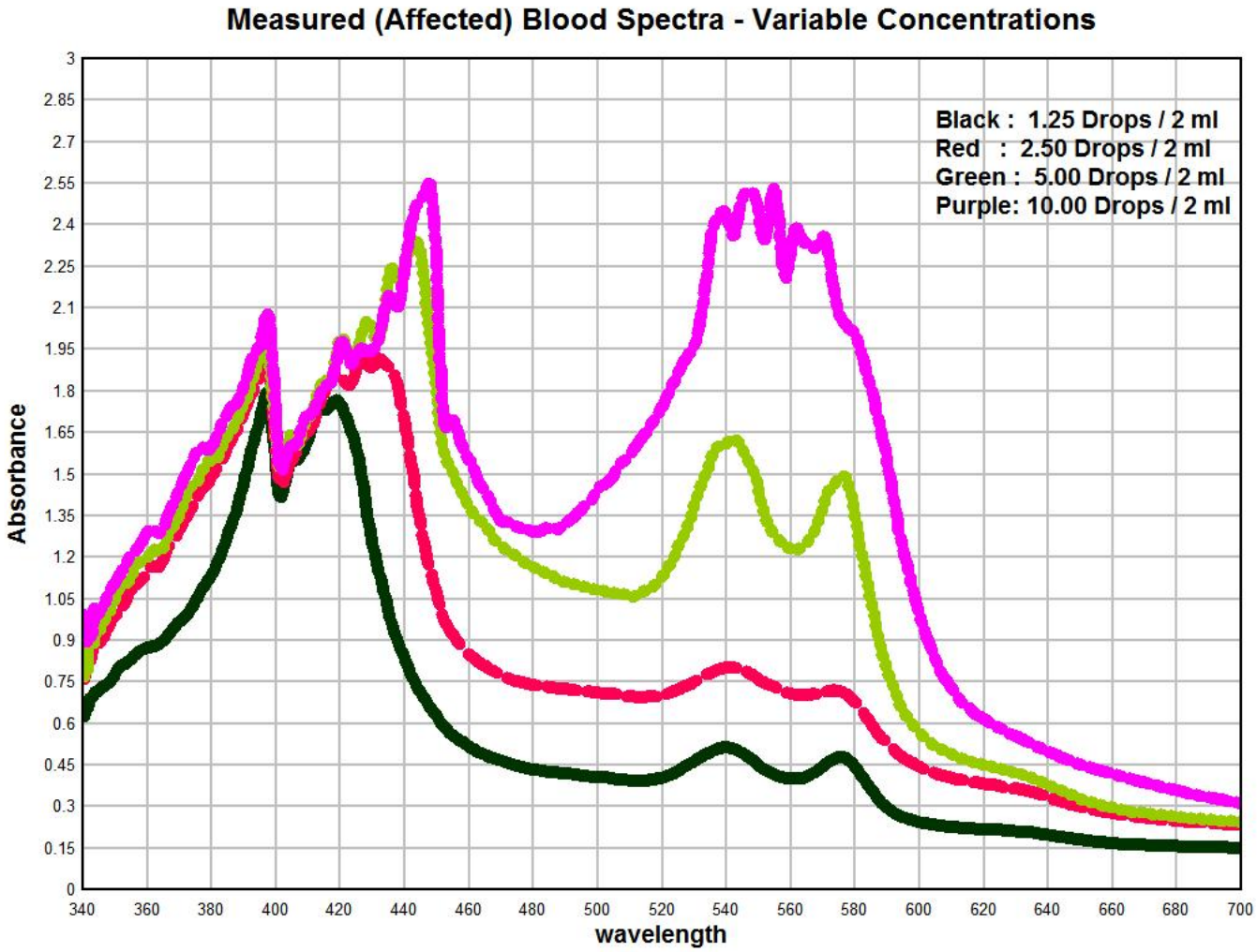
One of the ironies of the current research is that establishing a reference spectrum for hemoglobin, from current human blood samples, is problematic. At this point none of the human blood samples studied are able to reproduce the expected spectrum of hemoglobin. Each sample examined thus far demonstrates significant deviation from this expectation, as will also be described further below. This finding, now from

a spectral perspective, is actually in line with the concerns expressed by this researcher some time past, and this is that the general population appears to be subject to the so-called “Morgellons” condition to varying degree. The heart of this research, then and now, is upon a particular organism repeatedly identified in the blood of all samples observed, along with oral filament samples that are also characteristic of the condition. As such, it has actually been necessary to develop the “reference” hemoglobin spectrum from the literature, as no “pure” or *live* case is available to me at this time. The graph above is such a set of reference spectrums that have been developed from the literature on the subject[2]. The concentration of a substance can also affects its spectrum, and thus a process has been generalized to determine an appropriate spectrum for various concentration levels.



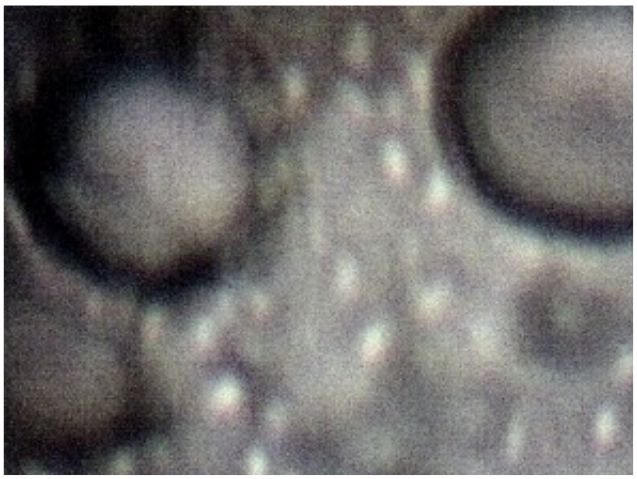
The graphs is an example of how concentration can affect the spectrum of a substance; this set of graphs shows the spectrum of the cultured organism over a fairly broad range of concentrations. It has been discovered that low concentration levels of the culture (sodium hydroxide and heat preparation, as described earlier) do not sufficiently portray the more dramatic spectral characteristics of the organism. This deeper examination itself was prompted by the appearance of an additional prominent peak and additional spectral influences observed within more concentrated blood samples. The important relationships between the spectra of the culture shown immediately above and its impact upon the blood will become more apparent to us as further research is described. In the interim, readers are invited to examine the patterns implicit between the reference hemoglobin spectrum, the spectra of the cultures, and the average spectrum of blood as it is being reported at the onset of this article. The graph to follow

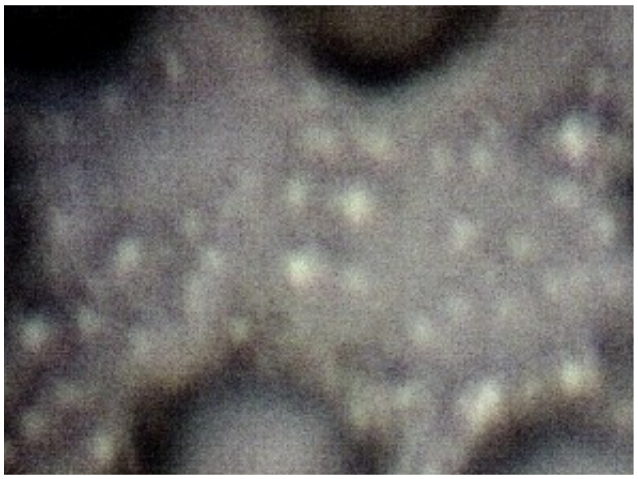
at the end of this paper will show the consolidation of these influences.



At an introductory level, this graph reveals the summary effect of the culture *organism* upon the blood. Shown above is what is proving itself to be a representative sample of a human blood spectrum under various concentration levels. Important insights may be gained by looking at this graph and how the character of the spectrum varies with respect to the concentration of the blood. It will be found to be equally insightful to examine how the spectrum of the cultured organism (as shown in the prior graph) also varies with respect to concentration levels. The greatest insight will be gained by combining both studies.

It will be observed, in general, that the greater the concentration of the organism within the blood, the more significant the impact is upon the hemoglobin, or blood of the individual. This is, of course, a perfectly logical statement, but spectral analysis now provides us with a tool to more quantitatively assess that impact. This will also, of course, be one of the major benefits of the spectral analysis of the condition that is now underway.





The photographs above revert to the alternative method of investigating the nature of the problem, and this is by direct observation of the blood. This has been the historical basis for most of the work on this site until recent assistance to the Carnicom Institute (much gratitude is extended) permitted the appropriation of helpful instrumentation. The larger structures are red blood cells, at approximately 5000x magnification. What is essentially being recorded here is the saturation of the surrounding blood plasma with the organism that is under study and as it has been repeatedly described on this site. This organism is at the sub-micron level and it is responsible for the culture spectra that have been shown in this report. At this stage both observational and instrumental techniques are available to study the nature of the “Morgellons” condition, and all information indicates a consistent and significant alteration of the basic nature, biochemical properties, and physical condition of the human blood.

Clifford E Carnicom
(born Clifford Bruce Stewart Jan 19 1953)

References:

1. Optical Absorption of Hemoglobin, Scott Prahl, Oregon Medical Laser Center.

2. Ibid., Prahl.

Oct
MORGELLONS : A THESIS
Oct 15, 2011

MORGELLONS : A THESIS
Clifford E Carnicom
October 15 2011
Edited Dec 01 2011
Edited May 10 2013

Note: I am not offering any medical advice or diagnosis with the presentation of this information. I am acting solely as an independent researcher providing the results of extended observation and analysis of unusual biological conditions that are evident. Each individual must work with their own health professional to establish any appropriate course of action and any health related comments in this paper are solely for informational purposes and they are from my own perspective.

Abstract:

A substantial body of research has accumulated to make the case that the underlying organism (i.e., pathogen) of the so-called “Morgellons” condition, as identified by this researcher, is using the iron from human blood for its own growth and existence. It will also be shown that the bio-chemical state of the blood is being altered in the process. The implications of this thesis are severe as this alteration affects, amongst other things, the ability and capacity of the blood to bind to oxygen. Respiration is the source of energy for the body.

This change is also anticipated to increase the number of free radicals and to increase acidity in the body. This process also requires and consumes energy from the body to take place; this energy supports the growth and proliferation of the organism. The changes in the blood are anticipated to increase its combination with respiratory inhibitors and toxins. The changes under evaluation may occur without any obvious outward symptoms. It is also anticipated that there are consequences upon metabolism and health that extend beyond the functions of the blood. This change represents essentially a systemic attack upon the body, and the difficulties of extinction of the organism are apparent. Physiological conditions that are in probable conjunction with the condition are identified. Strategies that may be beneficial in mitigating the severity of the condition are enumerated.

This paper will present this case progressively, and it will build upon the information that has been presented in previous papers. The paper will sequence through the following topics of discussion:

1. A Brief Introduction to the Chemistry of Iron

2. Beginning Observations

3. Qualitative Chemical Analysis

4. An Introduction to Bonding : Ionic, Covalent, Polar Covalent and Coordinated Covalent Bonds

5. The Structure of the Heme Molecule and the Role of Ligands

6. Qualitative Chemical Analysis of the Oral Samples : Two Methods to Verify the Existence of Ferric Iron

7. A Method to Extract the Oxidized Iron within the Filament Growth Structure

8. A Discussion of Ligands

9. Spectral Analysis of the Blood and a Comparison to the Growth Spectrum

10. Methemoglobinemia and Hypoxia

11. Ionization and Bond Disassociation Energy : The Cost of Oxidation

12. Bacterial Requirements for Iron in the Blood

13. The Oral Filament and Red Wine Reaction Resolved

14. Some Health Implications; The Value of the Holistic Approach to Medicine

15. Identification of physiological conditions that are in probable conjunction with the condition.

16. A Proposed Spectral Analysis Project

17. A Review of Proposed Mitigation Strategies

As we continue with our discussion, there will be three different general approaches that will be used in a combined sense to reach the conclusions that have been stated above. The first of these will be direct observation, the second will be qualitative chemical examination, and the last will be the use of spectral analysis and analytics. A synthesis of each approach will give us the understanding of the situation that we require. Let us begin with some discussion on the chemistry of iron and then follow with a few of the qualitative iron tests that are helpful in the methods that have been developed.

1. A Brief Introduction to the Chemistry of Iron:

Let us start with an introduction to iron. Iron exists in three primary forms in nature, the first in its elemental form with no net charge, and the other two as compounds, known as ferrous and ferric compounds. It is these latter two states of iron that will be of interest to us in terms of human biochemistry.

Ferrous compounds involve iron in a charged state, known as Fe2+, and *ferric* compounds involve iron in the valence state of 3, or Fe+3. The term valence refers to the number of electrons lost or gained in a chemical reaction. For example, a loss of two electrons from an atom will leave the atom in a charged state of +2. A charged atom or compound is called an ion or ionic compound, respectively.

Why is this important to us and why should we learn about the chemistry of iron? It is because iron is in our bodies and it is absolutely crucial to our lives and our health. The charged state of the iron in our bodies and our blood is of the utmost importance in understanding the changes to human health that are occurring.

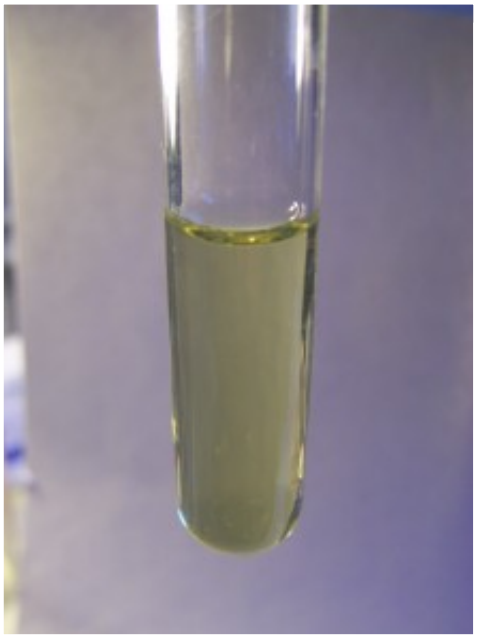
Now let us start focusing upon the iron in blood. Your blood needs iron to function. Not only does your

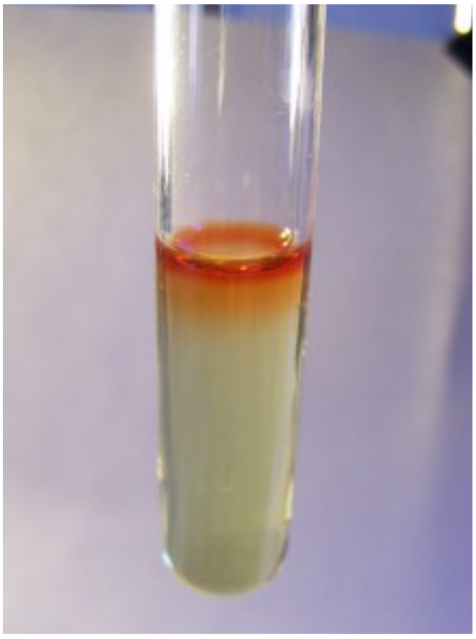
blood need iron to function but it needs the iron to be *in a particular state* for your blood to work properly. ***The iron in your blood must be in the ferrous form, or the Fe2+ in order to bind to oxygen***[1,2,3,4,5]. If it is ***not*** in this state (e.g, ferric iron or Fe3+), it will ***not*** bind to oxygen and human health ***will*** suffer. You are not thriving in an energetic sense if you do not have the proper oxygen content within your blood.

Hopefully we understand that the state of the iron in our bodies is not a trivial affair and it is in our interest to become educated on the matter. It is the very path that I have chosen in this research and the implications of these studies are profound.

Now let us talk, in a general sense, about what causes iron to change state. What for example, would cause iron in the elemental form (Fe) to go to the Fe2+ (charged) state, or for that matter, from the Fe2+ state to the Fe3+ (further charged) state? It is here that we introduce and explain the term of oxidation. As a familiar example, when something rusts, it is being oxidized. What it means, in a more descriptive sense, is that a chemical reaction is taking place and that electrons are being removed from an atom or substance. Formally speaking, oxidation refers to the process of losing electrons. Oxidation increases the charge state of the atom or ion, because as an electron (i.e, negative charge) is removed, the atom, ion or substance becomes more positive as a result. A typical example of oxidation is the change of iron from the Fe2+ state (i.e, ferrous) to the Fe3+ (i.e., ferric) state mentioned above.

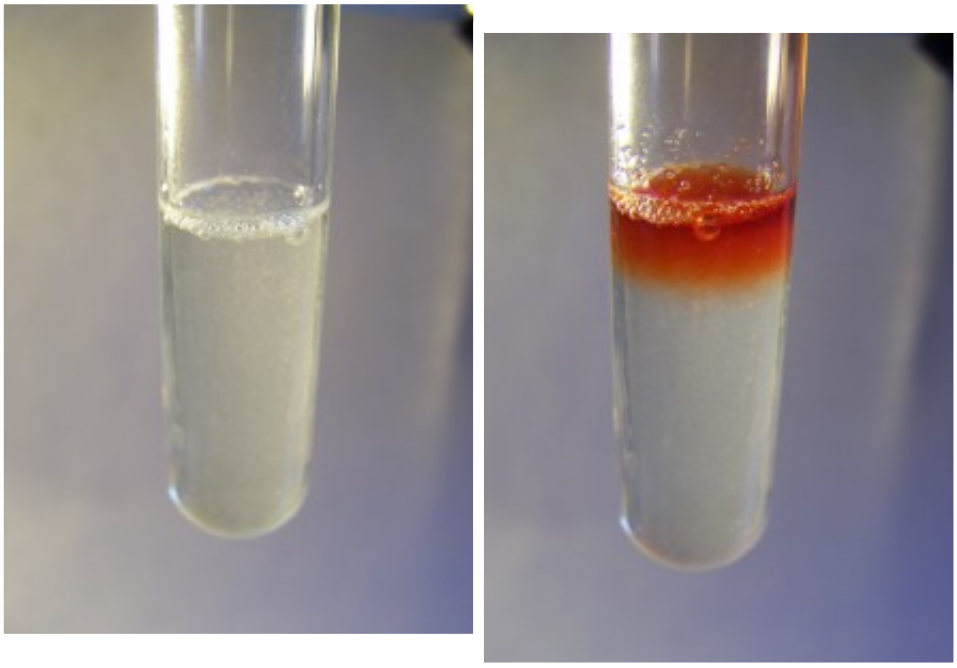
Below are some photographs that show testing of the iron ion in varying oxidation states, ie., Fe2+ and Fe3+ with the use of some specialized chemical reagents. One of the factors that is important in the qualitative tests that we are doing is that of color; color is an extremely useful tool for determining the existence of metals in solution and for the chemical state that they are in.



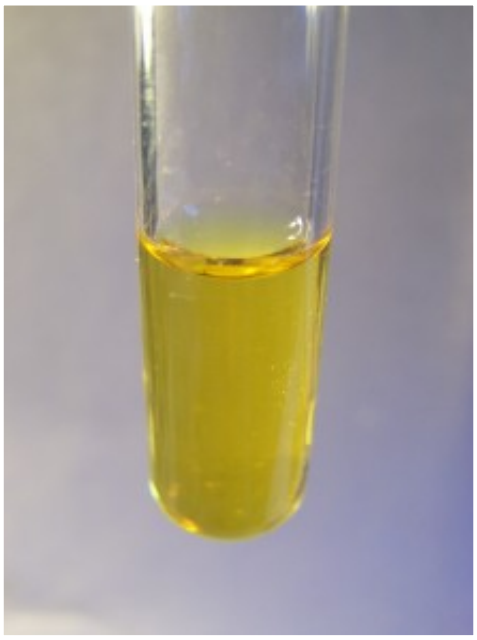


This set of photographs shows a solution of what is called “liquid iron”, essentially a solution of a ferrous salt (with some minor impurities) that is used in gardening applications. This ferrous solution is formed from a representative iron salt with the iron in the Fe2+ oxidation state. One of the important characteristics visually of the Fe+2 iron is the **greenish tint** that often accompanies the Fe2+ iron oxidation state. The photograph to the right shows the addition of a chemical (1,10 phenanthroline) that

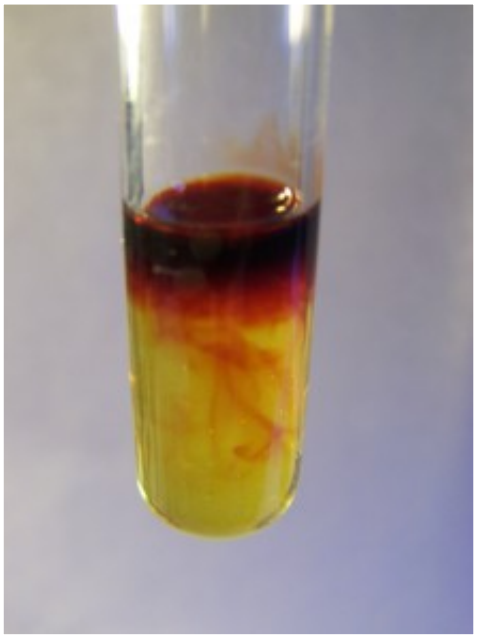
is very sensitive to the presence of the Fe2+ ion, and it turns the solution red in combination with the ion. The use of this chemical is a valuable and sensitive qualitative method to determine the existence of the Fe2+ ion.



This set of photographs is provided to demonstrate the variability of color as well as its value and importance. The photographs above show a freshly dissolved solution of ferrous sulfate. When the ferrous sulfate is dissolved in water it will ionize (separate into ions of Fe2+ and (SO4)2-). It will also generally turn light green in color but this example lacks the stronger green tint shown in the set to the left. Colors can easily be influenced by concentrations and impurities. A separate solution made previously demonstrates a stronger green tint that is characteristic of the Fe+2 ion; this particular one does not. The use of 1,10 phenanthroline reagent resolves the issue very clearly, however, as the characteristic reaction to produce the bold red color in combination with the Fe2+ ion is evident. This example demonstrates the value of approaching the problem from more than one perspective, such as with the use of color, chemistry and spectral analysis for a more comprehensive assessment of the situation.



This set shows an analogous qualitative chemical test for the presence of the Fe3+ ion solution. This particular solution is that of ferric chloride. There is an expected similarity in color between various ferric salts, as the ionic form of iron is the agent responsible for the color. A distinctive feature of the Fe3+ ion in solution is that of a **yellow to brown** color.



This photo also shows the use of a different, but equally important, reagent that is used to detect the presence of the Fe3+ ion in solution. The chemical used in this case is that of sodium thiocyanide. Even though this reagent also produces a bold red color, this test and the one mentioned above using 1,10 phenanthroline are entirely separate and unique from one another, and are only valid for the particular ion of each test.

The value of the tests shown above are threefold:

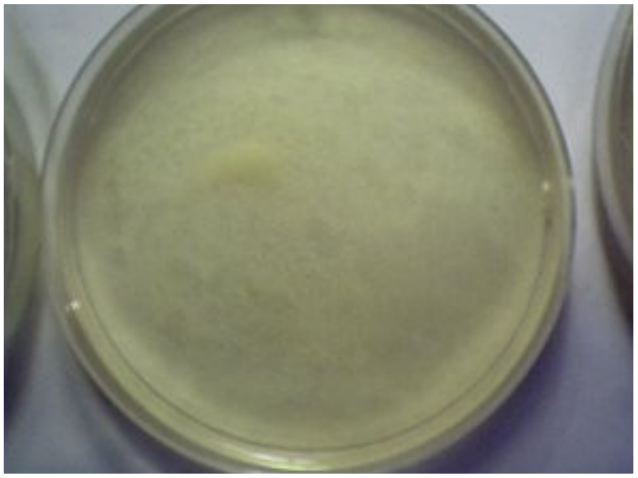
1. First we have a sensitive qualitative method of identifying the existence of specific iron ions, i.e., Fe2+ and Fe3+ in solution[6]. These tests can also be extended in combination with a spectrophotometer to provide concentration levels of the ions, if required[7].

2. If the test succeeds, we know that the iron states are present in an ***ionic*** form within the solution. If the test fails, it does not mean that Fe2+ or Fe3+ are not present, it only means that they are not present in ionic (i.e, disassociated) form. It is possible that the iron could exist in a different form (e.g., bound within a molecular compound) than ionic, and the test would not show this fact. This distinction will become important in later testing procedures that are described.

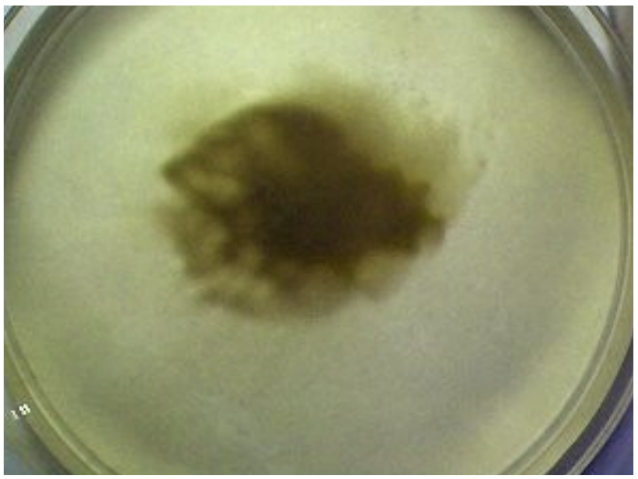
3. **Regardless of individual variations, there is a clear and distinctive difference between the greenish tints associated with the Fe2+ ion and the yellowish and brown tints that result from the Fe3+ ion**. This distinction will also become important in later testing.

2. Beginning Observations:

Let us now switch over to the course of direct observation. Many of us may recall that certain culture growth trials were discussed in an earlier paper entitled “Morgellons : A Discovery and a Proposal[8]. In that paper, conditions and circumstances that both increased and inhibited the rate of growth of the organism were discussed. A section of that paper again is relevant again with direct observation, as shown below, in combination with the color characteristics of iron discussed above. Direct observation essentially indicates to us that the organism is able to utilize and absorb iron in the Fe3+ state. Let us discuss further why this is the case.



This photograph shows a culture that has just been started. The process of starting a culture with this method requires only a single drop of the culture solution. The culture solution is prepared by subjecting the pulverized and dried filaments of previous growth to sodium hydroxide in solution and heat to the boiling point. The culture medium has ferrous (Fe+2) sulfate and hydrogen peroxide added to it as described in the paper referenced. This chemical reaction that takes place will again be described in more detail below.



This photograph shows the state of the culture growth after a few days have elapsed. The dark brown color characteristic of the ferric (Fe+3) oxidized iron within the organism growth is visible. The organism is absorbing the nutrients that have been provided in the culture medium. In this case, the Fe+2 ion originally introduced into the solution was oxidized by the hydrogen peroxide (Fenton's reaction) to produce the Fe+3 iron state. The organism is able to nourish itself from this oxidized state of iron and it imparts the characteristic color of the iron (Fe3+) oxidation state within the growth of the culture.

In order to understand the results of the photographs above, it is helpful to describe a chemical reaction, called "Fenton's reaction" that was discussed in the former referenced paper[9]. Fenton's reaction involves the combination of iron in the Fe2+ state (in this case, ferrous sulfate) and hydrogen peroxide. The reaction is as follows:[10]

$$Fe^{2+} + H_2O_2 \rightarrow Fe^{3+} + OH^{\cdot} + OH^{?}$$

This reaction was established in the following manner: A starter culture of the underlying organism was introduced into distilled water. A few drops of a ferrous salt solution, namely ferrous sulfate was introduced into the culture. This was followed by a few drops of hydrogen peroxide. It has been learned that this culture medium rapidly accelerates the growth of the culture. The result of the combination of the iron in the Fe2+ state with hydrogen peroxide produces three things:

1. Iron ions in the ferric state, or Fe3+.

2. The hydroxide ion (not a radical), OH-

3. The hydroxyl radical, a highly reactive free radical.

Notice that none of these three developments were dependent upon the culture; Fentons reactions would have taken place irregardless of the introduction of the organism. What we do know from the reaction, however, is that the iron is oxidized to the Fe3+ state and becomes immediately available to the organism along with the hydroxyl radical. The paper mentioned discusses some of the ramifications of this combination with respect to health. Not only does the oxidation takes place, but we see that the organism is directly able to utilize the iron in this oxidized state (Fe3+) for its growth and sustenance.

This provides our first link in understanding the role of oxidation of iron in our body and its relationship to the growth of the organism. All of the conditions described for the controlled petri dish trial are also to be found to occur within the human body.

3. Qualitative Chemical Analysis:

There are chemical tests which can be performed to determine the existence of substances, particularly those in ionic form. These tests are valuable in that they are relatively simple and yet they can provide crucial information as to the existence of a metallic ion, for instance, without providing quantitative or concentration levels. Examples of this include the determination of the existence of the iron ions (both ferrous and ferric), copper ions, sulphate ions, chloride ions and others[11,12,13]. It is important to understand that the tests being described in this section are for ionic forms only, i.e, they are in a disassociated form in solution. *A negative test does not mean that the element in some form does not exist, (.e.g, bound in a molecular form); it only means that it does not exist in an ionic form*. This distinction will become important to us as we proceed later with additional laboratory procedures.

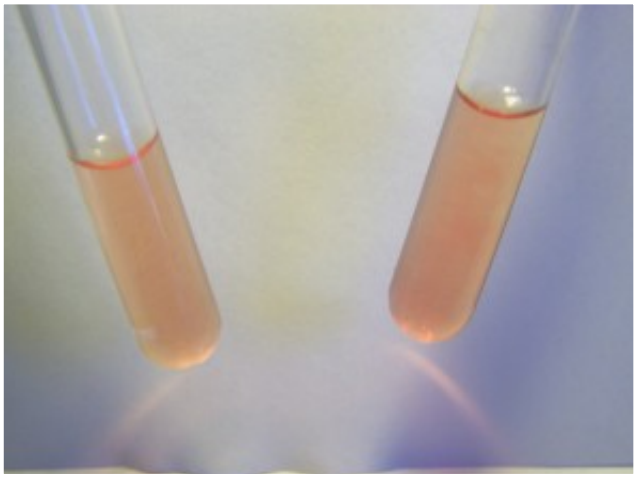
An excellent example of a qualitative test for the presence of ionic forms of iron has already been described in the earlier section of this paper, entitled An Introduction to the Chemistry of Iron. In this case, as described, certain reagents were used to positively identify the presence of the Fe+2 and Fe+3 ions in known solutions.

Now let us apply these methods to the questions at hand, which are twofold:

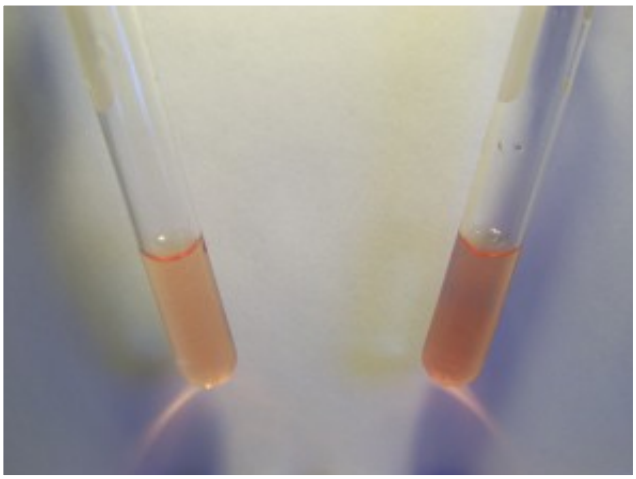
1. Does human blood in solution contain iron ions? We know that blood contains iron, so it will be of interest to examine if it exists in ionic form.

2. Does the culture solution (as developed from oral filaments characteristic of Morgellons) contain iron ions?

Let us discuss the first question, i.e., does blood contain iron in ionic form? If so, is it in the Fe2+ state, or the Fe3+ state, both, or none? We can answer this question with the application of the same reagents mentioned earlier, 1,10 phenanthroline for the test of Fe2+ ions and sodium thiocyanide for the testing of Fe3+ ions.



Testing for Fe2+ ions in blood in distilled water solution with1,10 phenanthroline. Results are negative. No characteristic deep red color forms in the test tube to

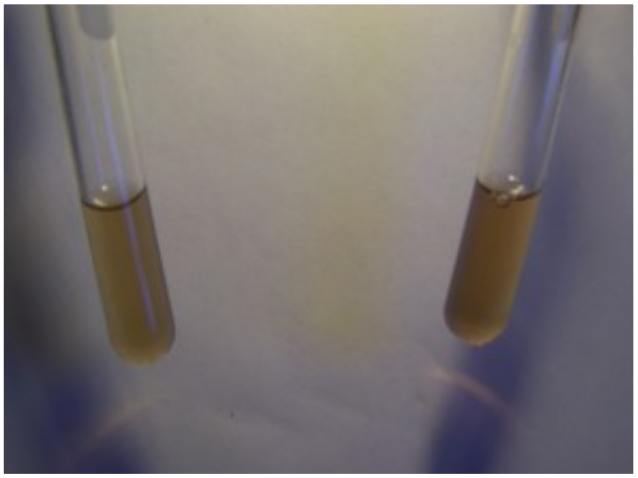


the right where the reagent has been added. Testing for Fe3+ ions in blood in distilled water solution with sodium thiocyanate. Results are negative. No characteristic deep red color forms in the test tube to the right where the reagent has been added.

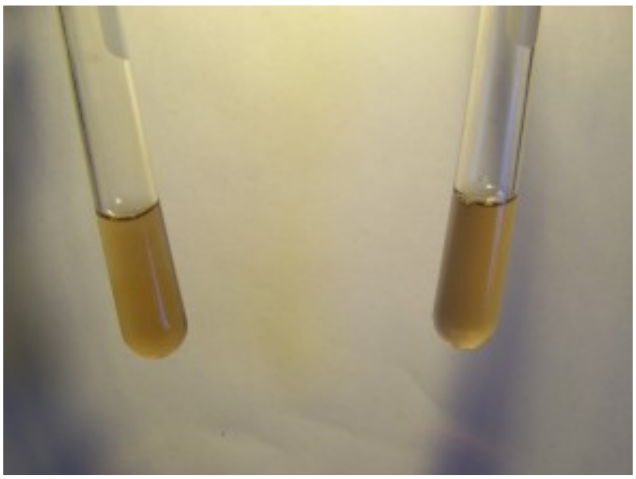
The results in both cases are negative. This means that human blood does *not* show the existence if iron in ionic form, either Fe2+ *or* Fe3+ within it. *It does not mean that blood does not have iron within it, for we know that it does*. But in what form does it exist then? If it is not ionic, is the iron bound in some way? If so, what is it bound to? How do we know what state it is in (Fe2+ or Fe3+) if it is bound to something? These are some of the questions before us. The answers to these questions will become important to us in our understanding of any changes taking place to the blood and they will become equally relevant in our tests of the culture solution based upon oral filament growths. This result also raises the problem of *how* do we go about qualitatively testing for iron in the blood as we have now learned that the direct ion testing approach is not sufficient.

As we proceed, please keep in the forefront that our problem is to approach the question of how the state of oxidation of blood is affected by the Morgellons condition.

Now let us test the culture solution in the same way: The preparation of the culture solution can be described in detail at a later time; this has been summarized to some degree in previous papers.



Testing for Fe2+ ions in the culture solution with1,10 phenanthroline. Results are negative. No characteristic deep red color forms in the test tube to the right



where the reagent has been added. Testing for Fe3+ ions in the culture solution with sodium thiocyanate. Results are negative. No characteristic deep red color forms in the test tube to the right where the reagent has been added.

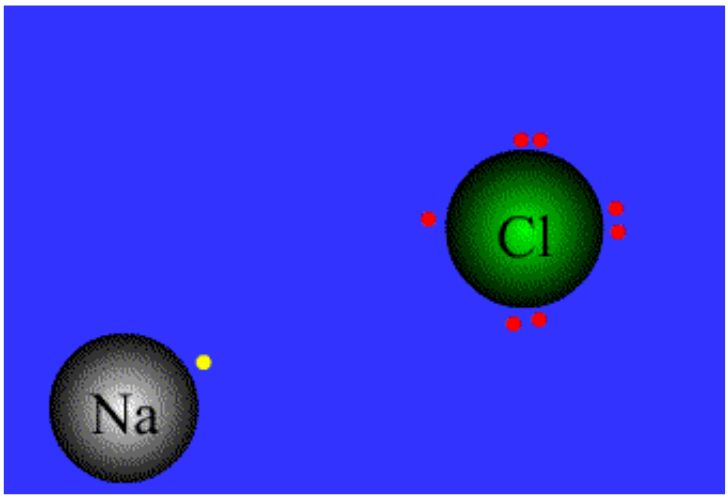
The results are again in both cases negative. This tells us correspondingly, that the culture solution does not contain iron in the *ionic* form (Fe2+ or Fe3+), at least to the degree of sensitivity of the tests. Once again, it does NOT mean that the culture solutions do not contain iron, only that if it is present that it is not in the ionic (disassociated) form. The issue, therefore, must provoke our testing methods further and *the question of iron binding to other molecules, even if in an oxidized state (Fe2+ or Fe3+), rises to importance.*

4. An Introduction to Bonding : Ionic, Covalent, Polar Covalent and Coordinated Covalent Bonds:

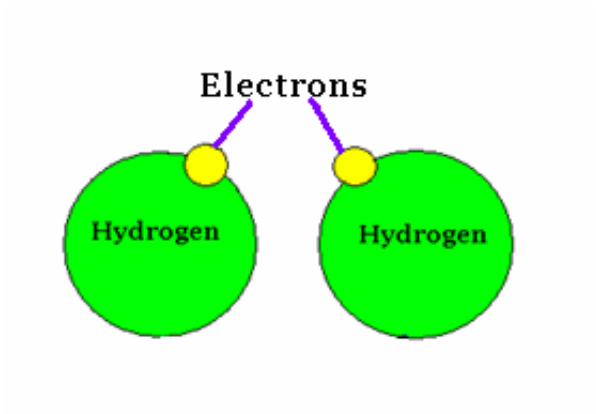
Soon we must educate ourselves further on how iron exists within the blood. Before that occasion, however, we must also spend some time talking about the various methods that atoms use to bind together to form molecules and compounds. Much of what happens in chemistry is in some way related to bonding and it is helpful to have at least some background on the subject. Ultimately, the knowledge is crucial to our understanding and determination of how the oxidation state of blood is altered.

Within conventional chemistry, there are two forms of bonding of atoms that occur: ionic and covalent. Ionic bonding means that electrons are *transferred* from one atom to another. Covalent bonding means that the electrons are *shared* between atoms. Bonding is important because the physical properties of a substance are generally entirely different depending upon the type of bonding that exists. Therefore, if you know what type of bonding is occurring within a molecule or substance, you can likely determine quite a bit about the physical properties and behavior of the substance. In our case, this is not an academic exercise and we do not have a choice; we need to learn as much as we can about the properties of the blood and how it interacts with the rest of the body. Science is more meaningful is we can give value and application to our studies and in our current situation, our very lifeblood and welfare depends upon this pursuit. Consider taking some time to learn about the chemistry and biochemistry that is involved here and we will all be the better for it.

The following are simple illustrations of both ionic and covalent bonding:

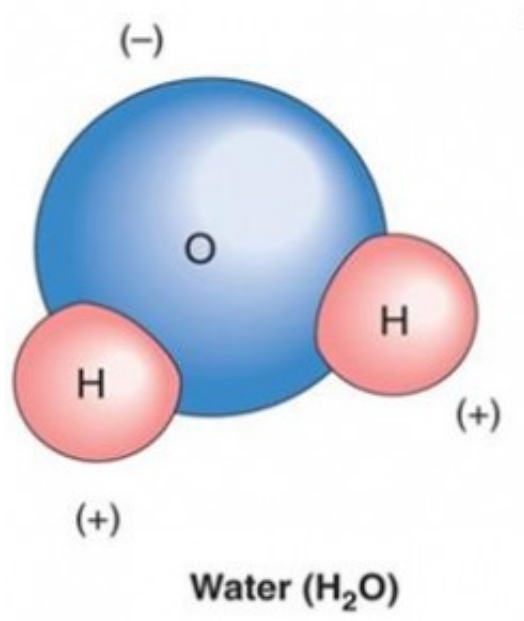


An example of ionic bonding.
The *transfer* of electrons characterizes this bond form.
Source: Northeastern Oklahoma A&M College



An example of covalent bonding.
The *sharing* of electrons characterizes this bond form.
Source : Mr. Wolgemuth GHHS Science Web Site

Next, a brief word on polar covalent bonding: Polar covalent bonding is a variation on the covalent bonding theme shown above. In the example above on covalent bonding, the forces on the electrons are symmetrical. When different types of atoms join together(as shown below) vs. atoms of the same type (as in the two hydrogen atoms shown above), the forces between the electrons are not necessarily symmetrical. This asymmetry of forces between shared electrons is referred to as a *polar covalent bond*. A simple example of polar covalent bonding, i.e., the water molecule, is shown immediately below. These three types of bonds: ionic, covalent and polar covalent cover most of the ground of conventional and introductory discussions of bonding of atoms within chemistry.



An example of polar covalent bonding.
The *asymmetric sharing* of electrons and *unequal distribution of charge* characterizes this bond form.
Source : Zendarie : Biology One Step At a Time
[http://zendarie.com/2011/chemical-bonds/ : Server Not Found 404 12/13/15]

We, however, in our journey of understanding the nature of iron bonding within blood, are not allowed to stop here. We will find that the three bond types above do not tell us what we need to know about the way in which iron is bonded, or "held" within the blood. There is indeed a fourth type of bonding that we will introduce, and we will find that it is different, unique, interesting and important to know about when it comes to understanding what is happening within our blood. The bond type that is pertinent to our need to know is called a "*coordinated covalent bond*".

The coordinated covalent bond is an interesting animal, as it does not fit in very well with any of the conventional explanations of bonding listed above. What has caught my interest is that the coordinate covalent bond is not introduced in the forefront of chemistry education, but from my vantage point, it can easily end up being a most important form of bonding to know about. It seems to me that one of the easiest ways to attempt to visualize a coordinated covalent bond is to imagine at atom being "held" or "suspended" or surrounded by electrons, the forces of those electrons keeping the bond in place. Let us get the formal definitions, and then go to work with an image that can help us to understand this unique form of bonding. Here are three definitions to work with:

To start:

"A coordinate covalent bond is a covalent bond in which one of the bonded atoms furnishes both of the shared electrons"[13].

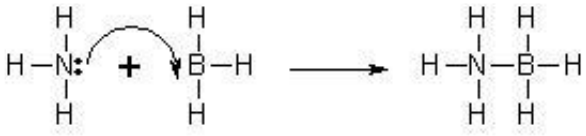
Also:

"A particular type of covalent bond is one in which one of the atoms supplies both of the electrons. These are known as dipolar (or coordinate, semipolar, or dative) bonds."[14]

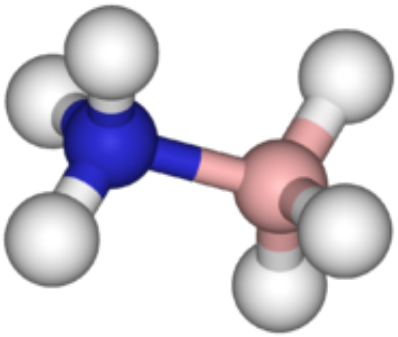
And:

“A covalent bond occurs when one atom contributes both of the shared pair of electrons. Once formed, there is no difference between a coordinate bond and any other covalent bond.”[15]

And lastly, for the person in greater need, here is a more detailed online definition[16] and description of the coordinate covalent bond.16



An example of coordinate covalent bonding.
This is called a Lewis diagram and it shows the arrangements of the electrons in the outer shell of the atom and how they are “shared” or *coordinated*.
Source: New World Encyclopedia: Covalent Bond



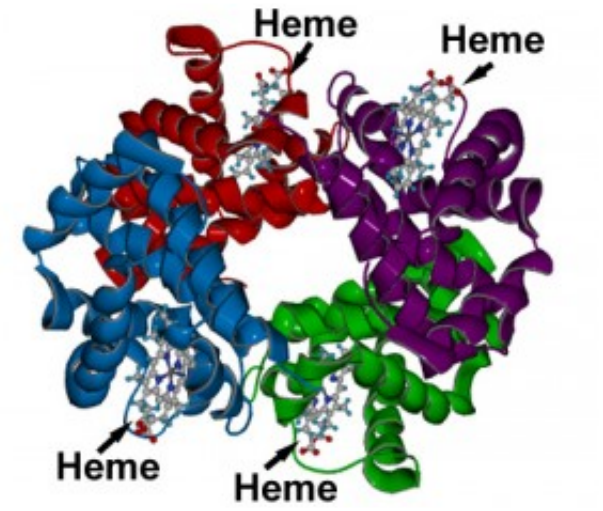
A three-dimensional model of the coordinate covalent bond shown to the left..
Source: New World Encyclopedia: Covalent Bond

Now let us try to give more meaning to what the coordinate covalent bond entails. The images above depict one of the simpler presentations of a coordinate covalent bond. Both images are different views of the same bonding process. What the picture shows on the left is that instead of one electron being shared by each atom (in this case, Nitrogen and Boron) to form a shared pair, BOTH electrons are donated by the Nitrogen atom and none by the Boron atom to form the bond. The end result is the same as in a regular covalent bond, but the process by which the bond was achieved differs from a normal covalent bond. *The reason that this type of bonding is important is that many types of new and fundamentally important “complexes” or chemical structures can be formed*. **Our blood structure is one such example**. Many of the complexes that are formed in this way involve the bonding of a metal atom (**e.g, iron**) with surrounding molecules, and this leads us directly into our discussion of the blood and the hemoglobin (or heme) molecule. The formation of what are called coordination complexes or coordination compounds, very often with metals at the center of the structure, is one of the most important practical branches of chemistry. It is necessary for us to understand coordination complexes in order to understand how the iron in our blood bonds to oxygen. And so now that we are in the thick of it, on we go…

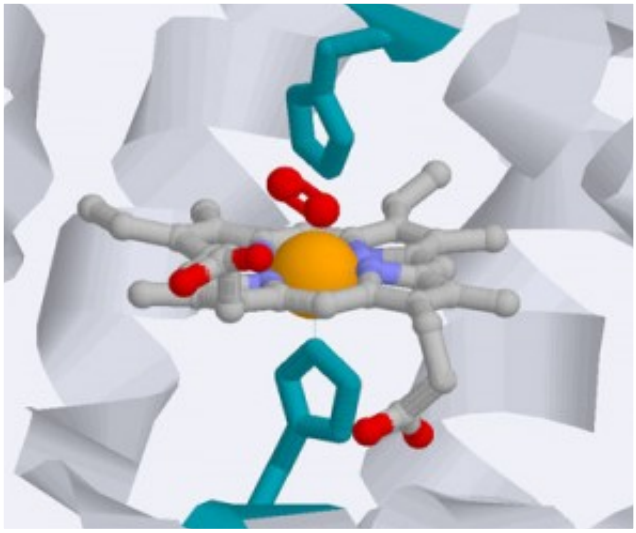
5. The Structure of the Heme Molecule and the Role of Ligands:

We are now in position to become more familiar with the detailed structure of blood. Our interest will be

centered on hemoglobin, and in even greater detail, upon what is known as the heme molecule. Hemoglobin is an iron containing protein within red blood cells. Hemoglobin is the molecule that transports oxygen.[17] It is the iron of hemoglobin that binds to oxygen[18]. Heme is one of four subunits within hemoglobin. Each heme group has an iron atom at its center, and therefore each hemoglobin molecule can bind to four molecules of oxygen (O2).[19] Our primary interest will be in the heme group, as it is where the oxygen carrying capacity exists. Here are a couple of images to familiarize the reader with the overall structure of hemoglobin and the heme group. Subsequently, we will examine the heme group in even greater detail along with the bonding process.

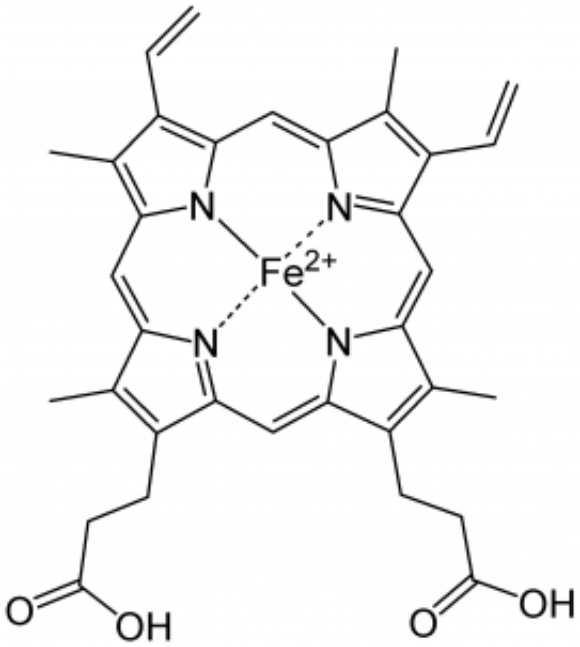


A generalized model of the hemoglobin molecule.
Notice the four subunits of heme within the hemoglobin molecule; this is where the iron atom exists that can bind to oxygen.
Source: Washington University, Department of Chemistry

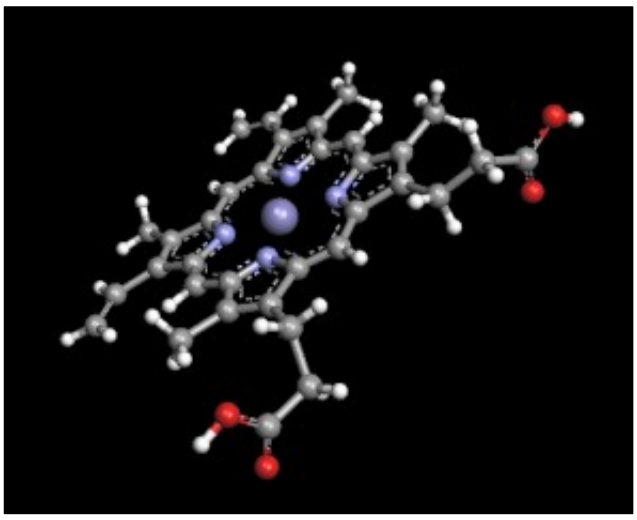


A closer view of the heme group.
The iron atom(orange) resides in the center of the heme group. The oxygen (O2) molecule is in red above the iron atom. We will examine this structure and bonding process in greater detail below
Source : Wiley : Biochemistry

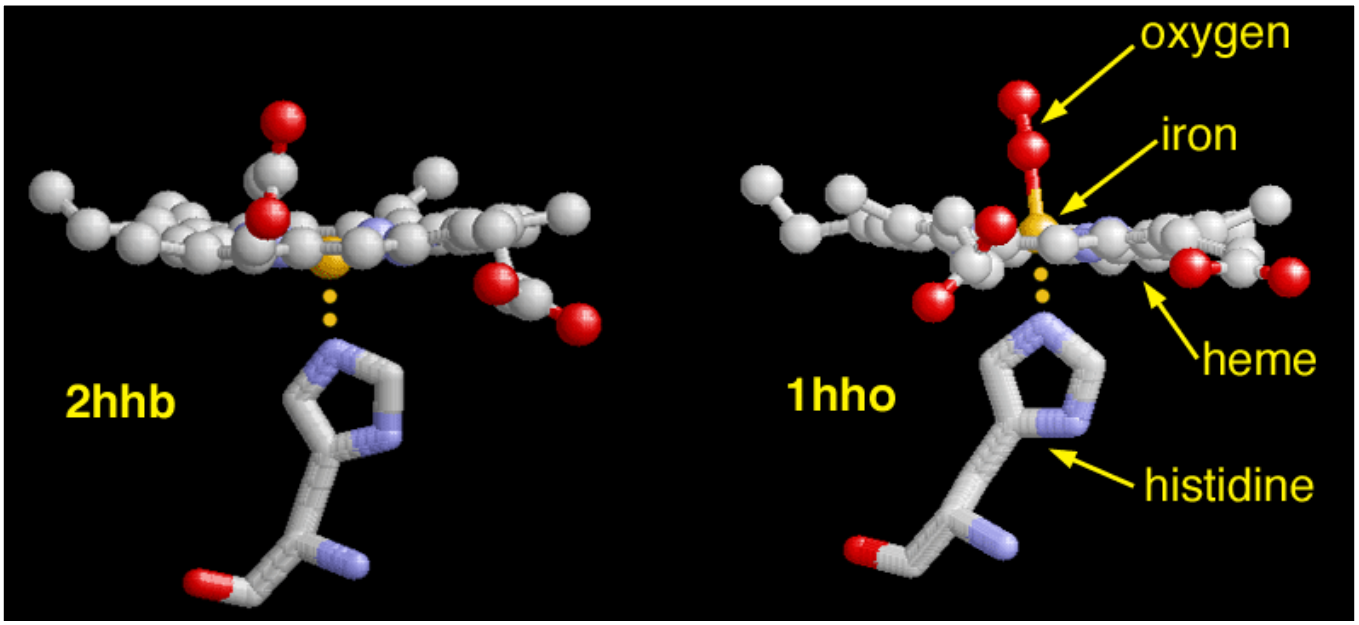
The type of bonding that allows the heme group to exist and to bind iron to oxygen as shown above is the coordinated covalent bonding that has been introduced previously. This type of bonding allows the formation of a multitude of *metal complexes*, and the heme group is an example of one such structure that incorporates a coordinated metal complex. These metal complexes and the unique type of bonding they incorporate are have a special importance in biochemistry and in blood. Let us now look at the heme group in even greater detail to understand the molecular structure further:



The heme group, consisting of an iron atom in the Fe+2 state, surrounded by four nitrogen atoms bound with coordinated covalent bonds. The iron must be in the +2 state to be able to bind to oxygen..
Image source: Wikipedia



A three-dimensional model of the heme group, with the iron (II) atom at the center surrounded by the four nitrogen atoms. This type of structure is known as a porphyrin. One of the best known porphyrins is heme, which is the pigment in red blood cells.
Source: Argus Lab

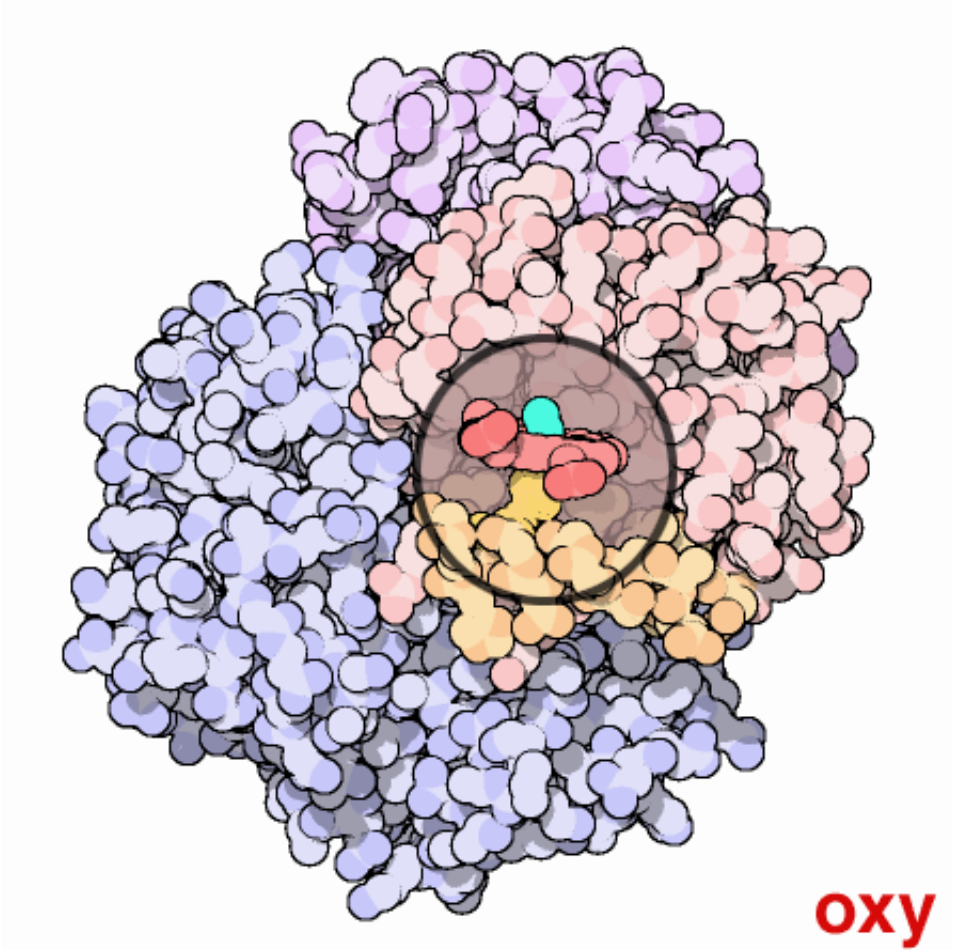


The dexoxygenated heme molecule (model) shown
with oxygen atoms (red) removed (left) and attached (right).

The heme group consists of an iron atom in the center of a ring structure, termed a porphyrin. The porphyrin includes the central iron atom in the +2 oxidized state and is surrounded by four nitrogen atoms with coordinate covalent bonds. The upper two photographs of this sections show this structure in both a planar view and a three-view. The coordinate covalent bonds, as discussed earlier, allow the transition metals such as iron to bind to a host of varying molecules. This type of structure is also that known as a chelate, where a central atom is bound to surrounding molecules or structures (termed ligands). A great variety of molecular structures with the transition metals can occur with this unique and more complex bond type, i.e., the coordinated covalent bond.

The lower photograph shows two additional aspects of the heme molecule and the bonds that it makes within. These include the histidine (an amino acid) structure and the oxygen molecule. The oxygen molecule is at the heart of the discussion here. The left photograph within the pair shows the oxygen molecule removed from the heme group and the right photograph within the pair shows the oxygen bound to the Fe2+ atom. The iron must be in the Fe2+ state for the oxygen to bind; transport of oxygen is a vital and crucial function of the blood within the human body. If the iron in the blood is changed to the Fe3+ state, the bonds to oxygen are broken and the blood is then known as deoxyhemoglobin. The primary cause of change in the oxidation state of an atom is from an oxidizer; some of the best known oxidizers include the hydroxyl radical, ozone, peroxides and bleaches[20]. Oxidizers exist with the human body to some level naturally. There is a body of evidence available in the literature that will demonstrate that excessive exposure to oxidizers within the body can be detrimental to human health. Oxidizers produce free radicals, which are highly reactive molecules that can “wreak havoc within the living system”[21]. Some of the most important free radicals in biology are the superoxide anion ($O2^{-}$), peroxide ($O2^{-2}$) and the hydroxyl radical (OH)[22].

It will become apparent that the change in oxidation state of iron from Fe2+ to Fe3+ in sufficient numbers within the blood is generally detrimental to the blood and human health. It will become equally apparent that this change is especially beneficial to the growth of the organism and filamentous biological growth structures that are characteristic of the Morgellons condition.



An animated view of the change between the oxygenated and deoxygenated states of the blood. Correspondingly, this results is a shift between the Fe2+ oxidation state of iron and the Fe3+ oxidation state of iron in the blood.

Source : Protein Data Bank
http://pdb101.rcsb.org/learn/resource/oxygen-binding-in-hemoglobin-gif

6. Qualitative Chemical Analysis of the Oral Samples ; Two Methods to Verify the Existence of Ferric Iron:

We are now in a position to better understand and interpret the results of more direct laboratory analysis. It will be found that there is essentially little difference between the direct human filament samples that are under examination and those that result from the culturing process demonstrated repeatedly on this site. At this point we will deal directly with human oral filament samples as the chemical reactions that are common to both forms are now better understood.

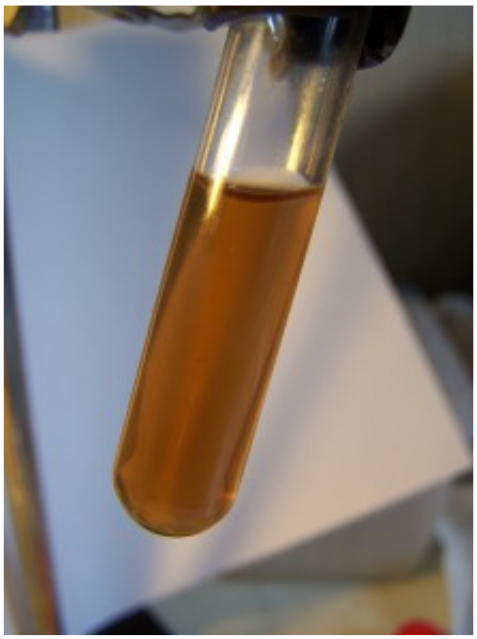
It has long been observed that extended exposure (e.g., three minutes +/-) of the oral gums to red wines produces in many, if not most, individuals a purplish filamentous mass than can be expelled and further

analyzed. This discovery is fully credited to Gwen Scott, N.D. as originally reported several years ago[23,24]. It is claimed by some individuals that this mass is of a precipitate form and that it is a natural reaction between red wines and saliva. The reaction referred to is valid and has been studied as well. However, the statement as it has been made is entirely false as it refers to the samples under examination. The sample under examination is of a filament form, and it is not a precipitate. The sheer volume of material that can be expelled, let alone the examination of the material, is sufficient to dispel the false and diversionary claims[25].

The chemistry of this rather dramatic reaction of filament production and coloration has, prior to this study of the last several months, been unknown. This is no longer entirely the case, and the subject will be introduced again later in this paper. For now, suffice it to say that a most significant chemical reaction and filament production does take place, and the discovery can be regarded as serendipitous and fortunate to the studies that have been made.

Given that such a reaction and production of mass does occur, this study has now examined the material in greater depth from a qualitative chemical perspective. It has also been known for some time now that the filaments do break down and undergo chemical transformation when exposed to a solution of sodium hydroxide (lye) and heat[26].

An oral sample filamentous mass produced from extended exposure of the mouth gums to red wine. The sample has been repeatedly rinsed and decanted in distilled water. The purplish color and microscopic filaments are characteristic of the sample.



The oral sample after it has been subjected to a process of alkalizing, heating and filtration. The sample is treated with sodium hydroxide (lye) in solution and heated to the boiling point. The solution is then filtered and produces the colored solution above. Please recall that the color of the ferric ion (3+) is usually yellowish to brownish and that the color of the ferrous (2+) ion is generally more greenish in color. This result of this process indicates that the ferric (3+) iron form is a candidate for further investigation in this qualitative analysis.

The photographs above show the original sample (to the left) and the sample after processing with alkali, heat and filtration (right). The solution on the right is also suitable for spectrophotometric analysis, as shall be discussed later. At this point, we will be concerned only with qualitative chemical reactions.

It is already known that the sample in the solution form prepared immediately above fails a test for the existence of Fe2+ and Fe3+ ions. This has been shown with similar results for the culture form of this study earlier in this paper. *This result does not mean that iron does not exist in the solution, only that it does not exist in disassociated ionic form.* The reason that the effort has been expended to understand the various types of chemical bonding is that because unless we know in what form a substance exists in solution we may not be able to detect it with common testing methods. This is the reason that an understanding of coordination complexes and coordinate covalent bonding is so essential; we must press the problem further and examine all options with respect to the possible existence of iron forms within the solution. The following three factors are thought to be relevant in the examination of the reaction of the oral sample solution with a copper sulfate solution:

First:

One of the types of chemical reactions is called a single displacement reaction. In a general way, this reaction has the form[28]:

A + BC -> B + AC

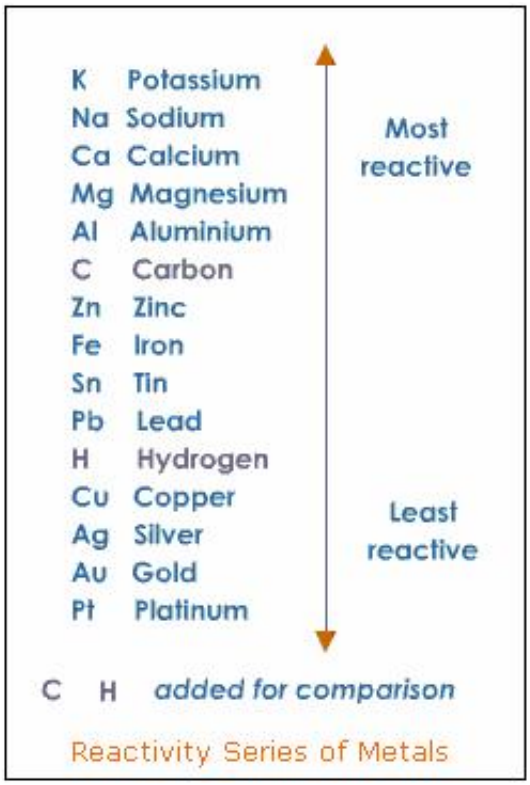
or

A + BC -> C + BA

and if A is a metal, A will replace B to form AC, provided A is a more reactive metal than B.

Second:

Another relevant topic here is what is called the activity series of metals. Some metals are more reactive than others, with water or acids and the activity series of metals lists that reactivity in a tabular form. For example, potassium, calcium and sodium are highly reactive metals with water, iron and nickel are moderately active, copper and silver are of very low reactivity, and gold and platinum are inactive. Here is an example of an activity series table[27]:



Source:
http://www.tutorvista.com/content/science/science-ii/metals-non-metals/reconcept-series-metals.php

It will be found that a metal higher on the list will replace a metal that is in ionic form and is lower in the list.

Third:

Another helpful known reaction is that iron ions (+2 and +3 states, respectively) in solution with sodium hydroxide will form ferrous (+2) hydroxide, a green precipitate, (Fe(OH)2) and ferric hydroxide, a brown precipitate, (Fe(OH)3) respectively.

The first chemical reaction that becomes of interest to study is the oral sample solution above when mixed with copper sulfate. It will be found that a reaction does occur, and the reaction is that a brown precipitate forms. This indicates that we are likely to have formed ferric hydroxide and this gives us another hint that we may be encountering iron within a +3 oxidation state within the original solution. The issue is complicated, however, by the fact that we know the iron is apparently not in ionic form. This would suggest that we are dealing with iron in a coordination complex of some type, where the iron is

bound to an unknown ligand. There are still uncertainties in this problem, but it appears that the copper sulfate is somehow a factor in releasing the iron from a complex form (presumably affected by the activity series above) so that it can combine with the hydroxide ion to form ferric hydroxide. A proposed reaction is somewhat akin to the form:

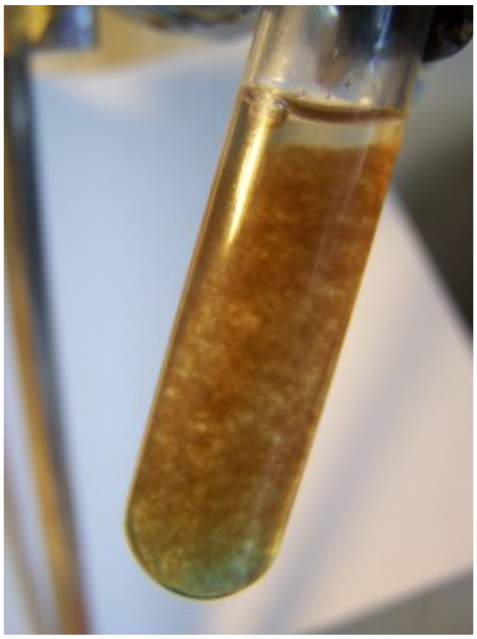
$Fe^{+3}X + Na^{+} + OH^{-} + CuSO4 + H_2O \rightarrow Fe(OH)_3 + Cu^{2+}\ SO4^{2-} + Na^{+} + H_2O + X$

where X is an unknown ligand that is attached to the iron ion. The resulting reaction has been tested further for copper and sulfate ions, respectively, and the results are positive and are therefore consistent with the above reaction.

An alternative proposed reaction is of the form:

$[Fe(H_2O)_6]^{3+} + Na^{+} + OH^{-} + CuSO4 \rightarrow Fe(OH)_3 + Cu^{2+}\ SO4^{2-} + Na^{+} + 6H_2O$

in which case the ligand is water and involves coordination with the hydrated ferric ion.



A reaction of the oral sample solution with copper sulfate. A brown precipitate forms. A postulated identity of the precipitate is that of ferric hydroxide which contains iron in the 3+ oxidized state.
The proposed ligand form is one question that will need to be addressed further. In the interim, the important question to pursue is whether or not the precipitate is consistent with a ferric (vs. ferrous) hydroxide identity. To further test the proposal of ferric hydroxide as the precipitate, it will be found that ferric hydroxide is soluble in citric acid[29]. It is also known that ferrous hydroxide, when dissolved in citric acid, will turn the solution green (characteristic of the ferrous ion). Ferric hydroxide, when dissolved in ctiric acid will turn the solution to a brownish color (characteristic of the ferric ion). This test has been conducted and the result is positive, the precipitate is soluble in citric acid and the resulting solution is brownish in color. This further solidifies the proposed identity of the precipitate as that of ferric hydroxide.

A second method of verifying the existence of the ferric form of iron within the oral filament sample has been established[30]. This method involves the reduction of the Fe3+ iron state to the Fe2+ state using ascorbic acid, and then testing for the existence of the iron in the Fe2+ state. The steps of the process

are:1

. The oral sample must be extracted with the red wine and the test conducted promptly; this is a time sensitive process that has been created.

2. The oral filament sample is rinsed repeatedly in clear water and decanted until the final mass is in clear distilled water.

3. The sample is treated with sodium hydroxide and' heated to the boiling point and then filtered. The solution will be brownish in color as described earlier.

4. The solution is then treated with ascorbic acid. Ascorbic acid is a strong reducer (anti-oxidant).

5. The solution is then centrifuged.

6. The clear solution that results from centrifuging is separated and placed in a separate test tube.

7. A test for the Fe2+ ion is conducted using (1,10) phenanthroline. The test results are positive. This test demonstrates the reduction of existing iron in the Fe3+ state to the Fe2+ state.

In the reference cited, it will be noted that potassium ferricyanide is used in the reaction. This experiment introduces the role of another ligand that will be discussed in more detail later, and this is the cyanide ion. It will be seen that varying ligands form complexes with the transition metals; this is one of the many reasons we must familiarize ourselves with coordination chemistry and coordinate covalent bonds to understand how this organism interacts with the body.

A positive test for the existence of the ferrous ion after reduction by ascorbic acid using (1,10) phenanthroline.

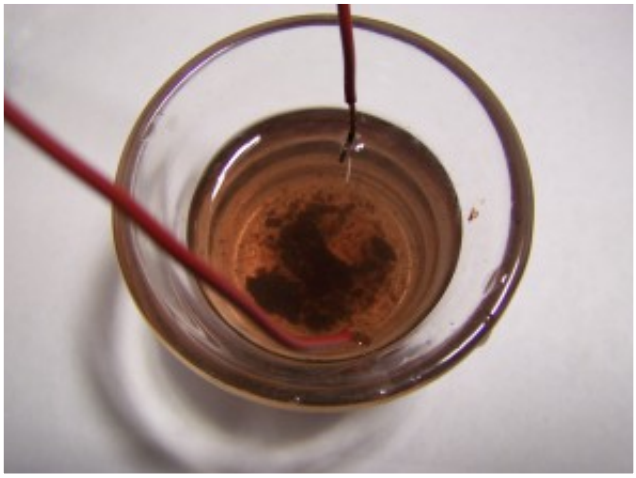
7. A Method to Extract the Oxidized Iron from within the Filament Growth Structure

A third and final method of verifying the existence of the ferric form of iron within the oral filament sample

has been established. In this case, the iron itself in an oxide form has been extracted directly from the oral filament sample using electrolysis. The method is both simple and effective. Many metallic salts, when subjected to electrolysis, liberate a gas at the anode and deposit the metal in pure form at the cathode[31,32,33,34]. Presumably this can apply to certain transition metal (e.g., iron) complexes as well and as evidenced by the results obtained. The method used is to apply a current to the oral sample solution directly. Voltage is applied at 6 volts for approximately 8 hours of time. The current in the solution has been measured at 0.7 mA. The electrolyte is sufficiently decomposed at the end of that period. The metallic compound is collected and heated and dried at the end of that period. It appears as though the bonds in the compound are quite strong as the compound is only mildly soluble in strong acids such as hydrochloric and sulfuric acids. The compound reacts vigorously to hydrogen peroxide as shown below in the video segment. The reaction shown involving the decomposition hydrogen peroxide to oxygen and water is an established and known catalytic reaction (in the same genre as Fenton's reaction)[35,36].

The results of all qualitative tests indicate that a ferric (3+) iron is a highly significant component of the growth structure and organism development. It is also presumed at this stage of the analysis that the iron exists primarily within a transition metal coordination complex with ligand structures that require further analysis and identification. An additional discussion on the ligand aspect of this study will follow.

Pre-electrolysis of the oral sample solution.



Post-electrolysis of the oral sample solution.

Drying the metallic residue from the electrolytic processing of the oral sample.

The final iron oxide (ferric oxide) compound result obtained directly from the oral sample through electrolysis.