THEORETICAL PREDICTION AND EXPERIMENTAL VERIFICATIONS OF THE NEW CHEMICAL SPECIES OF
Magnecules

Ruggero Maria Santilli
Institute for Basic Research, P.O.Box 1577, Palm Harbor, FL 34682, U.S.A.
ibr@gte.net, http://home1.gte.net/ibr/,

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Abstract

As a result of comprehensive studies by various scholars initiated back in 1978, a generalization–covering of quantum mechanics under the name of *hadronic mechanics* has been built and has now reached operational maturity. Thanks to these results, D. D. Shillady and I have introduced in three preceding papers a generalization–covering of quantum chemistry under the name of *hadronic chemistry* and proved its effectiveness in achieving representations of molecular data accurate to several digits. In this paper I present, apparently for the first time, the most compelling experimental evidence to date supporting hadronic mechanics and chemistry, the theoretical prediction and several independent experimental verifications of a *new chemical species*, i.e., atoms and molecules bonded by a *new force*. The origin of the new species rest in the magnetic moment of electrons in their *orbits* around nuclei, which has been ignored throughout this century due to their spherical distribution. In this paper I show that the polarization in a plane of the orbit of the electron of the hydrogen atom implies the emergence of a magnetic moment which is 1,316 *bigger* than the magnetic moment of the nucleus (the proton). Such a large value is then sufficient to permit the theoretical prediction of corresponding strong magnetic bonds between atoms and molecules which are stable at ordinary conditions. Various consistency aspects imply the necessary use of hadronic mechanics and chemistry, e.g., to prevent that all molecules are ferromagnetic. In view of the magnetic origin of the new bond, I submit the names of *magnecules* for the new species, in order to distinguish it from the conventional "molecules" denoting valence bonds. I then present various experimental confirmations by independent laboratories on the existence and anomalous properties of magnecules in gases, liquids and solids. The memoir ends with an indication without detailed treatment that the new species implies the birth of new technologies currently under development by Toups Technology Licensing Corporation, of Largo Florida, Givaudan–Roure Corporation of Teaneck, New Jersey, and other U.S. Corporations.

THEORETICAL PREDICTION AND EXPERIMENTAL VERIFICATIONS OF THE NEW CHEMICAL SPECIES OF *Magnecules*

Ruggero Maria Santilli

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1. INTRODUCTION

It is known by experts in the field although rarely indicated in Ph. D. courses or in the technical literature, that, despite outstanding achievements of clear historical proportions achieved throughout this century, *quantum chemistry* [1] is still afflicted by numerous fundamental unsolved problems, insufficiencies or shear inconsistencies such as:

1) The lack of a sufficiently strong molecular bonding force, because the forces currently assumed (the exchange, van der Waals and other forces) were conceived for nuclear structures in which they are known to be weak, thus demanding the additional introduction of the strong nuclear forces.

2) The impossibility to explain why the hydrogen, water and other molecules have only two hydrogen atoms, because the currently used bonding forces of nuclear type were conceived for an arbitrary number of constituents.

3) The impossibility to achieve an exact representation from unadulterated quantum principles of molecular binding energies because missing of about 2% of the experimental values, e.g., in the selfconsistent treatments.

4) More accurate representations of molecular characteristics have been recently achieved via structural modification of the coulomb law with gaussian and other factors called "screenings". However, on rigorous scientific grounds, these manipulations prohibit the very use of the term "quantum" mechanics and chemistry because gaussian screenings of coulomb force imply the loss of the hydrogen atom, the lack of stability of all electron orbits, and the absence of the very notion of "quantum" of energy which is known to requires stable orbits for its emission or absorption, as very well known. A fully similar occurrence holds for variational methods which, besides admitting unlimited number of free parameters of totally unknown origin and motivation (thus being of purely *mathematical* value), can be proved to violate the very conditions to preserve a " quantum".

5) The impossibility to conduct meaningful thermochemical representations because the 2% currently missing in the binding energy implies an error which is 50 times bigger than the average energy of a thermochemical reaction.

6) Excessive computer times in calculations despite the use of the most modern possible computers.

7) Dramatic disagreement between the correlations used in current orbital theories (which refer to an arbitrary number of electrons), and the experimental evidence that correlations only occur between *pairs* of electrons.

8) The impossibility to represent exactly electric and magnetic moments of molecules which at times are wrong even in the sign, let alone the value.

9) The prediction by quantum chemistry that all molecules are

ferromagnetic (Fig. 1.1), which is in dramatic disagreement with experimental evidence.

It is evident that the lack of solution of the above fundamental problems *is not* due to quantum chemistry per se, but rather to the main underlying theory, *quantum mechanics*. In fact, it is today known that most deficiencies are due to the complete absence of a scientific–quantitative representation by quantum mechanics of the conditions of deep overlappings of the extended wavepackets of electrons.

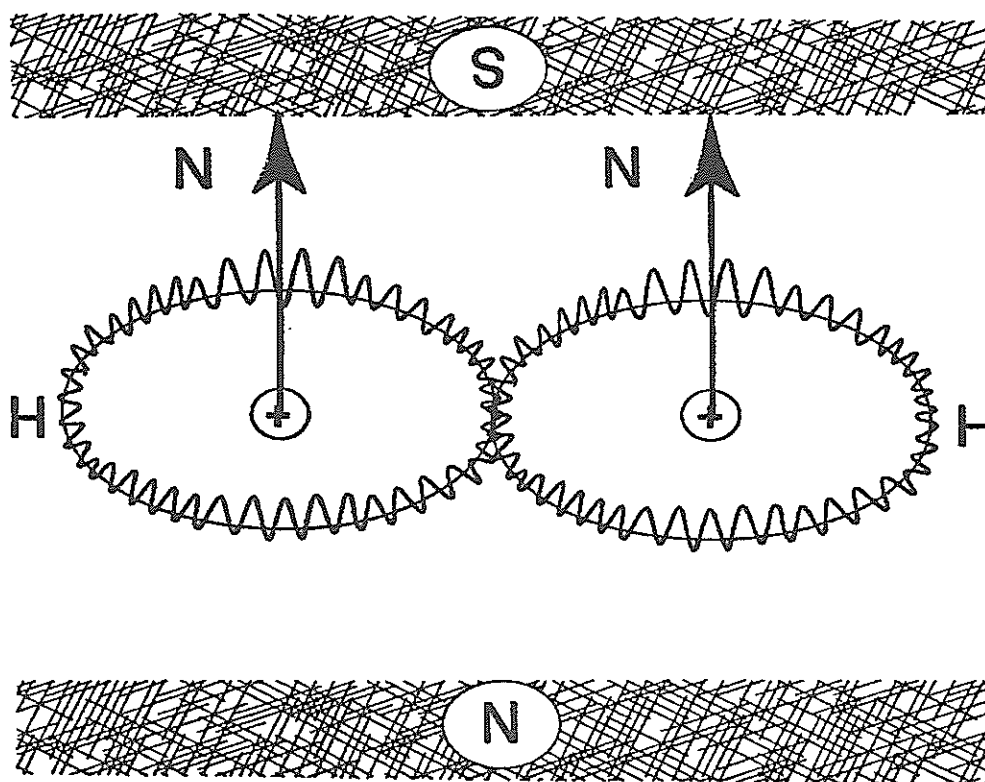FIGURE 1.1 A schematic view of the prediction by quantum chemistry that all molecules are ferromagnetic, here expressed for the case of the simplest possible hydrogen molecule H_2 = H–H at absolute zero degree temperature and in the absence of any motions. The prediction is an un–avoidable consequence of the current conception of molecular structures in which the bond is due to exchange and other forces of nuclear type, as a

consequence of which each atom preserves its individuality. The most rigorous discipline of this century, quantum electrodynamics, then establishes that, under an external magnetic field South–North the orbits of all valence electrons must acquire the opposite polarization North–south, resulting in a total net magnetic polarity $H_\uparrow - H_\uparrow$ which is in dramatic disagreement with experimental evidence. The only way known to this author to resolve the inconsistency is by assuming a much stronger correlation among the two electrons which, however, is outside quantum mechanics and chemistry, but fully permitted by their hadronic coverings [2,3].
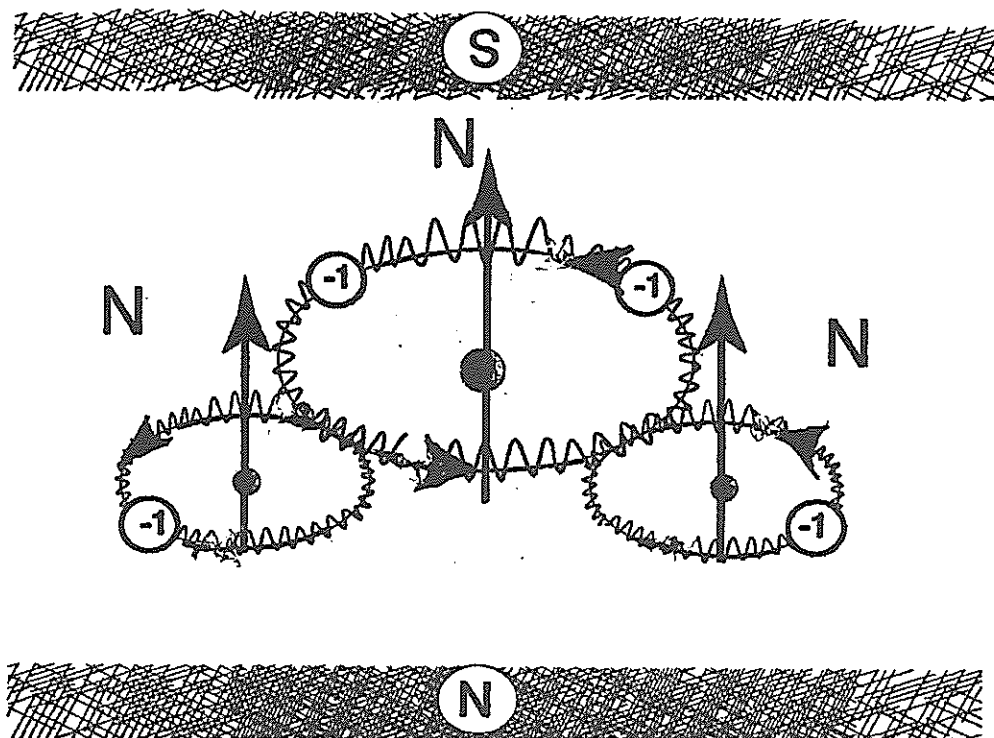

FIGURE 1.2: A schematic view of the behavior of the valence electrons of the conventional model of the water molecule H_2O = H–O–H at 0 K under an external magnetic field South–North. As it is the case for the hydrogen molecule, quantum electrodynamics predicts that, under the currently assumed independence of the atoms and weak correlations, each atom

must assume a polarization North–South opposite to that of the external field, resulting in the total net magnetic polarity of the water molecule $H_{\uparrow}$–$O_{\uparrow\uparrow}$–$H_{\uparrow}$ ·which is also in dramatic disagreement with experimental evidence, since water is diamagnetic as well known. After studying this inconsistency for years, the only resolution I know is the conception of a new model of the water molecule as achieved by hadronic mechanics and chemistry [2,3].

Quantum mechanics is *linear, local–differential and potential–hamiltonian–unitary,* while *the conditions of deep overlapping of the wavepackets is known to be nonlinear, nonlocal-integral and nonpotential, thus nonhamiltonian and, therefore, nonunitary.* Note that the *nonlocality* is caused by the overlapping of the "extended wavepackets" of the electrons while the charge remains perfectly "point-like".

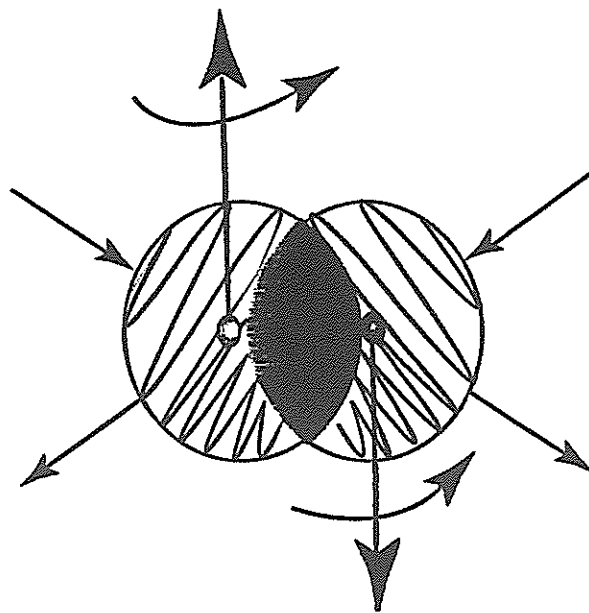FIGURE 1.3: A schematic view of the physical conditions at the foundation of the new chemical species introduced in this paper, the deep overlapping of the extended wavepackets of the valence electrons under their point-like charge structure. These conditions are known to be nonlinear, nonlocal and nonpotential, thus nonhamiltonian-nonunitary and, therefore, outside any realistic hope of scientific treatment via quantum

mechanics and chemistry. It was shown in papers [3] that the ignorance of the conditions of this figure in support of the quantum mechanical point-like as well as linear, local and potential abstraction of overlapping wavepackets of the electrons has implied the inability to reach a deeper and more accurate understanding of molecular structures.

In view of the above and other insufficiencies of quantum mechanics in all branches of science (see Ref. [2e] for a comprehensive presentation), a generalization-covering of the theory under the name of *hadronic mechanics* was proposed by **R. M. Santilli** [2a] when at Harvard University back in 1978, and then studied by numerous mathematicians, theoreticians and experimentalists (for a comprehensive presentation up to 1995 see monographs [2c] with an update to 1997 in memoir [2d]).

Operational maturity on the formulation and applications of quantum mechanics was reached only recently in memoir [2d] thanks to the use of the new *iso-, geno- and hyper-mathematics* which permitted the first known invariant formulation of nonlinear, nonlocal and nonunitary effects. Hadronic mechanics has therefore three branches called *iso-, geno- and hyper-mechanics* which are used for the representation of isolated-conservative-reversibles, open-nonconservative-irreversible, and irreversible-multi-valued structures, respectively. Numerous applications and experimental verifications of hadronic mechanics now exist in various fields (see the outline in Sect. 3.15 of Ref. [2d]).

Thanks to the achievement of maturity of hadronic mechanics, **R. M. Santilli** and **D. D. Shillady** [3] have recently constructed a generalization-covering of quantum chemistry under the name of *hadronic chemistry* which is also based on the novel *iso-, geno- and hyper-mathematics.* Hadronic chemistry then comprises three corresponding branches called *iso-, geno- and hyper-chemistry,* which are used for a more accurate representation of molecular structures, irreversible chemical reactions and biological systems, respectively.

In particular, Paper I [3a] propose the main formalism of the novel hadronic chemistry. The subsequent Papers II [3b] and III [3c] propose a novel *isochemical model of molecular bonds* whose main feature is the assumption that *pairs of valence electrons from two different atoms couple themselves in a singlet quasi-particle state at short distances (of 1 fm or less) we have called isoelectronium,* with the following main features (see Sect. 5 of Paper II [3c])

Main characteristics of the isoelectronium:

Charge: 0; spin 0; magnetic moment 0; rest energy 1.02 MeV;   (1.1)
Radius $r_c = b^{-1} = 6.8432329 \times 10^{-11}$ cm $= 0.015424288$ bohrs .
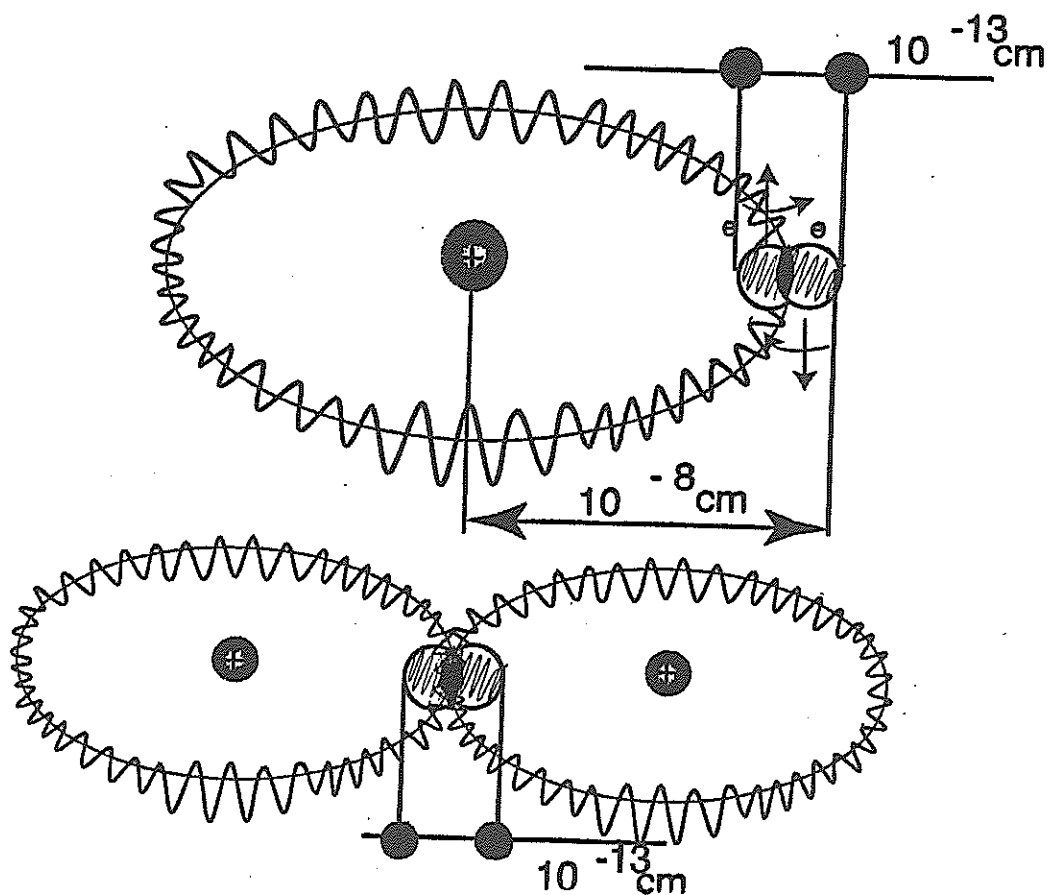
FIGURE I.4: A schematic view of the reason why quantum mechanics is *exactly valid* for the structure of *one* hydrogen atom, but only *approximately valid* for the two atoms of the hydrogen molecule. In the former case we have very large mutual distances between the electron and the nucleus which permits an effective approximation of the electron's *wavepacket* as being *point−like*. In turn, this implies the exact applicability of the linear, local and potential axioms of quantum mechanics. In the case of the hydrogen molecule these conditions are no longer valid because we now have the *deep overlapping of the wavepackets of the valence electrons at distances of 1 fm or less.* Under these conditions, a point−like approximation of the *wavepacket* of the electrons is no longer valid. It then follows that quantum mechanics and chemistry *cannot* be exactly valid for molecular structures. Hadronic mechanics and chemistry have been constructed precisely for the quantitative invariant description of the nonlinear, nonlocal and nonpotential conditions of deep waver−overlappings of valence electrons or of other particles.

The above new conception of molecular bonds has the following primary implications:

1) It introduces for the first time a *new* strong, *attractive forces among the two identical electrons* at distances of 1 fm or less suitable to represent the strength of molecular bonds in the physical reality, which is essentially the equivalent in chemistry of the strong force in nuclear physics.

2) It explains for the first time why the hydrogen, water and other molecules have only two hydrogen atoms. In fact, once two valence electrons are bonded into the singlet isoelectronium, they evidently reject the bonding of any additional electron.

3) Isochemistry has permitted the first representation of binding energies which is accurate to the *seventh digit.*

4) The above accurate representation occurs under the *exact validity of the basic axioms of isochemistry without ad hoc adulterations.*

5) Since the representation of binding energies is accurate to the seventh digit, isochemistry permits accurate thermochemical calculations.

6) Isochemistry implies convergence of power series much faster than those of quantum chemistry with a reduction of computer usage at least 1,000 times.

7) Isochemistry only allows correlations among *pairs* of electrons at all levels of study.

8) Isochemistry has provided a representation of electric and magnetic moments which is also accurate to *several digits,* let alone having the correct sign.

9) Isochemistry resolved the inconsistent prediction by quantum chemistry that all molecules are ferromagnetic (Figs. 1.8 and 1.9).

It should be indicated that Papers II and III provided a quantitative study of both possibilities that the isoelectronium is *stable* or *unstable,* by leaving the resolution of these alternative to subsequent studies upon the availability of additional theoretical and experimental evidence.

In particular, the *full stability* of the isoelectronium was reached under the *exact validity* of the axioms of isochemistry which yields an attractive hulten potential as representing the strong bond of the two valence electrons in the isoelectronium. By comparison, the case of *partial stability* of the isoelectronium was reached under an *approximation* of these basic principles which yields an attractive, yet weaker force responsible for the isoelectronium (rather than the much stronger hulten force).

The new evidence presented in this paper appears to favor the case of a

mostly stable isoelectronium, because necessary to resolve the inconsistency of Figs. 1.1 and 1.2.

~~In fact,~~ if the bonding of valence electrons is only *partially stable,* this necessarily implies that all molecules should have a well defined magnetic polarizability whose value is dependent on the time percentage of said instability.

For instance, suppose that the isoelectronium represents only the tendency of the valence electrons to couple-correlate themselves as in Sect. 8 of Paper II [3c] (see also Fig. 1.5), and suppose that their bonding only occurs for 10% of the time, thus having unpaired valence electrons for 90% of the time as in conventional quantum chemistry.
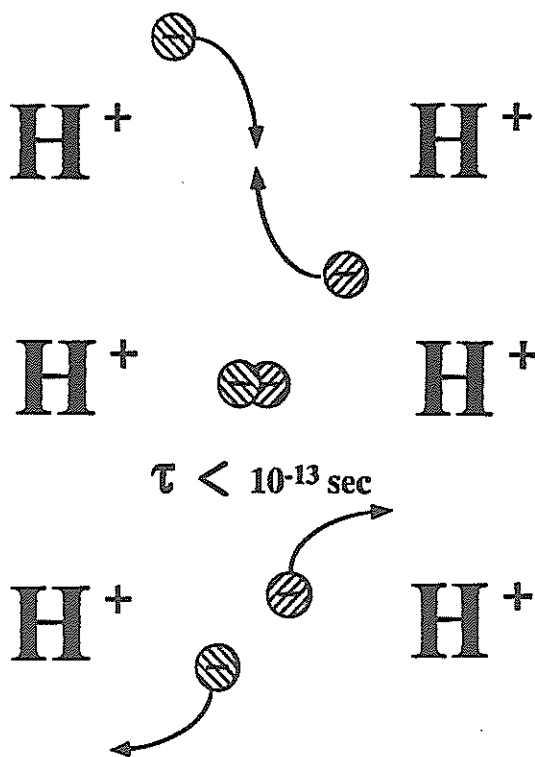
FIGURE 1.5: A schematic view of the *mostly unstable isoelectronium* of Papers II and III [3], essentially representing the tendency of electron pairs to have deep correlations at short distances in singlet coupling (evidently from Pauli's exclusion principle), although for a small period of time. This short lifetime originates from an *approximation* of the hulten potential well of the isoelectronium via one single gaussian. It is evident that the

lifetime of the isoelectronium increases with the improvement of the approximation via several gaussians, all the way to the full stability of the next figure.

It is then evident that, under the latter assumptions, *all molecules must acquire a net magnetic polarity under an external magnetic field, thus being ferromagnetic*, although with smaller numerical values as compared to the conventional model of molecular bonds.

The only way known to this author to resolve such a dramatic disagreement between the theory and the experimental data on the behavior of molecules under external magnetic fields, is the assumption of a mostly stable isoelectronium.

New Picture [handwritten]

simplest bond of 2 un. op. particles [handwritten]
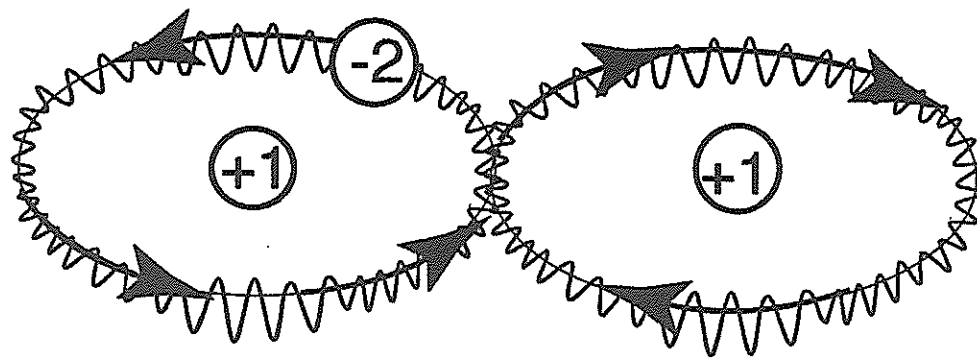
FIGURE 1.6. A schematic view of the *mostly stable isoelectronium* at absolute zero degree temperature and in the absence of rotations or other collective motions, here depicting the *isochemical model of the hydrogen molecule*. Note that *when rotations at ordinary temperature are admitted, the model recovers the conventional space distribution of the hydrogen molecule*. The model also holds for generic dimers HO, HC, etc. The model is here depicted in terms *orbits* of the valence electrons (rather than of *density distributions*). The main assumption is that the two valence electrons, one per each atom, correlate themselves into a bonded singlet state at distances of 1 fm or less, called *isoelectronium,* which describes a oo-shaped orbit around the respective two nuclei much similar to the orbit of a planet in certain binary star systems. The isoelectronium is then responsible for the *attractive force*

between the two atoms. The *binding energy* is instead characterized by the oo–shaped orbit of the isoelectronium around the two nuclei conceptually represented in this figure via a standing wave for a particle of spin 0 and charge –2e. Note that, at ordinary temperature, rotations would reproduce the conventional spherical distribution.
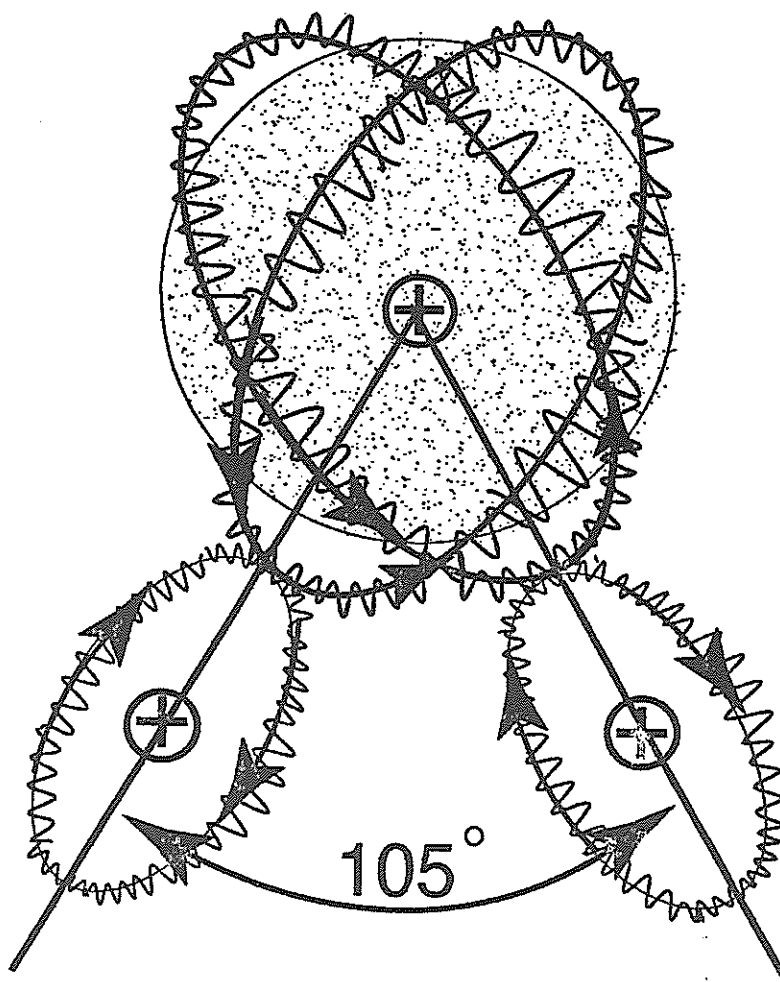
FIGURE 1.7: A schematic view of the *isochemical model of the water molecule* first proposed in Paper II [3c] with two isoelectronia (one per each HO dimer), presented at absolute zero degree temperature and in the absence of any rotational or other motions. *Note again that when rotations at ordinary temperature are admitted, the model recovers the conventional "Mickey Mouse" shape of the water molecule* [1]. The model is also depicted in terms of *orbits* of the valence electrons,

without precluding the description in terms of *density distributions* familiar in the existing literature. As one can see, a visual inspection of the new model resolves some of the fundamental open problems of the current conception of the water molecule, such as the lack of a sufficiently strong bonding force or the inability to explain why the water molecule has only *two* hydrogen atoms and only *one* oxygen.
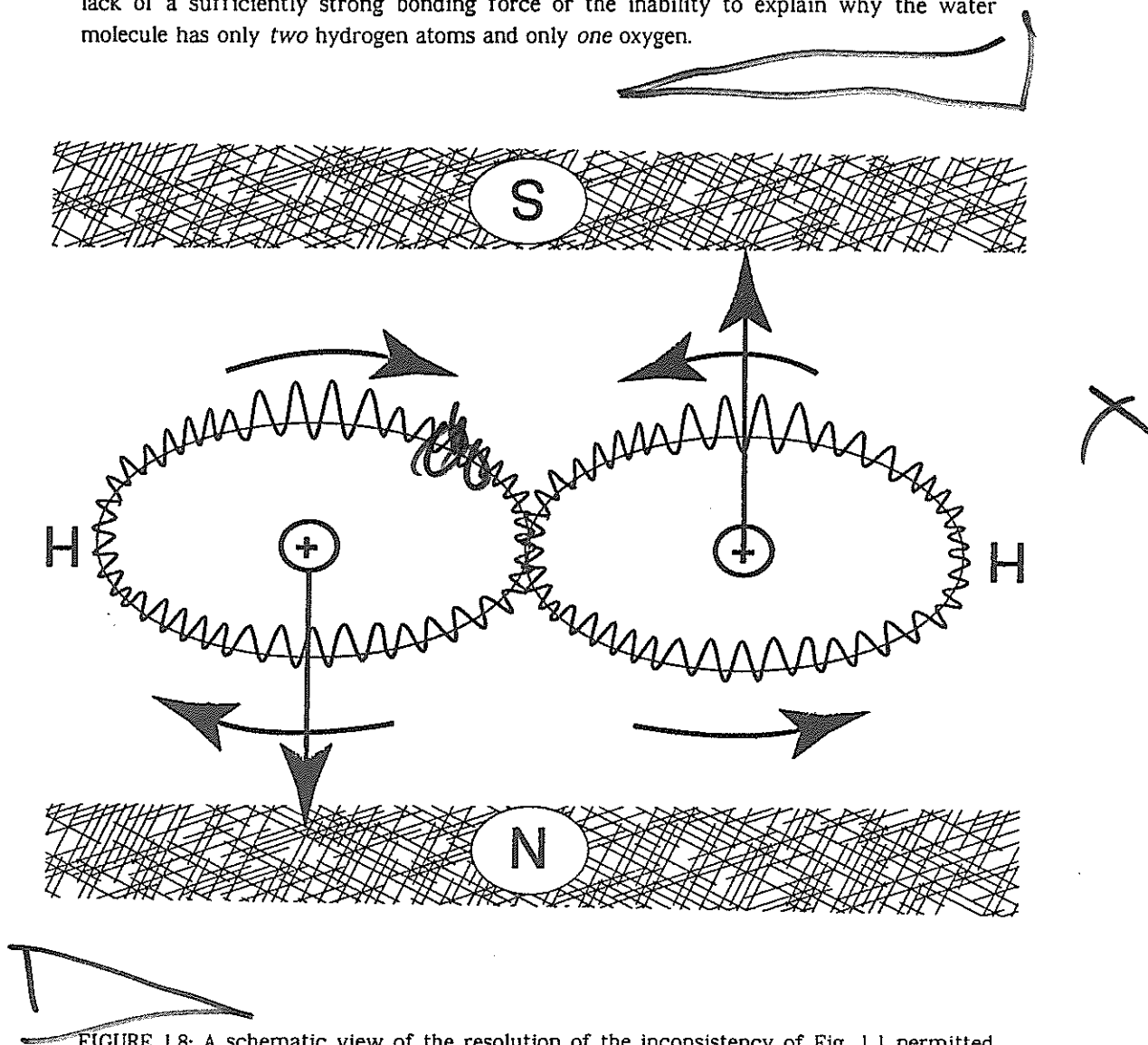
FIGURE 1.8: A schematic view of the resolution of the inconsistency of Fig. 1.1 permitted by the novel isochemical model of molecular bonds, here illustrated for the case of the simplest possible hydrogen molecule at 0 K and in the absence of any motion. In the conventional quantum model the valence electrons preserve their individuality, thus implying the mandatory prediction of a total net magnetic polarity under an external

magnetic field. For isochemistry the two valence electrons are no longer independent, but are bonded into the isoelectronium which describes an oo-shaped orbits around the two nuclei *with opposite rotational motion in the two o-branches.* The impossibility of a total net magnetic polarity is then evident and so is the resolution of the inconsistency of Fig. 1.1. Note the *necessity* for the stability of the isoelectronium for the resolution of said inconsistency.

FIGURE 1.2. A schematic view, again at absolute zero degree temperature and in the absence of motions, of the resolution of the inconsistency of quantum chemistry of Fig. 1.2, namely, the impossibility for the isochemical model of the water molecule to acquire a

net magnetic polarity under an external magnetic field. Note that the resolution presented in this figure is that for the worse possible configuration of the isochemical model, that with the *same* external polarity South–South. The resolutions of this figure and that of the preceding figure are at the foundation of the new chemical species introduced in this paper.

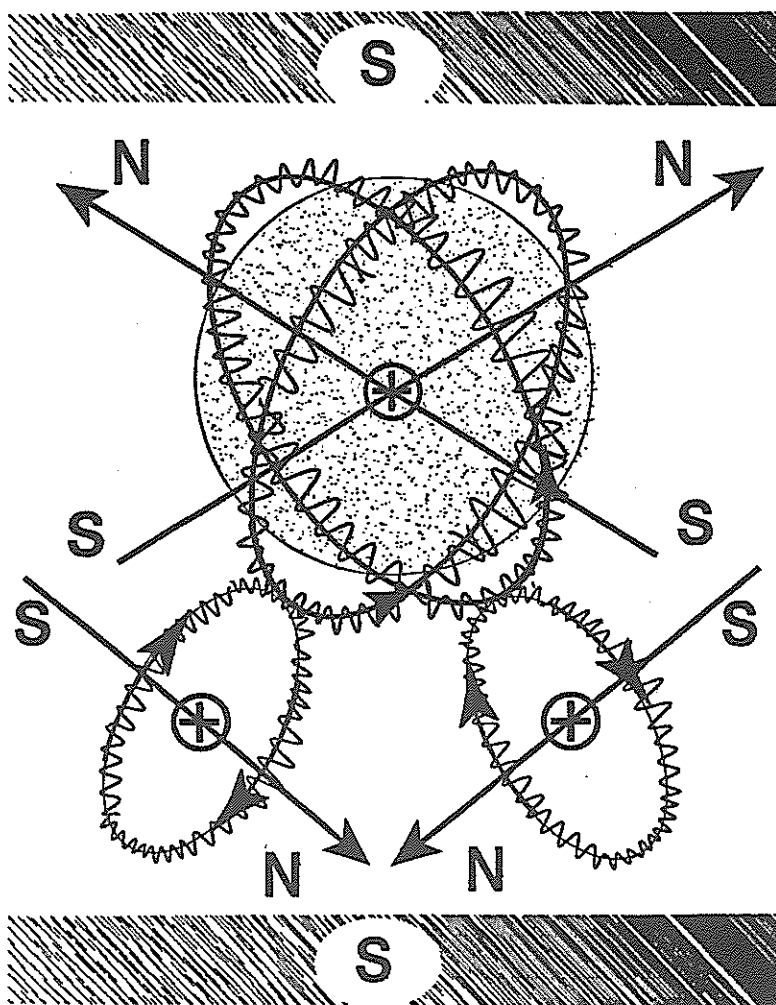Due to the importance of the topic, interested scholars are encouraged to present alternative models with a proof of the impossibility for molecules to acquire a net magnetic polarity under a mostly unstable isoelectronium and/or correlations of valence electrons.

I should stress that the isoelectronium *cannot* be 100% stable and *small instabilities* must be assumed. This is due to the fact that isochemistry coincides with quantum chemistry at distances sufficiently bigger than 1 fm [3]. In particular, isochemistry preserves exchange, van der Waals and other forces of current use. In turn, the latter forces necessarily imply a small instability of the isoelectronium. The same small instability can be reached under relativistic and field theoretical treatments.

Throughout this analysis I shall therefore assume that *in first nonrelativistic approximation, the isoelectronium is a stable singlet state with characteristics (1.1)*, while small instabilities should be treated in future relativistic or field theoretical studies.

In this paper I cannot possibly review hadronic mechanics and chemistry to avoid an un-necessary and prohibitive length. However, the reader should be aware that a technical understanding of this paper requires a technical knowledge of hadronic mechanics at least as presented in memoir [2d], and of quantum chemistry at least as presented in Papers I, II and III [3].

Finally, in reading this paper chemists should keep in mind that I am a theoretical physicist. Therefore, the used terminology is that of physics rather than chemistry, although I have made an effort in trying to identify both terminologies for the main aspects of the analysis to render the paper accessible to both physicists and chemists.

It should be however kept in mind that the *foundations* of the new species are *purely physical,* thus rendering appropriate the use of the physics terminology. Chemistry and related terminology are expected to be appropriate in the study of the *chemical behavior* of the new species.

2. THEORETICAL PREDICTION OF MAGNECULES

2.1. Definition of magnecules. In this paper I present, apparently for the first time, the theoretical prediction permitted by hadronic mechanics [2] and chemistry [3] of the first new chemical species since the discovery of the valence bonds in the past century, where by "new species" I mean "conventional atoms and molecules bonded by a new force".

The main hypothesis is that atoms and molecules can be subjected to a new *polarization* of the orbits of (at least the) valence electrons, where "polarization" is intended in physics as *the acquisition of a symmetry axis (or plane) with a fixed orientation in space* (apparently called in chemistry the "cyclotron resonating orbit"), and the polarization is such to produce a magnetic field sufficiently strong to permit a magnetic bond stable at ordinary conditions of temperature and pressure.

The new species is submitted under the ~~main~~ name of *magnecules* and other terms based on the prefix "magne" indicating *magnetic bonds*, while the name "molecules" will be used in its conventional meaning of denoting *valence bonds*.

DEFINITION 2.1: "Magnecules" constitute a new chemical species composed by conventional neutral atoms and molecules in liquids, gases or solids under new magnetic bonds due to the polarization of the orbits of (at least the) valence electrons which is stable at ordinary conditions and possesses the following characteristics:

I) The new species should not exist under sole valence bonds, e.g., because having a molecular weight much bigger than that of the heaviest molecule of substance considered;

II) The new species is identified in mass spectrometry by new peaks not present in the same substance without magnetic polarization;

III) The new peaks result to be "unknown" in the computer search among all known conventional molecular structures;

IV) The new peaks have no infrared (for gases) or ultraviolet (for liquids) signature at all;

V) The sole infrared or ultraviolet signatures of the new peaks are those of the conventional atoms or molecules constituting the new species;

VI) The ultraviolet or infrared signatures of conventional atoms or molecules in the new species are generally anomalous, thus indicating a deformation of their electron orbitals called "mutation";
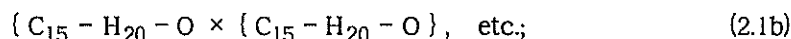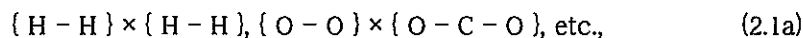
VII) The new species has anomalous penetrations thru other substances and anomalous adhesion to other substances, generally resulting in backgrounds following mass spectroscopic measurements with major differences with the original backgrounds prior to said measurements;

VIII) Physical characteristics of the new species (specific weight, viscosity, etc.) and chemical features (thermochemical energy released or absorbed, chemical reactions, etc.) are generally different than those of the same substance without magnecules; and

IX) All the above anomalies disappear at a sufficiently high temperature (the Curie point of the new species) evidently varying from substance to substance.

Magnecules shall be called: **elementary** *when composed by only two molecules;* **magneplexes** *when entirely composed by several identical molecule; and* **magneclusters** *when composed by several different molecules.*

By denoting the conventional valence bond with the symbol " − " and the new magnetic bond with "×", examples of *elementary magnecules* in gases and liquids are respectively given by

$$\{ H - H \} \times \{ H - H \}, \{ O - O \} \times \{ O - C - O \}, \text{ etc.,} \tag{2.1a}$$

$$\{ C_{15} - H_{20} - O \times \{ C_{15} - H_{20} - O \}, \text{ etc.;} \tag{2.1b}$$

examples of *magneplexes* in gases and liquids are respectively given by

$$\{ H - H \} \times \{ H - H \} \times \{ H - H \} \times \dots , \text{ etc. ,} \tag{2.2a}$$

$$\{ H - O - H \} \times \{ H - O - H \} \times \dots, \text{ etc.,} \tag{2.2b}$$
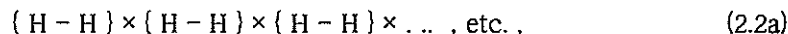
and examples of *magneclusters* are given by

$$\{ H - H \} \times \{ C - O \} \times \{ O \} \times \{ O - C - O \} \times \{ C \} \times \dots , \text{ etc.,} \tag{2.3a}$$

$$\{ C_{13} - H_{18} - O \} \times \{ C_{14} - H_{12} - O_3 \} \times \{ C_{15} - H_{20} - O \} \times \dots , \text{ etc.,} \tag{2.3b}$$
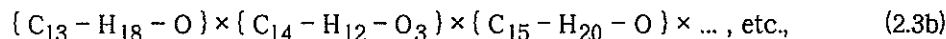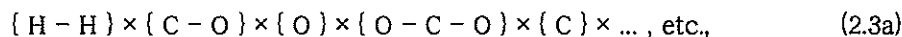
In this paper I shall present the theoretical prediction of magnecules and a number of independent experimental verifications for their existence at the gaseous, liquid and solid states. A number of additional independent experimental

tests on magnecules are under way and they will be presented in future works.

2.2. The magnetic origin of the new bonds.

It is evident that, as a necessary condition for their existence, *any clusters of atoms and molecules requires a bonding force for their existence.*

It is equally evident that the *sole* possible forces for new bonds are either of *electric* or of *magnetic* type. In fact, all available valence electrons are used in molecules by the very conception of the new species and, therefore, they cannot contribute to any new bond (which would be conventional anyhow). The weak and strong nuclear forces should be also dismissed because they are notoriously short range. This leaves the electric and magnetic structures of atoms and molecules as the only possible origin of the new bond.

It is equally evident that the electric origin of the new bond should be dismissed for any sufficiently strong and stable new species. To begin, *the atoms and molecules constituting the new species are assumed to be neutral* (Definition 2.1). As a consequence, the sole remaining possibility via electric fields is the *electric polarization of atoms and molecules,* e.g., that resulting from deformations of the electron orbits and/or displacements of the nuclei due to external fields.

It is equally evident that such a polarization is not sufficiently stable to characterize a stable new species. In any case, simple calculations (here left to the interested reader) establish that the numerical value of electric polarizations of atoms and molecules is too small to permit any appreciable new bond.

The above occurrence establish beyond scientific doubt that the only possibility for the new species to exist is that the new bonds are of *magnetic* type.

By continuing to proceed via exclusions, the only possible magnetic moments in a conventional atom or molecule are:

1) The intrinsic magnetic moments of the valence and other electrons;

2) The intrinsic magnetic moments of the nuclei; and

3) The magnetic moments caused by the rotation of the valence (and other) electrons in their orbits.

It is easy to see that *the intrinsic magnetic moments of the electrons have no possible contribution to the new species.* In fact, according to quantum chemistry, electrons have a density distributions in all three dimensions, thus preventing a localized value of their intrinsic magnetic moments.

Moreover, according to isochemistry, valence electrons couple themselves

into the singlet isoelectronia which have identically null magnetic moments by conception, Eq. (1.1).

It is equally evident that *the intrinsic magnetic moments of nuclei cannot possibly contribute to the creation of a new species for various reasons,* such as their insufficient strength as well as their excessive distance from other atoms (on an atomic scale).

At any rate, it is known that nuclei can be readily polarized with external magnetic fields, as established in the contemporary MRI technology [4]. In the event nuclear magnetic moments would be responsible of the new species, the mere application of a magnetic field to any liquid would imply its complete reduction to one single magnecluster, in dramatic disagreement with experimental evidence.

In conclusion, *the sole possibility for the existence of the new species is that their bonds originate from the magnetic moments of the orbits of valence electrons.*

Various studies of clusters of atoms and molecules without detailed theoretical identifications and experimental verifications of the *force* responsible for their structure are rather customary in contemporary quantum chemistry, e.g., in the study of the so-called "fullerenes" [5]. This implies the possibility that the new species has already been encountered a number of times in this century, although not identified as such.

2.3. The magnetic polarization of the orbits of valence electrons

To my knowledge, the chemical literature of this century on magnetic fields has been restricted to the intrinsic magnetic moments of nuclei and electrons [4].

Despite a rather laborious search, I have been unable to identify any study on the magnetic moments of the *orbits* of electrons in the rather vast literature of both quantum mechanics and chemistry (the indication of pre-existing studies would be gratefully appreciated for proper quotation in future works).

The magnetic moments due to orbits of valence electrons have been generally forgotten throughout this century for good reasons. In their natural state at ordinary conditions of pressure and temperature, valence electrons of all atoms have a *spherical* distributions (Fig. 2.1A) in which case no magnetic moment associated to the orbits can possibly be detected.

However, quantum electrodynamics, establishes that the rotation of any electron in a *plane* orbit does indeed create a magnetic moment according to well known laws (see next subsection).
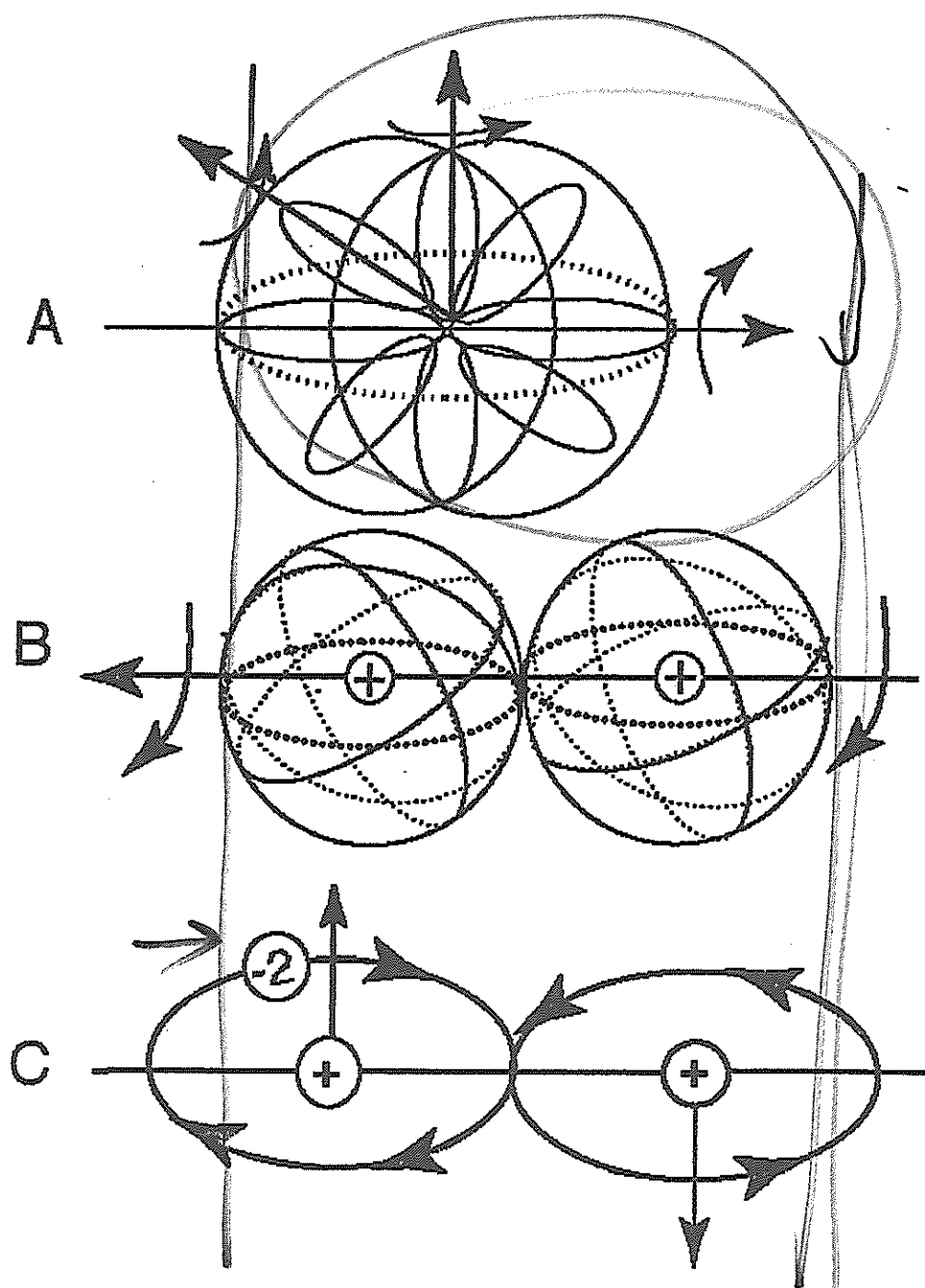
FIGURE 2.1: A schematic view of the mechanism at the foundation of the new species, the polarization of the orbits of valence electrons in a plane (cyclotron resonance orbits) here

illustrated for the case of the hydrogen molecule. As it is well known, in its natural gas state at ordinary conditions of pressure and temperature, *the hydrogen molecule is a sphere whose radius is equal to the diameter of a hydrogen atom* (Case A). A main assumption of this paper is the existence of a technology based on external magnetic fields which eliminates the rotational motions, by reaching first the configuration of Case B and then that of Case C in which the orbit of the isoelectronium is polarized in a plane. The emergence of two well defined magnetic moments is then evident. Note that I assume no new feature of the atomic structure, and merely use the manifestation of an intrinsic feature of the atomic structure.

The fundamental hypothesis I submit in this paper is therefore that *the orbit of the valence electrons can be polarized under sufficiently strong external magnetic fields, thus manifesting in this way their magnetic moment.* The existence of the magnecules is a mere consequence.

As we shall see in the next subsection, the value of the magnetic moment of the polarized orbits of valence electrons is much bigger than the corresponding nuclear values. However, even ignoring such numerical value, a mere observation of the elementary magnecule (2.1) indicates the close proximity of the polarized orbits of different atoms. A stable magnecule is therefore expected even for smaller values of said magnetic moment due to the strength of magnetic attraction at small distances.

I should stress that *the polarization of the orbit of the isoelectronium in a plane is studied in this paper only at absolute zero degree temperature and in the absence of rotations or other collective motions. It is evident that at ordinary temperature the application of external magnetic fields cannot produce polarization of the orbits in a plane, but only the deformation of the spherical distribution B of Fig. 2.1 into prolate spheroidal ellipsoids.*

2.4. Theoretical representation of magnecules. By denoting with the arrow ↑ the magnetic polarity North–South and with the arrow ↓ the (vertical) polarity South–North, and by keeping the study at the absolute zero degree temperature, the main assumption of this paper is that the hydrogen molecule H–H can be polarized into such a form that the orbit of the isoelectronium is in a plane with resulting structure $H_\uparrow$–$H_\downarrow$ (Fig 1.6).

Under this assumption, elementary magnecule (2.1) has the structure (see Fig. 2.2)

$$\{ H_\uparrow{}^a - H_\downarrow{}^b \} \times \{ H_\uparrow{}^c - H_\downarrow{}^d \}, \tag{2.4}$$

where: a, b, c, d, are symbols merely denoting different atoms; the polarized hydrogen atom $H_\uparrow^a$ is bonded magnetically to the polarized atom $H_\uparrow^b$ with the South magnetic pole of atom a is bonded to the North pole of atom b; and the North polarity of atom c is bonded to the south polarity of atom d. This results in a strong bond due to the flat nature of the atoms, the corresponding mutual distance being very small and the magnetic force being consequently being large.
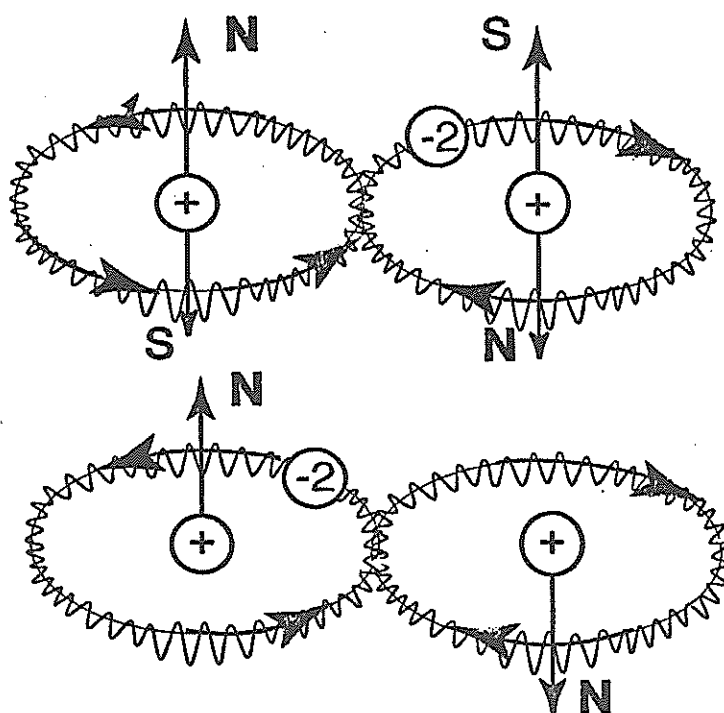
FIGURE 2.3: A schematic view of the most elementary possible gas magnecule (2.4), $(H_\uparrow - H_\downarrow) \times (H_\uparrow - H_\downarrow)$, here assumed to be formed at absolute zero degree temperature and in the absence of all collective motions. Note that the hydrogen molecule has no IR signature. Thus, the entire magnecule of this figure is therefore predicted to have no IR signature at all. Elementary magnecule (2.4) is therefore an exception to the general rule of Definition 2.1 according to which the only IR signatures of magneclusters are those of their molecular constituents. At ordinary temperature the magnecule acquires a conventional spherical shape due to rotations and other motions of the structure as a whole with comparatively ignorable relative motions between the two molecules.

Note that, once formed, magnecule (2.4) will indeed admit rotations, vibrations, and all conventional motions due to temperature, but as a single entity, with comparatively ignorable relative motions between the two molecules due to the strength of the bond.

A structure similar to (2.4) then holds for the remaining magnecules (2.1)–(2.3). For examples, another elementary gas magnecule is characterized by the polarizations

$$\{ H_\uparrow - H_\downarrow \} \times \{ C_\uparrow - O_\downarrow \} ; \tag{2.5}$$

and a generic gas magnecluster then has the structure (see Fig. 2.3)

$$\{ H_\uparrow - H_\downarrow \} \times \{ C_\uparrow - O_\downarrow \} \times \{ H_\uparrow - O_\downarrow - H \} \times \{ H_\uparrow - C_\downarrow - A - B - C \dots \} \times \dots \tag{2.6}$$

where A, B, C, are generic atoms in a conventional molecular chain and the atoms without an indicated magnetic polarity may indeed be polarized but are not necessarily bonded because of said geometric distribution in space.

Note that magnecule (2.4) may well have been detected several times in mass spectrometric measurements, but believed to be the helium (because its molecular weight is close to that of the helium). This case suggests that spectrometric studies of the new species should not be conducted unless the mass spectrometer (MS) is equipped with an infrared detector (IRD) for gases or ultraviolet detector (UVD) for liquids.

Recall that the hydrogen has no IR signature. Therefore, the IRD is expected to establish the *lack* of any IR signature of magnecule (2.4), while the helium has a well defined and known IR signature. Lacking the IRD in the MS instrument one may end up in the "experimental belief" that the detected peak is that of the helium, while the scientific reality may be dramatically different.

In view of the above occurrence, *in this analysis I shall, therefore, primarily use experimental evidence based on MS data complemented with IR data for gases or UV data for liquids, and consider as nonscientific possible MS dismissal of the new species with instruments without said IRD or UVD.*

2.5. Numerical value of the magnetic moment of polarized electrons orbits.
The calculation of the value of the magnetic moment of the orbits of the isoelectronium polarized in a fixed plane is truly elementary, but not

available in any book in quantum mechanics and chemistry I could inspect, as indicated earlier.

More specifically, the *laws* governing magnetic moments are well established in the literature. What is missing is their specific application to the *orbits* of the electrons beginning with that of the ground state of the hydrogen atom, let alone that for more complex atoms.
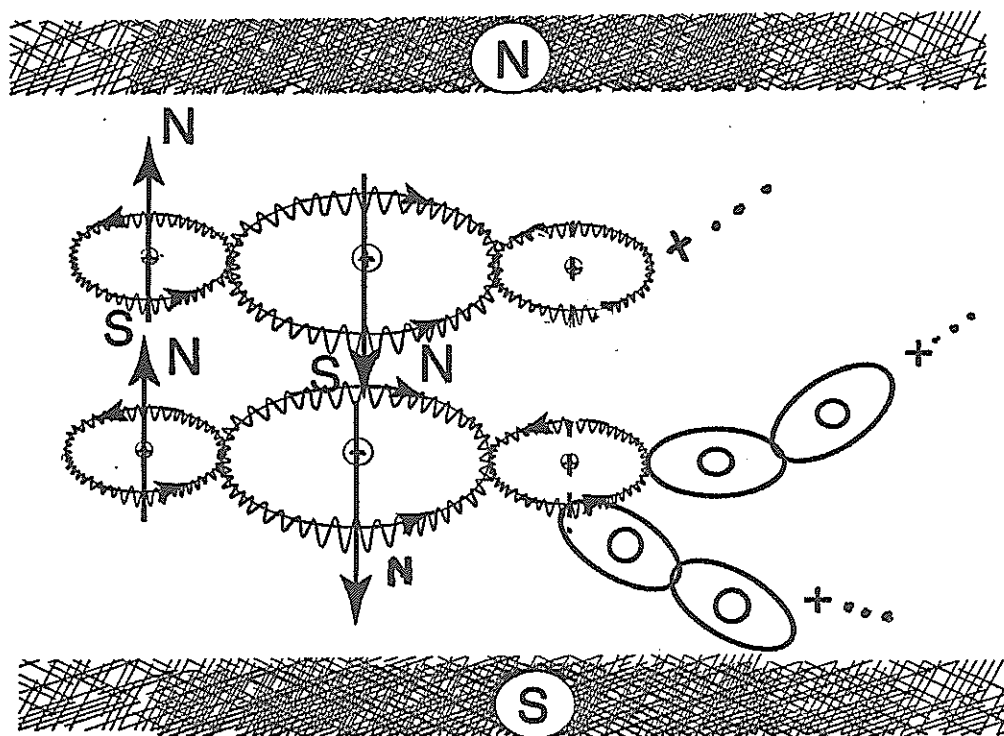
FIGURE 2.3: A schematic view of a generic magnecule (a magnecluster according to Definition 2.1) with constituent molecules in which only two dimers are magnetically bonded, while the remaining atoms of the molecules are not bonded due to their space geometry or other reasons.

By using the rationalized systems of units, the magnetic moment M of a polarized orbit of the isoelectronium is given by the general quantum mechanical

law

$$M_{isoel.} = \frac{q}{2\,m}\, L\,\mu \,, \tag{2.7}$$

where L is the angular momentum, μ is the rationalized unit and, from data (1.1), q = –2e and m = $2m_e$.

By plotting the various numerical values for the ground state of the isoelectronium in the hydrogen atom, I obtain

$$M_{isoel.} = 1,85.9590\,\mu \,. \tag{2.8}$$

By recalling that in the assumed units the proton has the magnetic moment 1. 4107 μ, we have the ratio

$$\frac{M_{Isoel.}}{M_{Proton}} = \frac{1,856.9590}{1.4107} = 1,316.3387 \,, \tag{2.9}$$

namely, *the magnetic moment of the polarized orbit of the isoelectronium in its ground state for the hydrogen atom is 1,316 times bigger than the magnetic moment of the nucleus (the proton).*

Due to its large numerical value, result (2.9) is amply sufficient to provide the theoretical foundations for the existence of the new chemical species of magnecules.

Recall from Paper II that the ground state of the isoelectronium in the hydrogen atom is *different* than that of the electron. Despite that, the two magnetic moment coincide.

In fact, angular momenta have the structure r $\wedge$ p; the orbit of the isoelectronium is expected to be 1/4 that of the electron, while its linear momentum is double in value. By plotting these data in Eq. (2.7) it follows that *the magnetic moment of the isoelectronium in its ground state polarized orbit for the hydrogen molecule as per Eq. (2.7) coincides with the magnetic moment of the ordinary electron in its own ground state in the same hydrogen atom, besides the presence in the latter case of the intrinsic magnetic moment of the electron (which must evidently follow the same polarization of the orbit)*

It then follows that *the conventional model of the hydrogen molecule implies a total value of the magnetic moment for the polarized ground state*

electron orbit in the hydrogen atom much bigger than the corresponding value for the isochemical model of the same molecule, due to the additional presence of the intrinsic magnetic moment of the electron.

In short, the conventional quantum chemical model of molecular bonds would predict a *bigger magnetic bond* than that predicted by hadronic chemistry. Nevertheless, this prediction will not be considered in this study due to the inconsistencies of quantum chemistry identified in Sect. 1.

Due to the conceptual, theoretical and experimental implications of Value (2.9), its independent verifications of its are solicited.

3. EXPERIMENTAL EVIDENCE OF MAGNECULES IN GASES AT TOUPS TECHNOLOGY CORPORATION.

3.1. Creation of magnecules in gases. I first proposed the existence of magnecules to, and several independent experimental verifications have been first established at the U. S. public corporation *TOUPS TECHNOLOGY LICENSING* (TTL) of Largo Florida (see the Company's Web Site [6a]). This section is devoted to an outline these developments.

During my studies on hadronic mechanics, I predicted the formation of magnecules in gases exposed to intense magnetic fields. I therefore searched for specific cases in which these conditions are met.

It was easy to see that one of the strongest, readily available sources of magnetic fields in gases is *an electric discharge.* I therefore predicted that magnecules exist in gases created by an electric discharge which are generally combustible. A similar prediction holds for liquids, as we shall see in Sect. 4.

I use the generic name of *MagneGas* to denote combustible gases created under or treated via a magnetic field sufficient to produce detectable magnecules. I use the term *MagneFuel* (or *MagFuel* for short) to include liquids with the same characteristics. Some of the MagneGases known to me are:

A) The gas patented by I. Eldridge in 1898 [7a];

B) The gas patented by W. A. Dammann and D. Wallman also in 1995 [7db];

C) The gas patented by W. J. Richardson, jr., in 1995 [7c] called AquaFuel^{TM};

D) The so-called Brown gas [7d] ;

E) The SkyGas [7e];

and others.

In general, an electric discharge is in a liquid essentially consisting of tap

water, carbon and other soluble substances, decomposes the water and other substances by forming a plasma at about 5,000 C of mostly ionized atoms of hydrogen, oxygen, carbon and possibly other elements which combine in a variety of ways, forming nonexplosive combustible gases with clean emission exhausts. The new gases cool down in the surrounding water, and bubble to the surface where they are collected with various means.

The main hypothesis I formulated in early 1998 is that at the time of their formation, gases H_2, CO, CO_2, O_2, etc. *do not* have a conventional structure because the orbits of (at least) their valence electrons are polarized (cyclotron resonance orbit) due to the very intense magnetic field surrounding the discharge (of the order of 10 Tesla). In turn, such a polarization implies the creation of the strong magnetic moments of Sect. 2.5, resulting a new magnetic bonds constituting the magnecules as per Definition 2.1.

While conducting these studies, I had the opportunity of visiting in early 1998 TTL where I met Mr. *Leon Toups,* President, Mr. *Mark Clancy,*Mr. *Michael Toups* and Mr. *Jerry Kammerer,* Vice Presidents, Mr. *William H. Richardson, jr.,* Mr. *Ken Lindfors,* Mr. *Jack Hansen* and other TTL engineers.

In this way I had the opportunity of seeing the production of AquaFuel, a new, safe, clean, combustible gas under development by TTL, which is produced quite simply via an electric discharge on carbon rods within ordinary tap water.

It was evident that the electric discharge decomposes the carbon rod, and creates a high temperature plasma of mostly ionized atoms of hydrogen, oxygen and carbon. In view of their affinity, carbon combines with virtually all available oxygen, thus resulting in a nonexplosive combustible gas, essentially composed by magnetically polarized molecules H_2, CO, CO_2 and their magnetic bonds. The resulting gas has some of the cleanest exhausts available in the fuel industry (see Web Site [6b] for details).

Immediately following my visual inspection of AquaFuel, I indicated to Mr. *Leon Toups* and other TTL members the hypothesis that the chemical structure of AquaFuel is anomalous, that is, *not representable with quantum chemistry.* This hypothesis was fully supported by Mr. *W. Richardson, jr.,* because of his years of unsuccessful and frustrating attempts in trying to understand AquaFuel via conventional chemical analyses and related quantum chemistry.

In fact, several conventional mass spectrometric analyses on AquaFuel conducted at conventional high temperatures, after adjustments due to possible air contamination (indicated by nitrogen content) and averaging over various methods of production, suggested the following

Conventional chemical composition of AquaFuel:

H_2	50 %
CO	40 %
CO_2	9 %
O_2	0.2 %
Misc. struct. in ppm	0.8 %.

$$(3.1)$$

However, the above chemical analysis was in dramatic disagreement with a variety of experimental evidence on AquaFuel reported in detail in Web Site [6b], such as: irreconcilable difference between the energy content of AquaFuel predicted by chemical composition (3.1) and the experimental evidence (see also Sect. 3.4); existence of large clusters in AquaFuel following filtration of light gases; numbers of octanes; and others.

I therefore conjectures that AquaFuel is indeed composed by the gases according to analysis (3.1), but all of them are magnetically polarized due to the high magnetic field of the electric discharges that produces them, thus resulting in a *new* chemical structure with generic magnecules

$$(H_\uparrow - H_\downarrow) \times (H_\uparrow - H_\downarrow), \quad (C_\uparrow - O_\downarrow) \times (C_\uparrow - O_\downarrow), \quad (O_\uparrow - O_\downarrow) \times (O_\uparrow - O_\downarrow), \text{ etc.}, \quad (3.2a)$$

$$(H_\uparrow - H_\downarrow) \times (H_\uparrow - H_\downarrow) \times (H_\uparrow - H_\downarrow) \times \ldots, (C_\uparrow - O_\downarrow) \times (C_\uparrow - O_\downarrow) \times (C_\uparrow - O_\downarrow) \times \ldots, \text{ etc.} \quad (3.2b)$$

$$(H_\uparrow - H_\downarrow) \times (C_\uparrow - O_\downarrow) \times H_\uparrow \times (O_\uparrow - C_{\downarrow\uparrow} - O_\downarrow) \times O_{\uparrow\uparrow} \times (O_\uparrow - O_\downarrow) \times C_{\uparrow\uparrow} \times \ldots, \text{ etc.}, \quad (3.2c)$$

where one should note the expected presence of individual polarized *atoms,* besides polarized molecules.

I therefore recommended to TTL the conduction on AquaFuel of comprehensive scientific measurements, such as those via suitably supervised Gas Chromatographic Mass Spectroscopic (GC-MS) equipment; energy content; octanes; permeability; etc. All these measurements were expected to be anomalous, thus providing the foundations of possible *new technology* on magnetically polarized gases of possible direct industrial relevance for TTL.

Mr. *Leon Toups* and all other TTL officers and members provided all possible financial, technical and logistic assistance for the conduction of the proposed scientific measurements which resulted to be invaluable for the achievement of the results presented in this study.

One should note the *corporate* origin of the above support for the search of basically *new* scientific knowledge, that is, knowledge beyond pre-existing

doctrines, which acquires particular significance when considering the notorious impossibility of seeking basic *new* knowledge in the contemporary academic environment.

In this section I report the experimental verifications on the existence of magnecules in AquaFuel achieved thanks to TTL support. Additional experimental verifications are under way at this writing and they will be reported in future papers.

3.2. Anomalies of magnecules to be measured. The hypothesis of magnecules in gases implies the expectation of numerous anomalies in various fields (mass spectrometry, thermochemical behavior, physical characteristics, etc.), such as:

Anomaly 3.1: Appearance of unexpected heavy MS peaks.

Gas magnecules are generally heavier than the heaviest molecule in a given gas. Peaks in the GC–MS are therefore expected in macroscopic percentages with molecular weights bigger than the heaviest molecule. These heavy composites should not provide MS peaks according to quantum chemistry, thus constituting an anomaly. As an illustration, the heaviest AquaFuel molecule in macroscopic percentages is CO_2, Eq. (3.1), which has molecular weight 44 a.m.u. By ignoring heavy compounds in parts per million (ppm), AquaFuel should have no large peak in the GC–MS with more than 44 a.m.u. The existence of heavier large peaks would establish this first anomaly.

Anomaly 3.2: "Unknown" character of the unexpected peaks.

To provide the initial premises for magnecules, the peaks of Anomaly 3.1 should result be "unknown" in the search by the GC–MS computer in its memory banks of conventional molecules, usually including about 150,000 molecules.

Anomaly 3.3: Lack of IR signature of the "unknown" peaks.

Another necessary condition to have magnecules is that the "unknown" peaks of Anomaly 3.1 should have no infrared signature at all. According to established evidence, all gases with a valence bond must have a well defined infrared signature (with a few exception of spherically symmetric molecules such as H_2). In the event the peaks of Anomaly 3.1 do have such a signature, they can be constituted by new yet conventional molecules not identified before. The only infrared signatures of any given gas magnecule should be those of the *conventional* molecules and atoms constituting the cluster itself. As an illustration, the only admissible infrared signatures of magnecule $(O_\uparrow - O_\downarrow) \times (C_\uparrow - O_\downarrow)$ are those of the conventional molecules O–O and C–O.

Anomaly 3.4: Mutation of conventional IR signatures.

The infrared signatures of the molecules constituting a magnecules are expected to be *mutated*, in the sense that the shape of their peaks is not the established one. This is another necessary condition for the existence of magnecules requested by the polarization of the orbits of the valence electrons. In fact, this polarization implies space distributions of the orbitals different than the conventional ones, thus resulting in a deformation of the shape of the IR peaks. Moreover, the same polarizations are expected to create additional strong bonds within a *conventional* molecule, which are expected to appear as new IR peaks. Still in turn, such an *internal mutation of conventional molecules* as far reaching scientific and technological implications, as we shall see.

Anomaly 3.5: Mutation of magnecules.

While molecules preserve their structure at conventional temperatures and pressures, this is not the case for magnecules which are expected to *mutate* in time, that is, to change the shape of the MS peaks due to change in their constituents. Since we are referring to gases whose constituents notoriously collide, magnecules can break-down during collisions into parts which can then recombine with other magnecules to form new structures. Alternatively, magnecules are expected to experience accretion (or emission) of polarized conventional atoms or molecules without necessarily breaking down into parts. It then follows that the peaks of Anomaly 3.1 are not expected to remain the same over a sufficient period of time for the same gas under the same conditions.

Anomaly 3.6: Mutated physical characteristics.

Magnetically polarized gases are expected to have mutated physical characteristics because the very notion of polarization of the orbits implies a *smaller* average molecular volume. Mutation of other physical characteristics is then consequential.

Anomaly 3.7: Increased adhesion.

Magnetically polarized gases are expected to have a increased adhesion to walls of disparate nature as compared to the same unpolarized gas. This is due to the well known property that magnetism can be propagated by induction according to which a magnetically polarized molecule with a sufficiently intense magnetic moment can induce a corresponding polarization of valence (and/or other) electrons in the atoms or molecules constituting the walls surface. Once such a polarization is created by induction, magnecules can have rather strong magnetic bonds to said walls.

Anomaly 3.8: Increased penetration through substances.

Magnetically polarized gases are expected to have absorption or penetration through other substances . This is first due to the reduction of the average

molecular volume with inherent increase of permeability as compared to the same unpolarized gas. The second reason is the magnetic induction of the preceding anomaly.

Anomaly 3.9: Increased energy release.

Magnetically polarized gases are expected to have thermochemical reactions with macroscopic increases of energy releases as compared to the same reactions among unpolarized gases, an expected anomaly which, alone, has large scientific and industrial significance.

All the above anomalies are expected to disappear at a sufficient high temperature, evidently varying from gas to gas (Curie point), while the anomalies are expected to be enhanced at lower temperature and survive liquefaction.

Thanks to the invaluable financial, technical and logistic support by Mr. *Leon Toups,* TTL President, my main task in 1998 has been that of providing scientific evidence by independent laboratories for the above anomalies.

The task has been rendered difficult by the fact that most conventional analytic equipment and methods have been developed for *conventional* properties. As such, they are expected to be ineffective for the measurements of *anomalous* properties.

Evidently, Anomalies 3.1 through 3.6 should be established via GC–MS. However, most GC–MS machines are not suitable to detect magnecules, and the few that are suitable should be operated in a way significantly different than the conventional one (otherwise the magnecules would have been discovered long ago).

More specifically, the *necessary conditions for measurements of magnecules with gas chromatographic, mass spectroscopic equipment are the following:*

Condition 3.1: The GC-MS should permit measurements of peaks at ordinary temperature (say, 10 C - 30 C) and the feeding lines should be cryogenically cooled. By comparison, GC–MS are routinely operated at temperatures of the order of 150 C to 250 C for which no magnecule is expected to exist. To put it explicitly, the conventional operation of GC–MS destroys the very clusters to be detected, and this identifies a first reason for the lack of detection of magnecules until now.

Condition 3.2: GC-MS used for measurements of magnecules should be equipped with the InfraRed Detector (IRD). In its absence,

no scientific measurement should be considered as final (because of the lack of 50% of the necessary measurements). To put this important point in plain language, measurements of magnetically polarized gases without the IRD can likely provide "experimental beliefs" without real scientific value due to "conventional interpretations" which are permitted precisely by the absence of IR data. On the contrary, data indicating the absence of IR signature for a given peak at the MS would discredit such "conventional interpretations" as nonscientific because, as indicated earlier, conventional molecules have an IR signature with only a few exception. Following a laborious search, I discovered that virtually all GC–MS in academic laboratories *are not* equipped with IRD (because academicians assume to be able to identify substances from their MS data only). This second main requirement virtually rules out the use of GC–MS in academic laboratories for the detection of the new species, and provides an additional reason why the magnecules have not been detected in academic laboratories so far. In reality, as we shall see, numerous magnecules have been indeed detected in academic laboratories, but were misinterpreted as esoteric molecules precisely because of the lack of IRD.

Condition 3.3: The GC-MS/IRD should be equipped with the largest possible feeding line with at least 0.5 mm ID. By comparison, GC–MS are usually operated with feeding lines with the smallest possible ID, at times of the order of 0.1 mm. This additional unusual requirement is due to Anomaly 3.7, i.e., the enhanced adhesion of magnecules to the walls of the feeding line which, in this way, becomes clogged up to the point of preventing the passage of the most interesting magnecules, the big magneclusters (Definition 2.1). This is another condition analysts with extended practice on *conventional* gases can only accept after being exposed to the evidence. The requirement is due to the fact that magnecules have the tendency to aggregate themselves in large clusters, some of which are so big to be visible to the naked eye (particularly in liquids, as shown in the next section). The use of the smallest possible feeding line, while fully acceptable for conventional gases, generally prevents the most interesting magnecules to even enter the instrument, let alone to be detected.

Condition 3.4: The GC-MS should be set to detect peaks at molecular weights where the analyst usually expects none. This condition identifies another reason why magnecules have simply not been looked for until now. As an illustration, the most interesting molecular weights for AquaFuel are those *bigger* than their heaviest conventional molecule, i.e., bigger than 44 a.m.u. It goes without saying that smaller molecular weights are also

important once the analyst *seeks an anomaly*, rather than a conventional setting. In fact, one of the most important magnecules is structure (2.4) at about 4 a.m.u composed by two hydrogen molecules.

Condition 3.5: The ramp time should be the longest admitted by the GC-MS/IRD and of at least 25 minutes. In general, for the evident reason to reduce costs, the ramp time is set at the smallest possible operational value, which is perfectly acceptable for conventional gases, but substantially inappropriate for the anomalies we have to detect. As we shall soon see, for the case of magnetically polarized gases a small ramp time implies the clustering of all magnecules into one single peak. The analyst then looks at each individual constituent of such a unique large peak and find fully conventional molecules, thus reaching the "experimental belief" of facing a conventional molecular structure. For a sufficiently large ramp time the magnecules are instead well separated, thus permitting the analyst to see their individual existence and therefore establish their individual lack of the valence structure via MS and IR data.

Numerous other conditions exist for GC–MS/IRD to be effective in the detection and identification of magnecules. They are of more technical nature and will be indicated whenever needed.

Besides the problems in identifying an appropriate GC–MS/IRD, I experienced additional difficulties in the identification of other instruments capable of providing effective measurements of the other Anomalies 3.7–3.–3.9, again, because the available instruments have been designed for the measurement of *conventional* rather than anomalous features.

As an illustration, by far the most difficult measurement of AquaFuel features has been the achievement of credible scientific values of its energy content in British Thermal Units (BTU) per cubic foot (cf). By comparison, the measurement of the BTU/cf of ordinary gases is so elementary nowadays to be computerized following GC–MS data.

Significantly, *all* methods currently available to measure the BTU/CF of AquaFuel failed to provide results of any credibility (this is the case of computerized computation of BTU/cf from GC–MS results) and some conventional calorimeters did not even allow AquaFuel to burn, let alone to make a measurement (this is the case of the computerized calorimeters for methane whose air intake is too big for the combustion of AquaFuel and its required adjustment outside the range of the computer program).

Equal difficulties were encountered via the use of EPA analytic techniques,

evidently because they are not designed to detect anomalies.

3.3. Spectroscopic evidence of magnecules in gases. After a
laborious search in the U.S.A., I located a GC–MS equipped with IRD suitable to
measure magneclusters at the *McClellan Air Force Base* in North Highland, near
Sacramento, California. Thanks to the invaluable assistance and backing by TTL, I
was authorized to conduct GC–MS/IRD measurement on AquaFuel at that facility.

Following the prior arrival of a bottle of AquaFuel, on June 19, 1998, I visited
the analytic laboratory of *NATIONAL TECHNICAL SYSTEMS* (NTS) located at said
McClellan Air Force Base. The measurements on AquaFuel were conducted by
analysts *Louis A. Dee,* Branch Manager, and *Norman Wade* who operated an
HP GC model 5890, an HP MS model 5972, and an HP IRD model 5965. Upon
inspection, the instrument meet all conditions 1–5 of Sect. 3.2. I therefore
authorized the measurements.

Thanks to a professional cooperation by the analysts, the equipment was set
at all the unusual conditions indicated in Sects. 3.2. In particular, the equipment
was set for the analytic method VOC IRMS.M utilizing an HP Ultra 2 column 25 m
long with a 0.32 mm ID and a film thickness of 0.52μm. I also requested to conduct
the analysis from 40 a.m.u. to the instrument limit of 500 a.m.u. This condition was
necessary to avoid the CO peak of AquaFuel at 28 a.m.u. which is so large to dwarf
all other peaks.

Moreover, the equipment was set at the lowest possible temperature of 10 C;
the biggest possible feeding line with an ID of .5 mm was installed; the feeding
line itself was cryogenically cooled; the equipment was set at the longest
possible ramp time of 26 minutes; and a linear flow velocity of 50 cm/sec was
selected. A number of other technical requirements are available in the complete
documentation of the measurements reproduced in App. A of Ref. [3e].

The analysts first secured a documentation of the background of the
instrument prior to any injection of AquaFuel in view of Anomaly 3.7 which is
evidently expected to alter the background due to anomalous residues of the
AquaFuel in the instrument after the completion of the tests.

Following a final control that *all* requested conditions were in place, NTS
analysts *Louis A. Dee* and *Norman Wade* injected AquaFuel into the HP GC–
MS/IRD and initiated the tests.

As one can see, the results constitute the first direct experimental evidence
on the existence of magnecules.

After waiting for the 26 minutes of the ramp time, *sixteen heavy anomalous*

peaks appeared in the MS screen, thus providing direct experimental verification of Anomaly 3.1 (Fig. 3.1).

AquaFuel contains from 5% to 7% of CO_2 as per various chemical analyses conducted at high temperature [6b]. The spectrum of Fig. 3.1 is from 40 a.m.u. to 500 a.m.u. Comparative inspection of the various peaks and their size then establishes that they represent macroscopic percentages of compounds in AquaFuel which, according to quantum chemistry, should not exist, thus providing experimental evidence for Anomaly 3.1 beyond scientific doubt.

I should report that, at the appearance of the peaks of Fig. 3.1, analyst *Norman Wade* stated "I have not seen something like these peaks in twenty five years of analyses".

The analysts then passed to the identification of the individual peaks of Fig. 3.1. As illustrated in Fig. 3.2 (see the complete documentation of Ref. [3e] for more data), *all sixteen peaks of Fig. 3.1 resulted to be "unknown" following the computer search in the memory banks of the McClellan Air Force Base comprising about 140,000 molecules, thus providing direct experimental verification of Anomaly 3.2.*

After completing and documenting the MS data, the analysts passed to measurements at the IRD. To their surprise, *none of the peaks of Fig. 3.1 had any infrared signature at all, thus providing direct experimental verification of Anomaly 3.3* (Fig. 3.3). The IR scan for the MS peaks of Fig. 3.1 only shows a peak clearly belonging to CO_2, namely, to one of the *components* of the peaks of Fig. 3.1. The IR signature of the other components do not appear in Fig. 3.3 because they are behind the left margin of the scan. Note also that there is no identifiable CO_2 peak in the MS spectrum of Fig. 3.1.

The analysts then established (Fig. 3.4) that *the IR peak of CO_2 is itself anomalous (mutated), thus providing experimental evidence for Anomaly 3.4.*

This result is most intriguing inasmuch as it provides *experimental evidence for a mutation of the structure of conventional molecules with the presence of an additional strong internal binding force also expected to be of magnetic type which, in turn, is expected to imply an increased energy content.*

To appraise the implication of this aspect alone, one should meditate a moment on the fact that it provides *experimental evidence on the polarization of the orbits of internal non-valence electrons*, evidently because valence electrons cannot provide any additional molecular bond for both conventional and hadronic chemistry.

The analysts also inspected small peaks in the IR scan, and they all resulted to be "unknown", as shown in Fig. 3.5, thus completing the experimental evidence

of the anomalous IR behavior.

Following the measurements, I received the following signed report dated June 23, 1998 (see the original in App. I of Ref. [3f]):

"Dear Dr. Santilli,

Thank you for the opportunity to provide analytic data on AquaFuel^{TM}. Attached are all GC-MS and concomitant GC-IR data that we obtained for the unfiltered sample.

... Our blank runs obtained before and after the analyses show no high mass spectra, thus proving that the high molecular weight species found were actually in the AquaFuel^{TM} sample.

.... Search results using a library of 138,000 chemical compounds, did not indicate any matches with this high molecular weight species found in AquaFuel^{TM}.

Based on the limitations of our equipment and our inability to find a library match, the identification of this mysterious AquaFuel^{TM} ingredient is an unknown."

National Technical Systems
Louis A. Dee
Branch Manager"

```
Information from Data File:
File        : C:\HPCHEM\1\DATA\0618004.D
Operator    : NAW
Acquired    : 18 Jun 98    3:01 pm using AcqMethod VOC_IRMS
Sample Name: TOUP'S TECH
Misc Info   : 1ML LOOP; 10C @ ULTRA COLUMN
Vial Number: 1
CurrentMeth: C:\HPCHEM\1\METHODS\DEFAULT.M
```
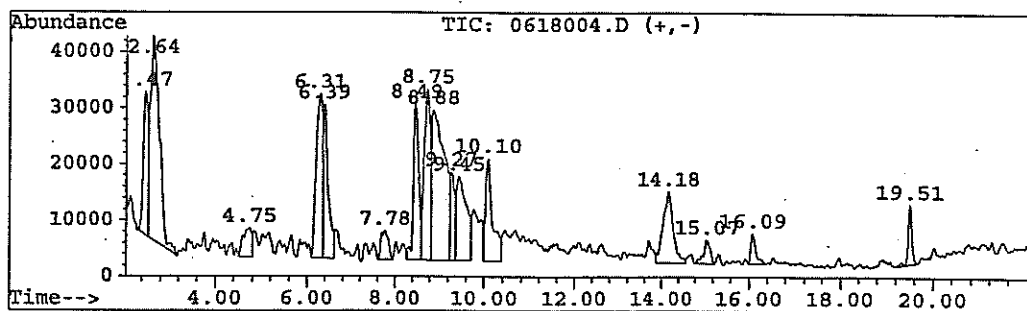

Retention Time	Area	Area %	Ratio %
Total Ion Chromatogram			
2.474	1753306	5.386	32.724
2.644	5091514	15.641	95.030
4.754	641528	1.971	11.974
6.307	2737749	8.411	51.098
6.390	2211258	6.793	41.272
7.782	592472	1.820	11.058
8.490	2357396	7.242	43.999
8.754	2784829	8.555	51.977
8.882	5357812	16.460	100.000
9.265	1123809	3.452	20.975
9.448	2421234	7.438	45.191
10.098	1946292	5.979	36.326
14.177	2129791	6.543	39.751
15.073	435208	1.337	8.123
16.085	389822	1.198	7.276
19.509	577433	1.774	10.777

FIGURE 3.1: A reproduction of the MS peaks providing the *first experimental evidence on the existence of magnecules* identified on June 19, 1998, by analysts *Louis A. Dee* and *Norman Wade* of the branch of *NATIONAL TECHNICAL SYSTEMS* (NTS) located at the *MCCLELLAN AIR FORCE BASE* in North Highland, near Sacramento, California, under support from *TOUPS TECHNOLOGY LICENSING* (TTL) of Largo, Florida. The peaks refer to the combustible gas *AquaFuel*^{TM} under development by TTL, for molecular weights ranging from 40 a.m.u. to 500 a.m.u. AquaFuel is a *light* gas with only

CO_2 as the heaviest molecule in macroscopic percentage with a molecular weight over 40
a.m.u. [6]. Therefore, *only* the CO_2 peak should have appeared in the scan with any
macroscopic size. On the contrary, the CO_2 peal is not identifiable at all in the scan; *all*
sixteen peaks should not be present according to quantum chemistry; and the scan
therefore provides the first direct experimental confirmation of Anomaly 3.1.

```
Library Searched : C:\DATABASE\WILEY138.L
Quality          : 37
ID               : Tris(methylseleno)[13C]methane
```
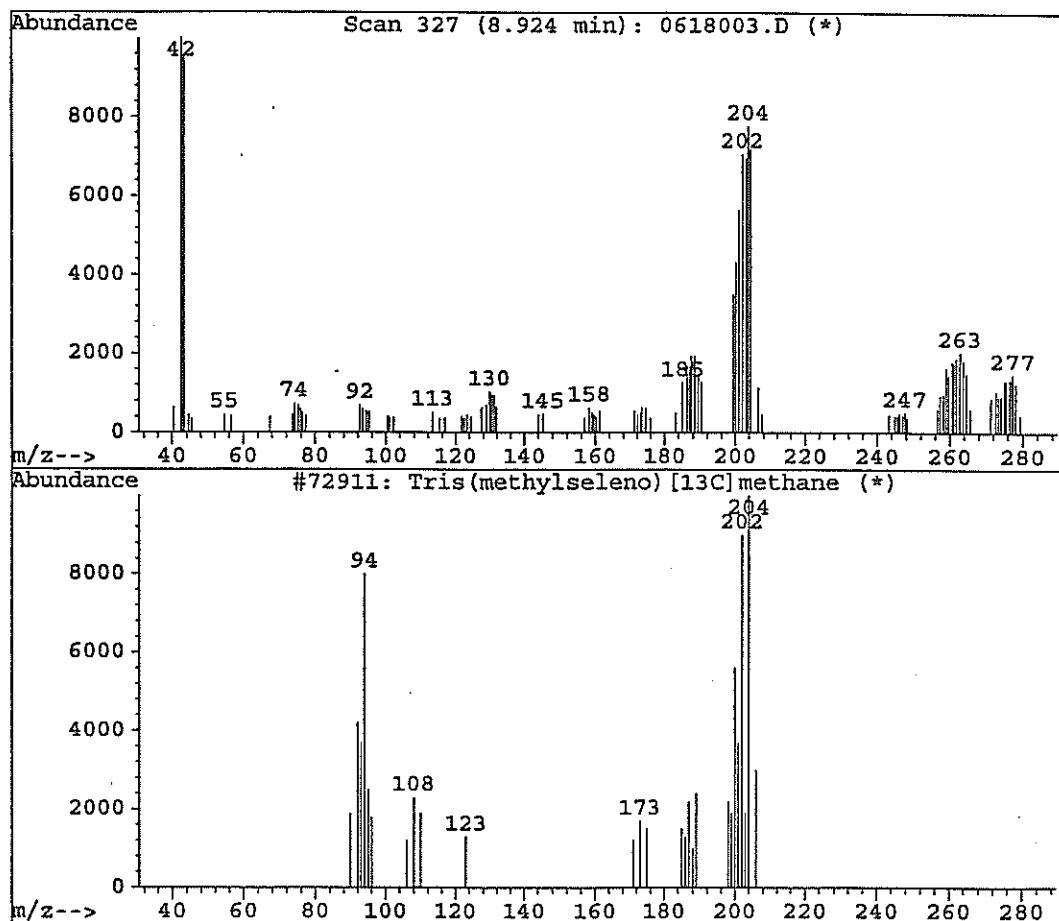

FIGURE 3.2: *The first experimental evidence at NTS that the peaks of Fig.
3.1 are "unknown".* The peak at the top is that at 8.924 minutes and that at the bottom
shows the lack of its identification by the computer search. Note that, not only the best fit
identified by the computer does not match the peak considered, but also the identified

substance (methylseleno) cannot possibly exist in AquaFuel because of the impossible presence of the necessary elements. Exactly the same situation holds for all remaining fifteen peaks of Fig. 3.1 (see the complete documentation in Ref. [3f]) which, therefore, remained "unknown", thus providing the first direct experimental verification of Anomaly 3.2
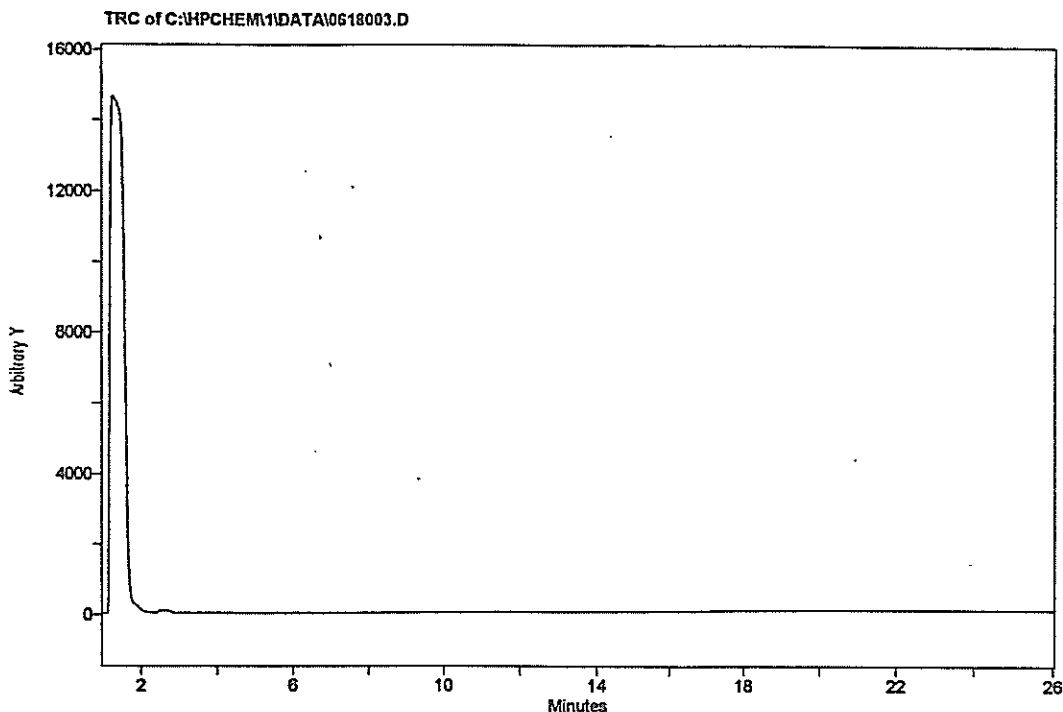
TRC of C:\HPCHEM\1\DATA\0618003.D

FIGURE 3.3: *The first experimental evidence at NTS on the lack of IR signature of molecules,* which establishes the existence of large peaks in the MS which have no IR signature at all. This provided the first direct experimental verification of Anomaly 3.3. The only IR signatures which are possible in AquaFuel are those for the *constituents* of the peaks of Fig. 3.1 which are ordinary gases such as O_2, CO, and CO_2. In the above figure only the IR signature of CO_2 appears because the scan was from 40 a.m.u. to 500 a.m.u. and, as such, could not include the IR signatures for O_2 and CO (H_2 has no IR signature).

Search Method for C:\HPCHEM\1\DATA\0618003.D\AVE1_8.IDS   Text Search = None
Sample Name = AVE1_8.SPC   Peak Search = Forward
Search Date = 06-23-1998 1:51 PM   Full Spectrum Search = Euclidian Distance
Mask Used = None   Custom Search = None
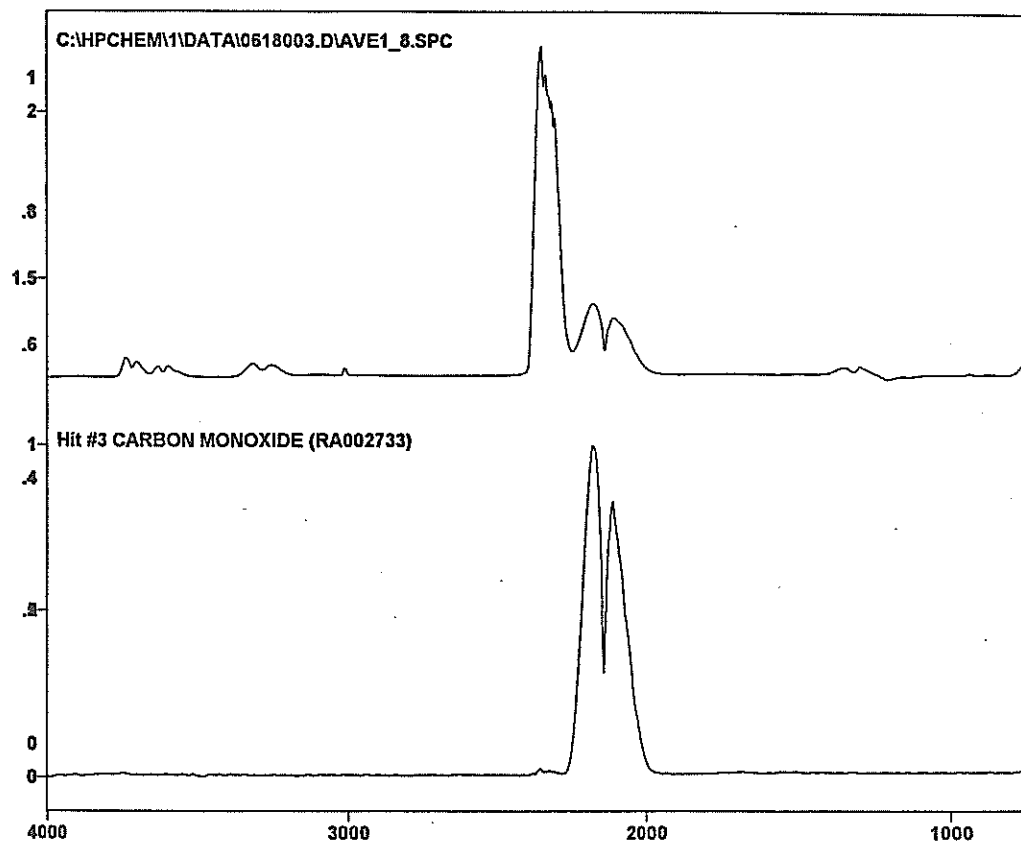

FIGURE 3.4: *The first experimental evidence at NTS on the mutation of the IR signature of magnetically polarized conventional molecules,* here referring to the CO_2 (top) compared to the conventional one (bottom). This provides the first direct experimental verification of Anomaly 3.4, namely, that *conventional* molecules composing AquaFuel have a deformed space distribution of their electrons, as necessary to have a polarization of their orbits. In turn, such deformations imply a necessary mutation of the IR signature. Note that the known, double–lobe PQR peak of CO_2 persists in the detected peak with the correct energy, and only with decreased intensity. Jointly, there is the appearance of a *new peak at higher energies on the left* which is

Jointly, there is the appearance of a *new peak at higher energies on the left* which is evidence of an extremely interesting *new internal bond within the conventional CO_2 molecule,* which evidently implies an increased energy content, thus establishing experimental foundations for a new technology of magnetically polarized gases with enhanced energy content (see Sect. 3.4). *Note that the computer interprets the IR signature as belonging to CO which is erroneous since CO is out of the selected range. The signature is instead that of CO_2 as confirmed in subsequent tests (see Fig. 3.8).*

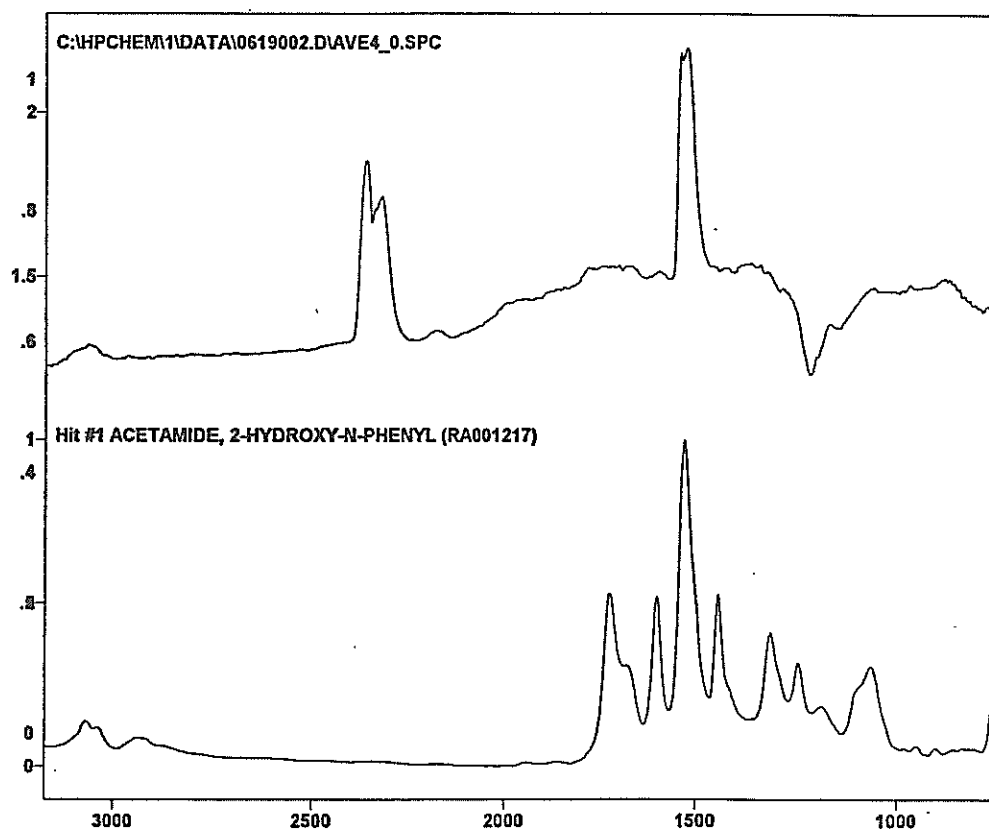FIGURE 3.5: A reproduction of the lack of identification in the computer search of small peaks in the IR scan. The best possible match offered by the computer (lower peak) does not even partially recover the detected IR peak (top). At any rate, the suggested substance (Acetamide) cannot possibly exist in AquaFuel because of the lack of the necessary elements. All other smaller IR peaks remained equally unknown.

The measurements on the same sample of AquaFuel tested at NTS were repeated on July 25, 1998, by analyst *Kevin Lothridge* via a GC–MS/IRD located at the *PINELLAS COUNTY FORENSIC LABORATORY* (PCFL) of Largo, Florida, under TTL support (for complete documentation see App. II of Ref. [3f]).

The equipment consisted of an HP GC model 5890 Series II, an HP MS model 5970 and an HP IRD model 5965B. Even though similar to the equipment used at NTS, the PCFL equipment was significantly different inasmuch as the temperature had to be increased from 10 C to 55 C and the ramp time reduced from 26 minutes to 1 minute. The latter reduction implied the cramping of all peaks of Figure 3.1 into one single large peak, a feature confirmed by all subsequent GC–MS tests with short ramp time.

Despite these differences, the test at PCFL confirmed *all* Anomalies 3.1–3.4 first detected at NTS (see Figs. 3.6, 3.7, 3.8 and the complete documentation reproduced in Appendix B of Ref. [3e]). In addition, the tests provided the first experimental evidence of additional anomalies.

Following my request, analyst *Kevin Lothridge* conducted *two* MS tests of the *same* AquaFuel sample at *different times* about 30 minutes apart. As one can see in Fig. 3.9, *the test at PCFL provided the first experimental evidence of Anomaly 3.5, the mutation in time of magnecules.* In fact, the peak of Fig. 3.9 is macroscopically different than that of Fig. 3.6.

This provided evidence that, when colliding, magnecules can break down into ordinary molecules, atoms and fragments of magneclusters, which then recombine with other molecules, atoms and/or magnecules to form new unknown peaks. Equivalently, the experimental evidence establishes the expectation that mutation of magnecules can simply occur via the accretion of release of another polarized atoms or molecule without breaking down.

As one can see in Fig. 3.10, the tests conducted by analyst *Kevin Lothridge* also provided *the first experimental evidence that the background following the end of the measurements resulted to be significantly similar to the MS scan, thus providing a direct experimental verification of Anomaly 3.7 on the increased adhesion of magnecules.*

The original background prior to the measurements with AquaFuel was re-obtained only after flushing the instrument with an inert gas at about 250 C. Such flushing heated the interior walls and parts of the instrument, thus breaking down all magnecules, terminating their anomalous adhesion and re-establishing their conventional molecular structure.

File   : D:\IRDDATA\TTGAS.D
Operator :
Acquired : 25 Jul 98 11:08 am using AcqMethod HGAS
Instrument :   5970 - In
Sample Name: A-FUEL
Misc Info : KEVIN LOTHRIDGE
Vial Number: 1

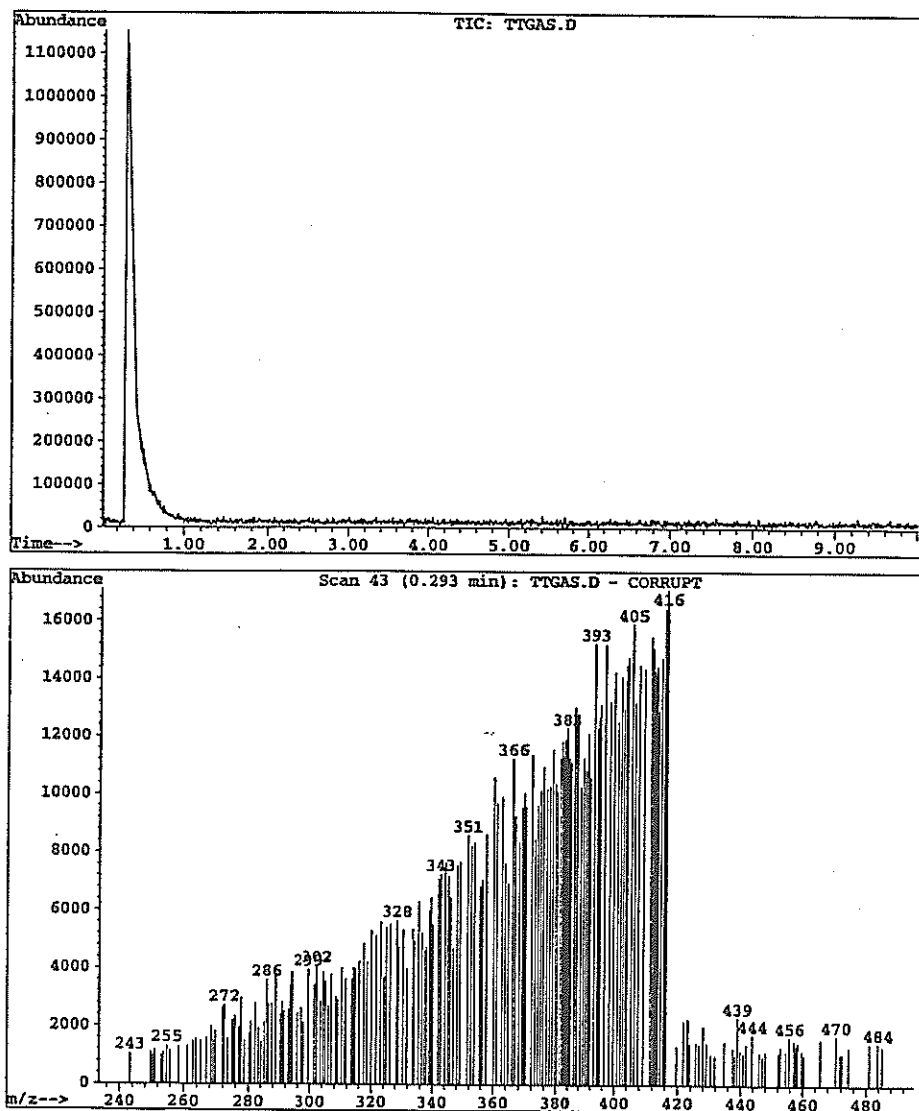FIGURE 3.6. A view of the IRD scan (top) and MS spectrum (below) of AquaFuel conducted by analyst *Kevin Lothridge* on July 25, 1998, via a HP GC–MS/IRD located at the *PINELLAS COUNTY FORENSIC LABORATORY* (PCFL) of Largo, Florida, under support from *TOUPS TECHNOLOGY LICENCING* (TTL) also of Largo, Florida. As one can see, the scan confirms the anomalous peaks of Fig. 3.1 obtained at NTS which are clustered into

the single peak (bottom part of the above figure) due to the excessively short ramp time of 1 minute. The scan also confirms the results of Fig. 3.3 obtained by NTS on a crucial anomaly of magnecules, their lack of IR signature (top part of the figure). Note that, exactly as it was the case for the NTS measurements, the only IR signature is that of the CO_2 which does not appear in the MS scan as an isolated identifiable peak even though it is contained in AquaFuel for about 9 %.

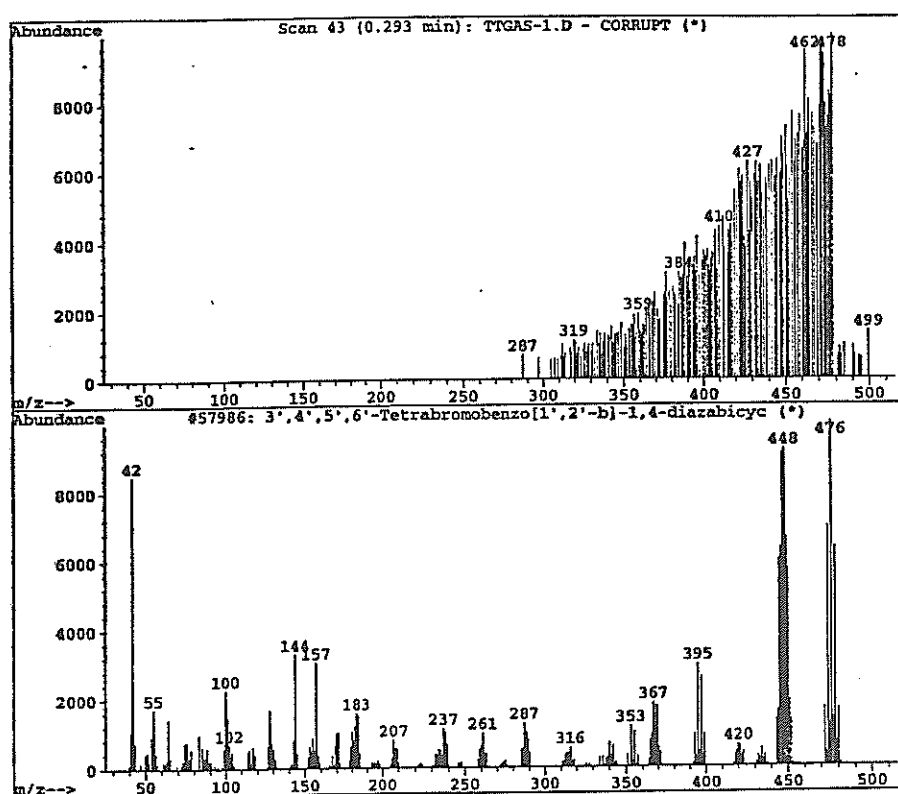FIGURE 3.7: A confirmation at the PCFL of the NTS result of Fig. 3.2, the lack of identification by the computer search of the peaks in the MS (see App. II of Ref. [3f] for the complete documentation). Again, the substance selected by the computer as the best match (bottom) does not even approach the detected peak (top), besides being impossible for AquaFuel because of the lack of needed elements.
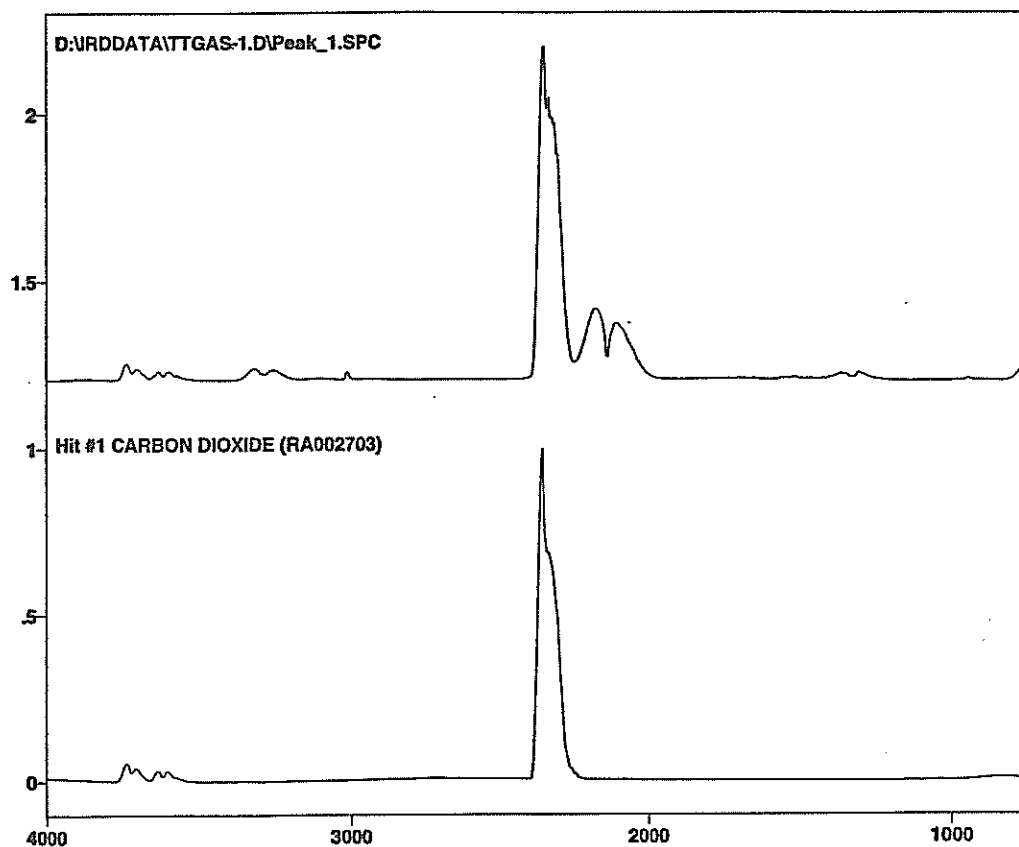
FIGURE 3.8: The independent confirmation at the PCFL of the NTS finding of Fig. 3.4 regarding the mutated IR signature of the CO_2 in AquaFuel. Note the almost identical shape of the mutated IR peak in the top of the above figure and that in Fig. 3.4. Note the shift toward lower energies of the mutated signature as compared to that of Fig. 3.4. This implies a weakening of the conventional valence bond in the CO_2 structure (expressed by the double-lobe peak) in favor of magnetic bonds due to the polarization of the orbits of internal electrons, thus confirming the capability of magnetically polarized molecules to store more energy than the conventional ones.

File   : D:\IRDDATA\TTGAS-1.D
Operator   :
Acquired   : 25 Jul 98 11:39 am using AcqMethod HGAS
Instrument :   5970 – In
Sample Name: A-FUEL
Misc Info   : KEVIN LOTHRIDGE
Vial Number: 1.
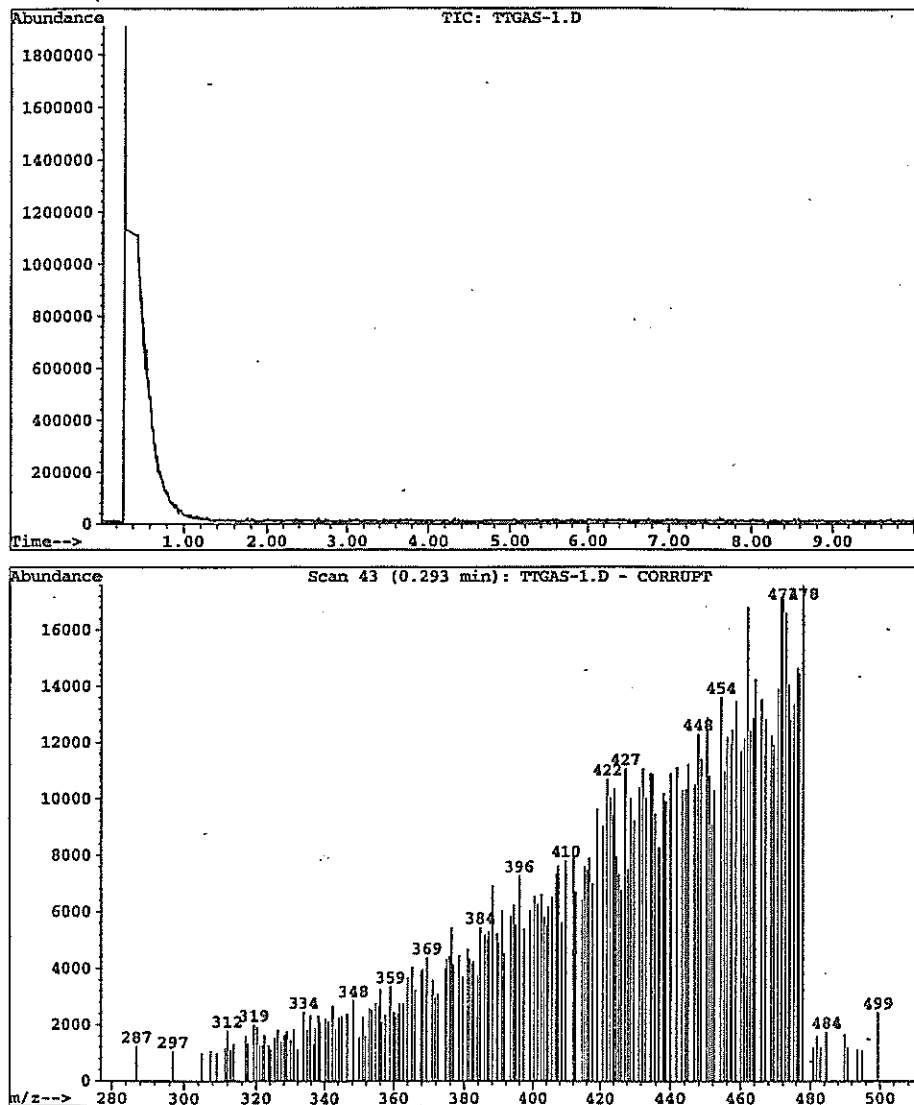
FIGURE 3.9: The first direct experimental verification of Anomaly 3.5 obtained by analyst *Kevin Lothridge* at the PCFL on July 25, 1998, on the mutation in time of the magnecules constituting AquaFuel. The MS peak of this figure is macroscopically different than that of Fig. 3.6, despite the fact that they refer to the *same gas* (without even removing the bottle from the feeding line), only scanned 30 minutes apart.

File   : D:\IRDDATA\AIR2.D
Operator   :
Acquired   : 25 Jul 98 11:22 am using AcqMethod HGAS
Instrument :   5970 – In
Sample Name: BLANK AFTER A-FUEL
Misc Info   : KEVIN LOTHRIDGE
Vial Number: 1
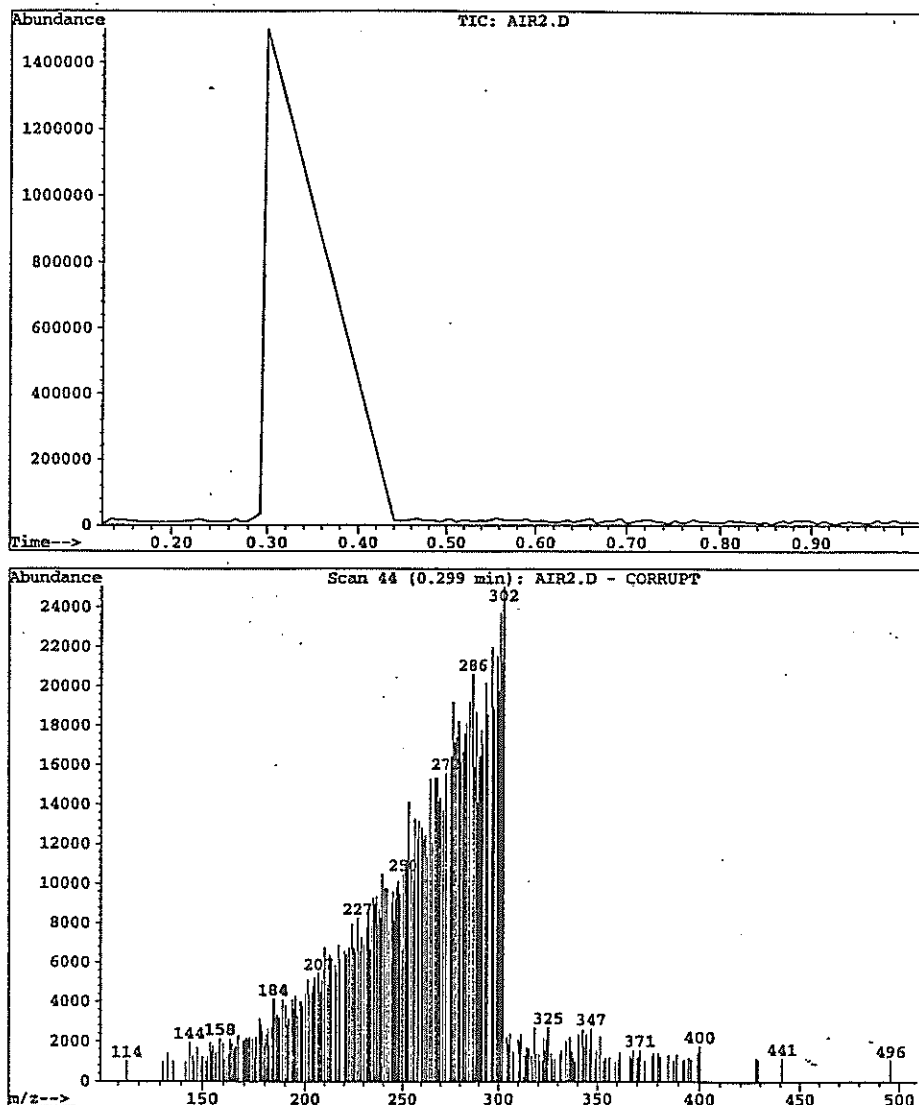
FIGURE 3.10: The first direct experimental verification of Anomaly 3.7 obtained at the PCFL, the increased adhesion of magnecules. The figure reproduces the background of the instrument upon completion of the measurements and removal of AquaFuel. Nevertheless, the background results to be very similar to the MS scan during the tests, thus establishing that part of the gas had remained in the interior of the instrument. This behavior can only

be explained via the induced magnetic polarization of the atoms and molecules in the walls and parts of the instrument with consequential increased adhesion via magnetic bonds. It should be noted that this anomalous adhesion has been confirmed by all subsequent tests for both the gaseous and liquid states.

A third independent verification was conducted on July 29, 1998, by analyst *David Fries* at the *CENTER FOR OCEAN TECHNOLOGY* of the *UNIVERSITY OF SOUTH FLORIDA* (USF) in St. Petersburg, under TTL support. The test were done via the use of a GC–MS Barian 2000 in which the GGC had been removed and replaced by a modified Paul's Trap which turned the instrument into a Ion Trap Mass Spectrometer (IT–MS).

Since the equipment belongs to an academic laboratory, it was not equipped with an IRD. This is unfortunate for scientific knowledge because Paul's Trap is based on a locally strong magnetic field which, as such, is expected to polarize all conventional molecules (although in an amount evidently less than the extreme magnetic fields of a large electric discharge).

In fact, the background of the instrument prior to the initiation of measurements showed various peaks which were tentatively identified as conventional molecules. The presence of an IRD would have evidently permitted the separation of science from personal beliefs.

In fact, only the additional presence and use of an IRD would have permitted the scientific identification with only two possibilities: the IR signatures of the peaks in the background are indeed those of the believed conventional molecules; or said peaks have no IR signature at all, in which case they cannot possibly be conventional molecules, because consisting of smaller molecules under the new magnetic bond.

As one can see in the following figure 3.11–3.21 (see Appendix III of Ref. [3f] for the complete documentation), despite the lack of IRD, the measurements provided a third independent verification of *all* preceding experimental evidence on the existence of magnecules.

Moreover, *the USF measurements established the existence in the AquaFuel magnecules of individual hydrogen atoms, due to the accretion or loss by various peaks of only one hydrogen atom due to variations of only one a.m.u.* This result was expected because of the known high sensitivity of Paul's Trap. The presence in the AquaFuel magnecules of other individual atoms (such as C or O) is implies in the preceding NTS and PCFL measurements, although it is best established for the case of the hydrogen.

In view of the above occurrence, inspection of the various MS scans

indicates *the absence in magnecules of systematic numerical periodicities,* e.g.,
their systematic increase with periodicity two (sole accretion of H_2 molecules), or
thirty-eight (sole accretion of CO molecules).

```
Spectrum Plot              C:\SATURN\DATA\AIR          Date: 07/29/98  08:57:53
Comment:
Scan: 79    Seg: --  Group: -- Retention: 6.58  RIC: 129158   Masses:  20-507
# Pks: 464    Base Pk: 73               Int: 12660      _J0.00% = 12660
100%        73
```


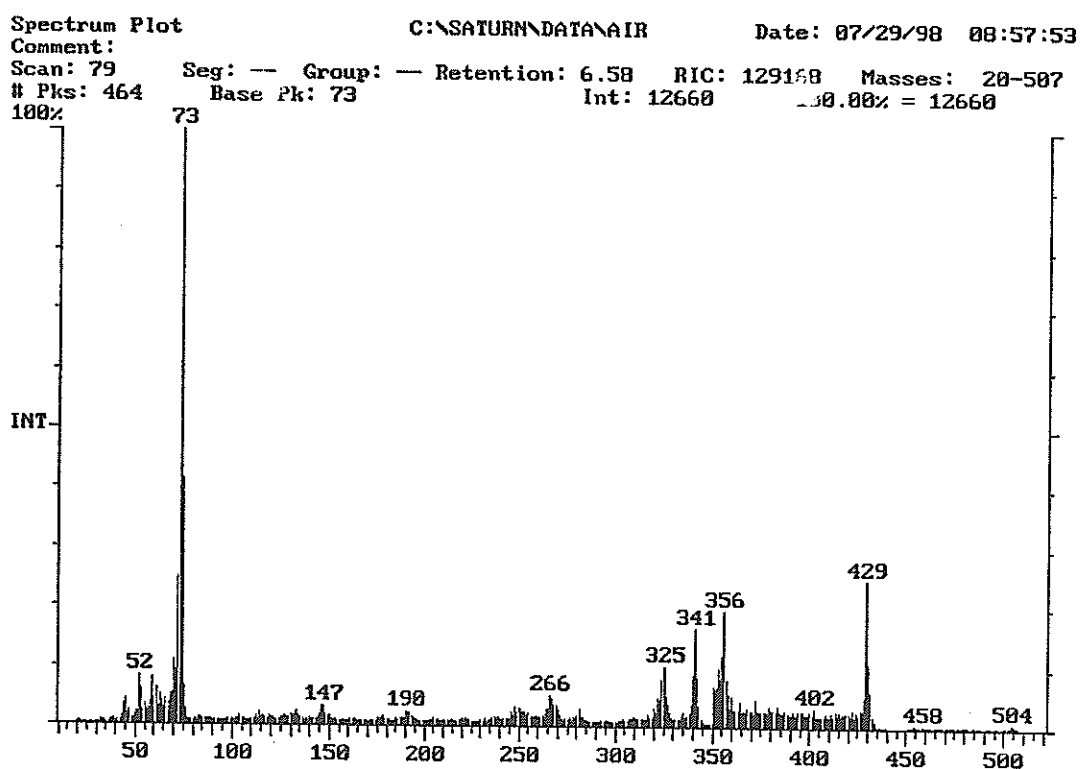FIGURE 3.11: Scan 79 of the tests conducted on AquaFuel on July 29, 1998, by analyst
David Fries at the *CENTER FOR OCEAN TECHNOLOGIES* of the *UNIVERSITY OF SOUTH
FLORIDA* (USF) in St. Petersburg, under support by *TOUPS TECHNOLOGY LICENSING* (TTL)
of Largo, Florida. A mere visual inspection of the peaks provides additional direct
experimental verifications of Anomaly 3.1 as first established by the NTS data of in Fig. 3.1.

AquaFuel is a *light* gas with about 49% H_2, 40% CO, 9% CO_2, 1% of O_2, and 1% of traces of various heavier substances based on H, O and C individually in ppm. The very existence of the dominant large peak at 73 a.m.u. is unequivocal experimental confirmation of Anomaly 3.1. The large peaks at 246, 325, 341, 356 and 429 a.m.u. then confirm the above evidence beyond credible doubt. Needless to say, there are countless conventional substances having 73 a.m.u., but none of them is possible in a gas composed by H, O and C and created at about about 5,000 C of the electric discharge.

```
Spectrum Plot              C:\SATURN\DATA\AIR          Date: 07/29/98  08:57:53
Comment:
Scan: 428     Seg: ——  Group: —— Retention: 35.66  RIC: 427839    Masses:  19-459
# Pks: 273    Base Pk: 77                    Int: 20475      100.00% = 20475
100%          77
```
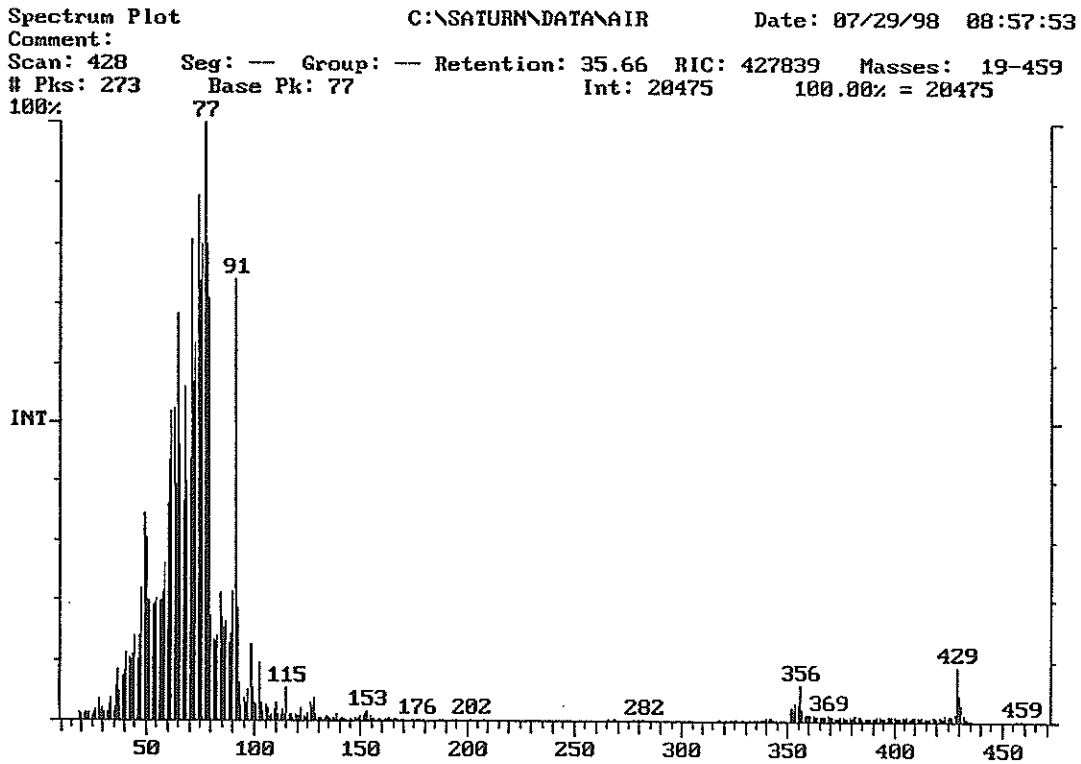

FIGURE 3.12: A reproduction of scan 428 at USF. Note the *dramatic* differences with the preceding scan 79 of Fig. 3.11 which confirm the *mutation the magnecules*. Note also the lack of systematic numerical periodicity in the mutations which are, therefore, at random, as expected from the internal collisions in a gas.

Spectrum Plot   C:\SATURN\DATA\AIR   Date: 07/29/98 08:57:53
Comment:
Scan: 462   Seg: -- Group: -- Retention: 38.49 RIC: 50°755   Masses: 19-458
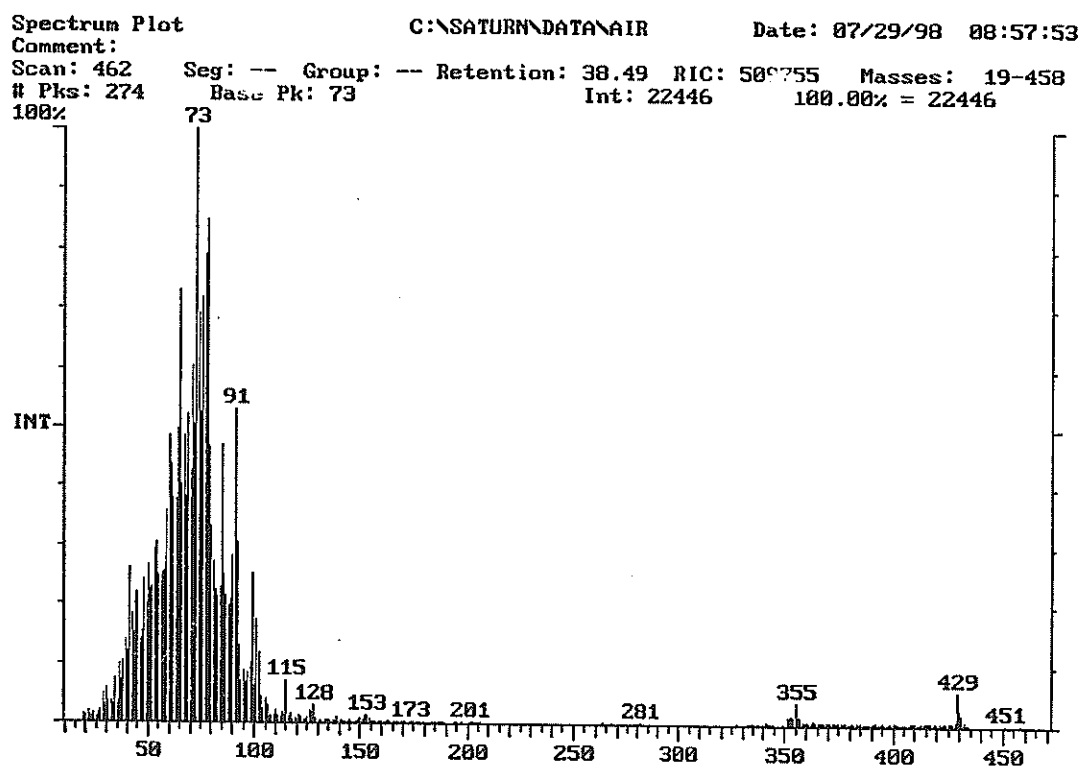# Pks: 274   Base Pk: 73   Int: 22446   100.00% = 22446

FIGURE 3.13: A reproduction of scan 462 of the USF measurements on AquaFuel which
confirms the mutation of magnecules in time. Note the *decrease* of the main peak from
77 a.m.u. of the preceding figure to 73 a.m.u of this figure. Comparison of the two scans
also identifies the mutations 202 → 201, 282 → 281, 356 → 355 which provide the *first*

direct experimental verification of the presence in magnecules of individual hydrogen atoms. Moreover, the mutation of the main peak 77 → 73 provides *the first experimental evidence of the existence of the elementary magnecule* $(H_\uparrow - H_\downarrow) \times (H_\uparrow - H_\downarrow)$. In fact, AquaFuel contains helium only in ppm. Mutation 77 → 73 of the dominant peak cannot, therefore, be credibly explained via the loss of a helium atom.


```
Chromatogram Plot           C:\SATURN\DATA\FRIES1      Date: 08/29/98  09:31:55
Comment:
Scan: 1881    Seg: —   Group: — Retention: 156.75 RIC: 109118    Masses:  65-152
Plotted: 1 to 2400                    Range: 1 to 2142      100% = 142266
```
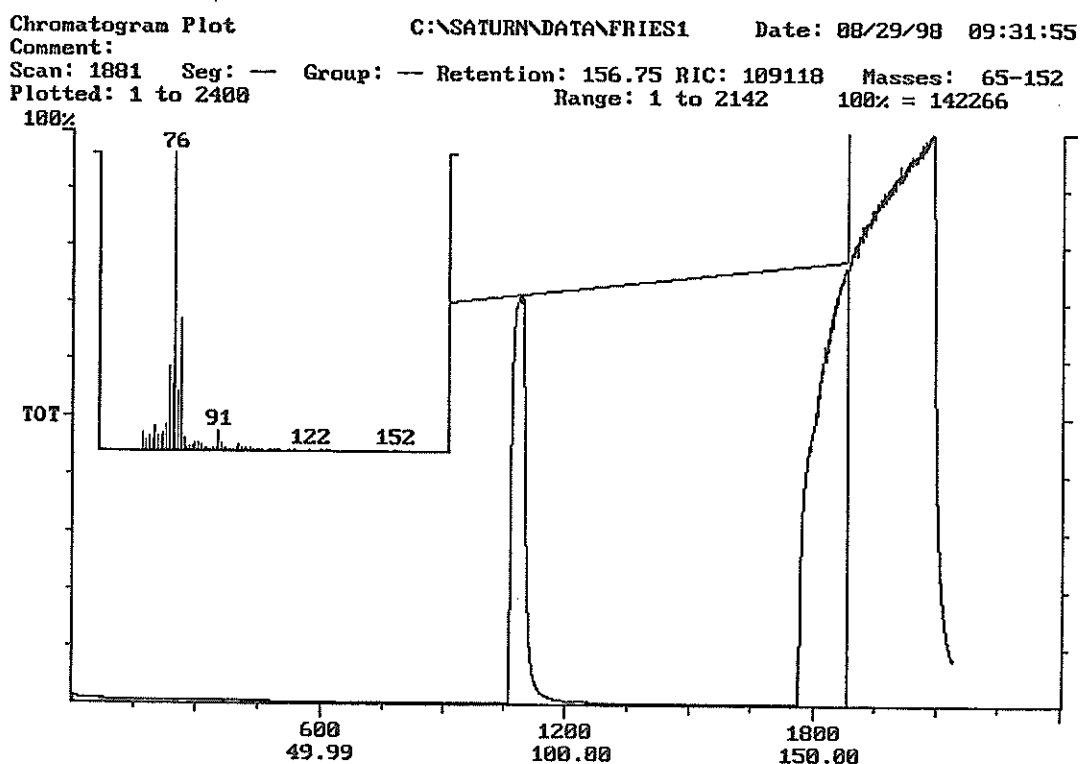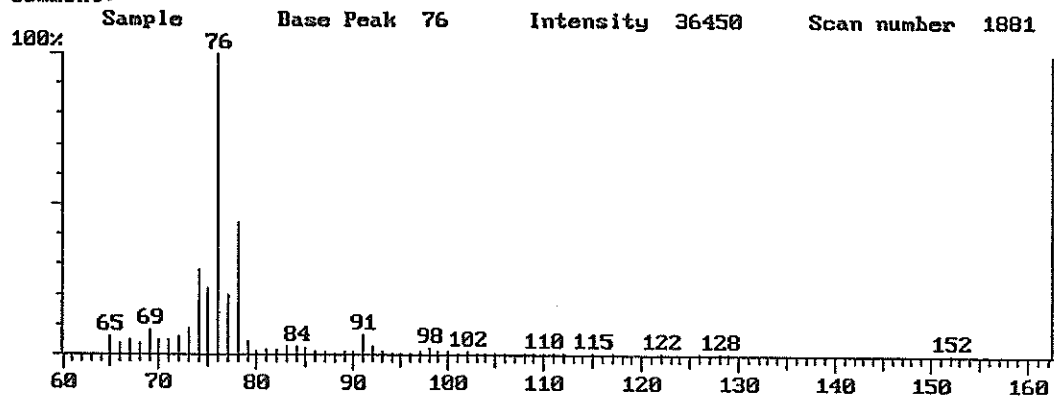
FIGURE 3.14: A reproduction of scan 1881 of the USF measurements on AquaFuel.

Library Search C:\SATURN\DATA\FRIES1   Acquired: 29 Aug 1998   09:31:55 + 156.7
Comment:
    Sample   Base Peak 76   Intensity 36450   Scan number 1881
100%   76

65 69   84   91   98 102   110 115   122 128   152

60   70   80   90   100   110   120   130   140   150   160

Library Search C:\SATURN\DATA\FRIES1 Acquired: 29 Aug 1998   Scan number 1881
Comment:
100%

100% 2-Pentanone, 1,1-dimethoxy-3-methyl-   CAS 56830-14-9*

100% 1-Carbahexaborane(7)   CAS 25301-90-0

100% Germane, ethyl-   CAS 1747-99-5

60   70   80   90   100   110   120   130   140   150
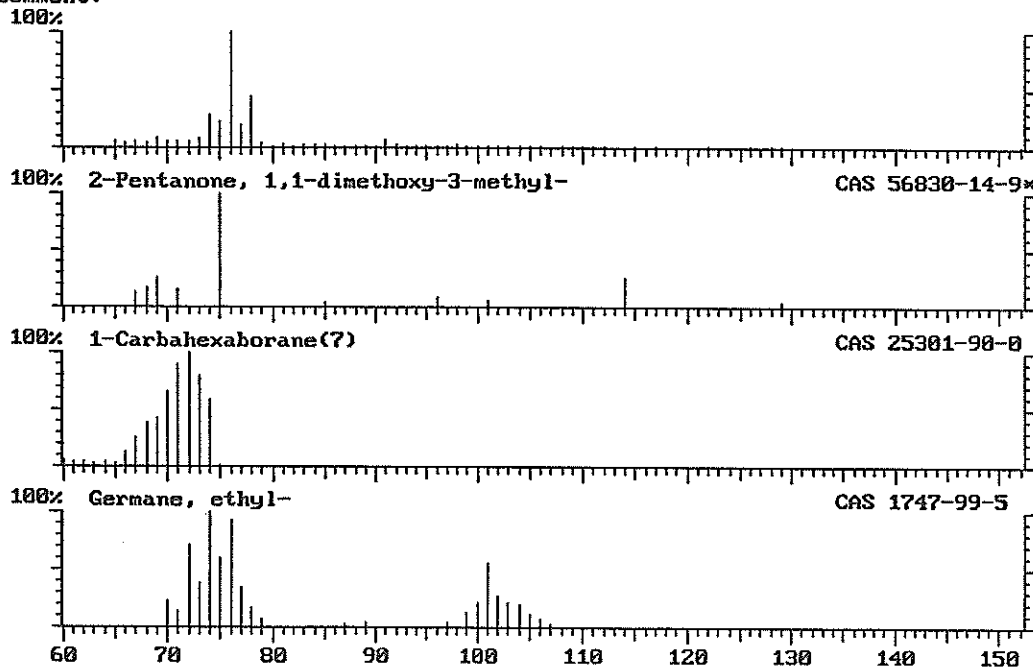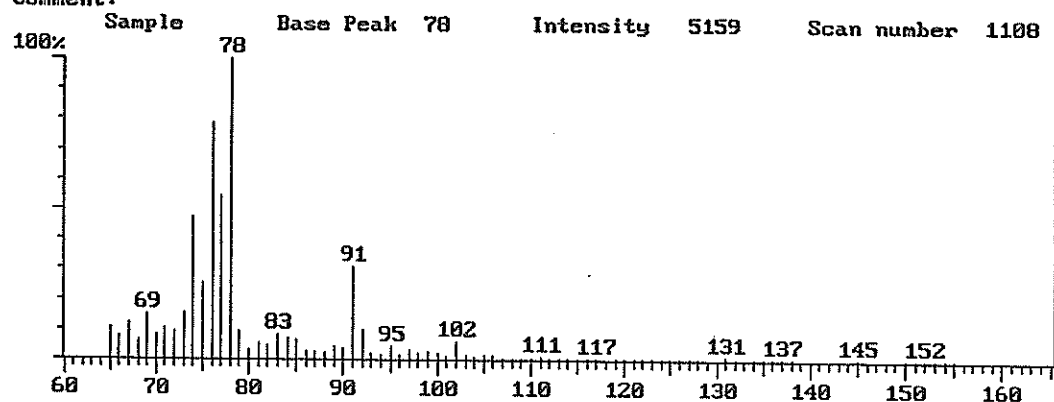
FIGURE 3.15: The lack of identification of the peak of scan 1881. Note that the computer
provides 100% confidence on substances that cannot possibly exist in AquaFuel because of
the lack of existence in AquaFuel of the necessary elements.

Library Search C:\SATURN\DATA\FRIES1   Acquired: 29 Aug 1998   09:31:55 + 92.33
Comment:
        Sample   Base Peak 78   Intensity   5159   Scan number   1108

Library Search C:\SATURN\DATA\FRIES1 Acquired: 29 Aug 1998 Scan number   1108
Comment:

100% Germane, ethyl-   CAS 1747-99-5 *

100% Silanamine, N-phenyl-   CAS 5578-85-8

100% Pentanoic acid, 3,3-dimethyl-5-[(phenylmethyl)selenol- CAS 3709-13-5
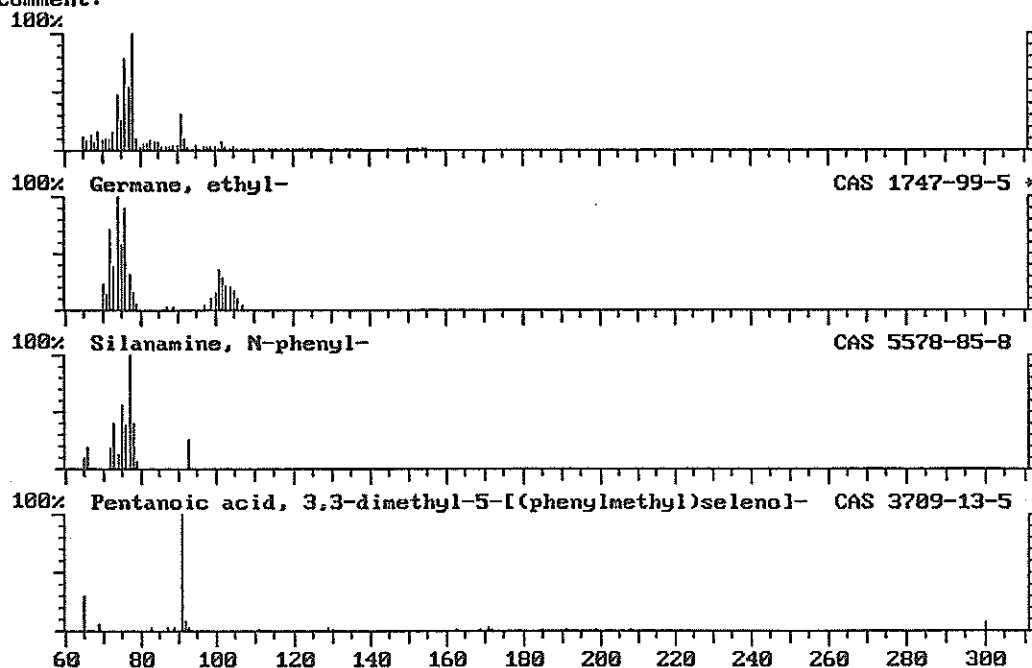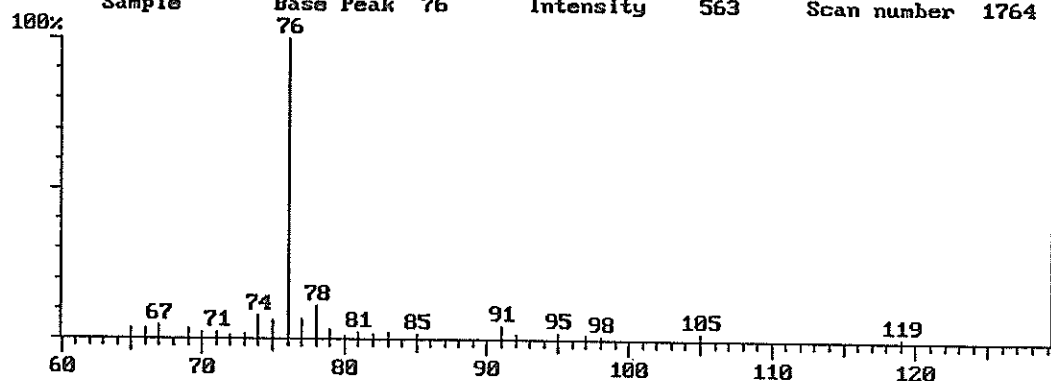
FIGURE 3.16: The lack of identification of the peak in scan 1108.

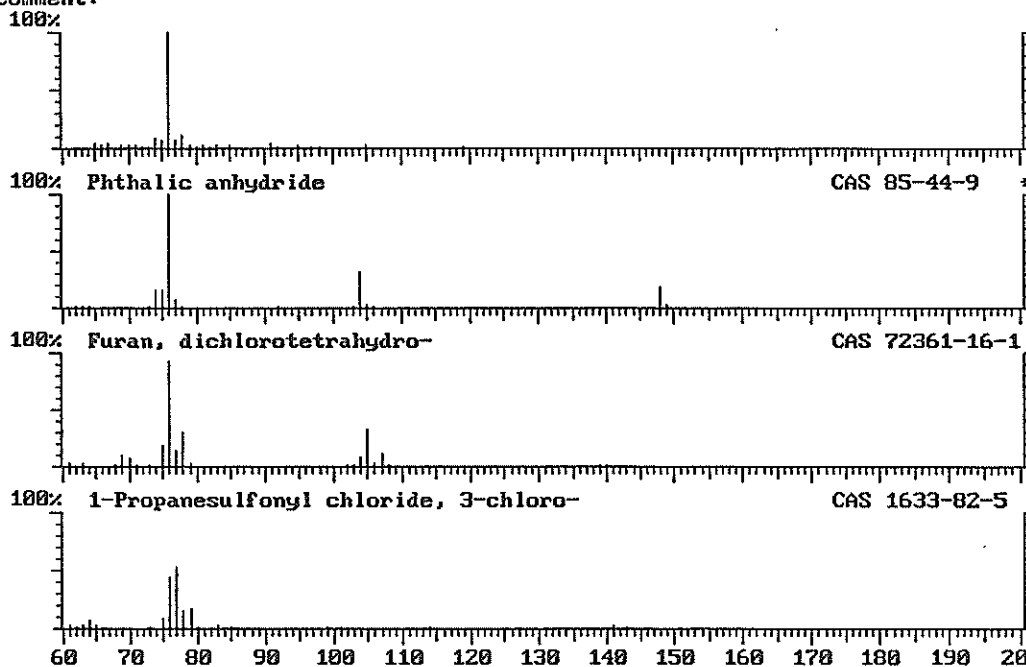Library Search C:\SATURN\DATA\FRIES1   Acquired: 29 Aug 1998 09:31:55 + 146.9
Bomment:
        Sample   Base Peak 76   Intensity   563   Scan number 1764
100%   76

        67   74   78
            71   81   85   91   95 98   105   119

    60   70   80   90   100   110   120

Library Search C:\SATURN\DATA\FRIES1 Acquired: 29 Aug 1998   Scan number   1764
Comment:
  100%

  100% Phthalic anhydride   CAS 85-44-9   *

  100% Furan, dichlorotetrahydro-   CAS 72361-16-1

  100% 1-Propanesulfonyl chloride, 3-chloro-   CAS 1633-82-5

    60   70   80   90   100 110 120 130 140 150 160 170 180 190 200
Formula C8.H4.03   Rank 1   Index 66551
MolWeight:148   Search:All   LocalNorm:On   P:408 F:507 R:▓▓▓ CAS# 85-44-9

FIGURE 3.17: The lack of identification of the peak in scan 1764.

Library Search   C:\SATURN\DATA\FRIES1   Acquired: 29 Aug 1998   Scan number 1068
Comment:
100%

100%   2-Pentanone, 1,1-dimethoxy-3-methyl-   CAS 56830-14-9*

100%   4,7-Methano-1H-isoindole-1,3(2H)-dione, 3a,4,7,7a-tetra CAS 6265-30-1

100%   1-Carbahexaborane(7)   CAS 25301-90-0

    60   70   80   90   100   110   120   130   140   150   160   170
Formula C8.H16.O3   Rank 1   Index 12383
MolWeight:160   Search:All   LocalNorm:On   P:100 F:569 R:148 CAS# 56830-14-9
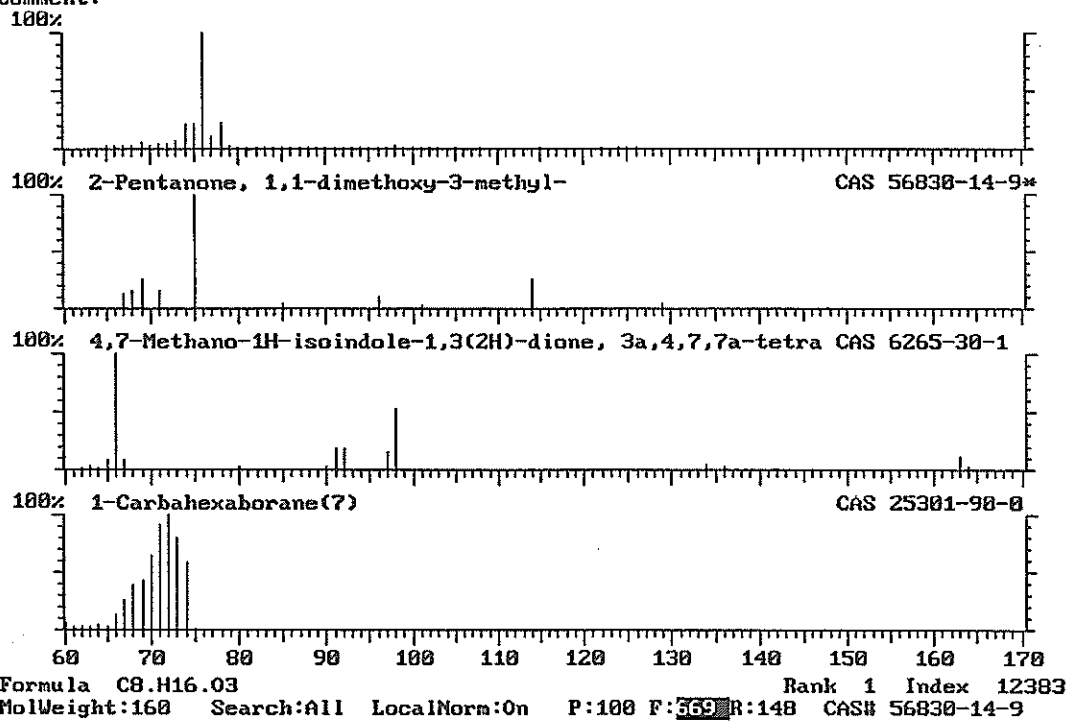
FIGURE 3.18: The lack of identification of the peak in scan 1068.

Library Search   C:\SATURN\DATA\FRIES1   Acquired: 29 Aug 1998   Scan number   1089
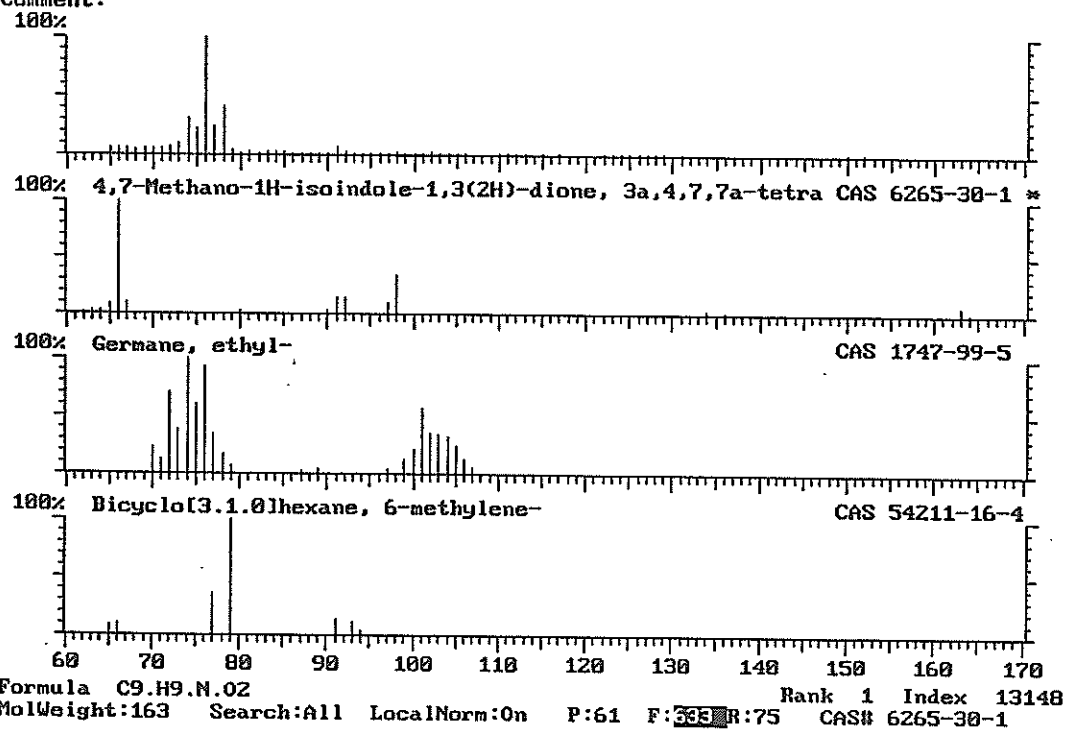Comment:

Formula   C9.H9.N.O2
MolWeight:163   Search:All   LocalNorm:On   P:61   F:368 R:75   CAS# 6265-30-1

Rank 1   Index   13148

FIGURE 3.19: The lack of identification of the peak in scan 1089.
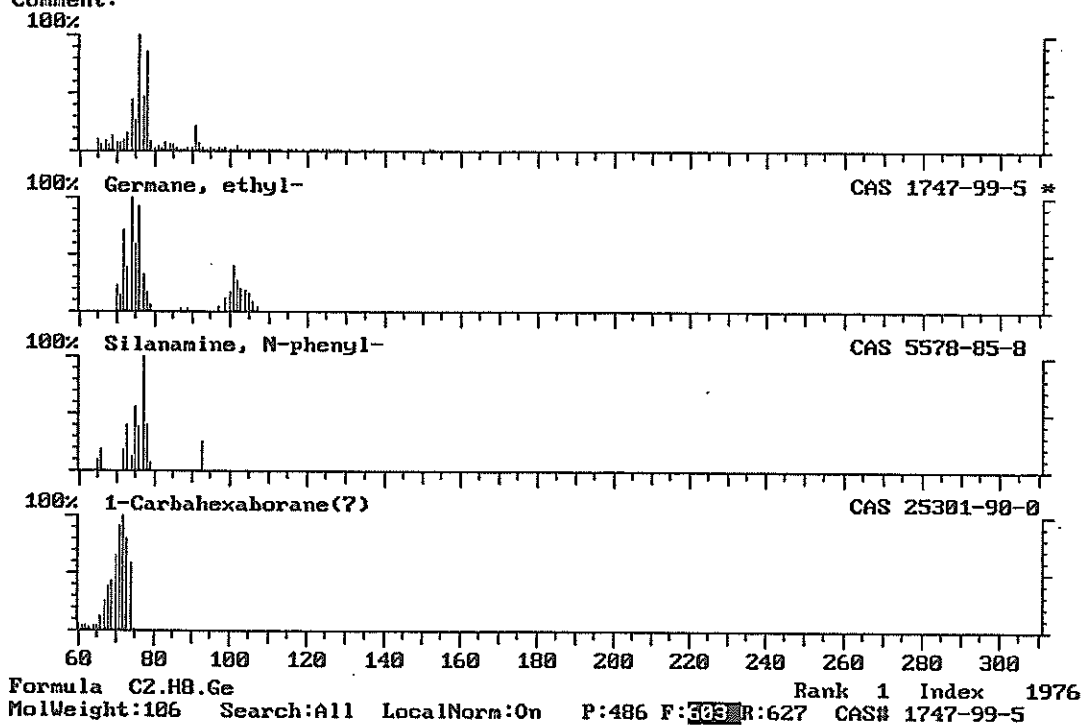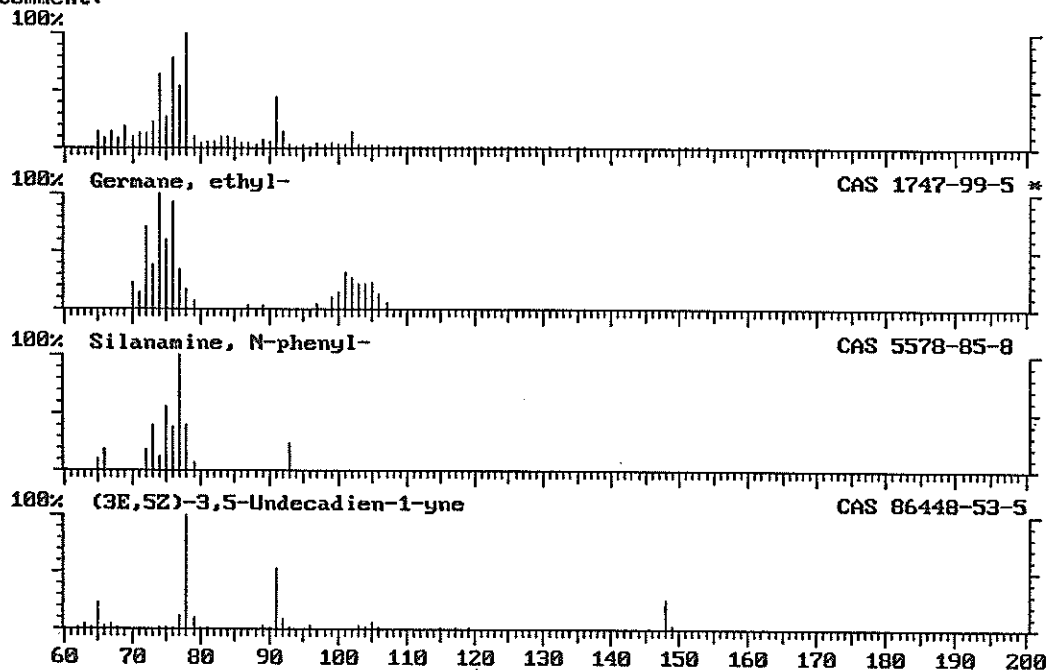
FIGURE 3.20: The lack of identification of the peak in scan 1105.

Library Search   C:\SATURN\DATA\FRIES1   Acquired: 29 Aug 1998   Scan number   2102
Comment:

Formula   C2.H8.Ge   Rank   1   Index   1976
MolWeight:106   Search:All   LocalNorm:On   P:▓▓▓F:651 R:593   CAS# 1747-99-5

FIGURE 3.21: The lack of identification of the peak in scan 2102.

Experimental evidence on the disappearance of all unknown peaks at sufficiently high temperatures was established for the first time by Dr. *N. Palibroda* and Dr. *P. Glueck* at the *INSTITUTE FOR ISOTOPIC AND MOLECULAR TECHNOLOGIES* (IIMT) of Cluj-Napoka, Romania, also under TTL support, via a GC-MS MAT 311.

When operated at 150 C, the *same* sample of AquaFuel tested at NTS, PCFL and USF showed no unknown species at all, and only ordinary light gases with ppm of more complex composites of H, O and C. This provided additional support on magnecules as being made-up of ordinary molecules and atoms under a new bond of magnetic origin.

A number of additional experimental confirmation of the above GC-MS/IRD results are under way and they will be reported in future papers.

3.4. Enhanced energy release of magnetically polarized gases.

A most scientifically intriguing and industrially significant features of magnetically polarized gases is a dramatic increase in energy released in thermochemical reactions as compared to the same reactions between the same gases in their conventional state.

This remarkable property is established for AquaFuel beyond credible doubt by numerous independent experimental verifications which I briefly outline below (see Web Site [6b] for a comprehensive reports).

As indicated in chemical analysis (3.1), AquaFuel has about 50 % of H_2, 40 % of CO, 9 % of CO_2, 0.2 % of O_2, and 0.,8 % of various composites of H., O and C in ppm.

By recalling that H_2 has 300 BTU/cf, simple *theoretical calculations* show that, according to quantum chemistry, AquaFuel should have about 167 BTU/cf, of which 150 BTU/cf are provided by the hydrogen and the remaining BTU's are provided by the remaining components (excluding noncombustible gases such as CO_2). The above theoretical value of energy content was confirmed by *ATLANTIC ANALYTIC LAB* of Whitehouse, New Jersey, *COSA INSTRUMENTS* of Norwood, New Jersey, and other independent laboratories [6b].

However, *direct experimental tests* conducted by comparing methane and AquaFuel in running a Coleman Generator powered by a Tecunseh 10 HP two cycles engine (which I have personally eyewitnessed) have established that *AquaFuel produced from tap water has a minimum of 380 BTU/cf, contrary to the prediction by quantum chemistry that it should have 167 BTU/cf, thus*

resulting in an increase of energy release of 125 % (sic).

Numerous independent tests have not only confirmed the above experimental findings, but actually increased the anomalous release of energy. For instance, tests conducted by *TRI-TECH CORPORATION* (the multinational giant in cutting gases), the branch located in Tampa, Florida, and supervised by Mr. *Joel D. Rentz*, VP and Director of local research facilities, have established that *AquaFuel cuts steel bars as fast and efficiently as acetylene which has 2,300 BTU/cf* [6b].

This test indicates a loss of efficiency in the comparative burning of AquaFuel and methane in the preceding measurements due to a setting of the Tecunsseh two-cycle engine which is effective for methane, but not sufficient to release all energy content of AquaFuel.

A study of the literature and patents on new combustible gases [7] reveals that the above anomaly is typical of all gases produced under an electric discharge and, therefore, it is inherent in all magnetically polarized gases.

Systematic studies on the origin of this anomaly are under way. I provide below a *conceptual* outline in the hope of stimulating a collegial study of the anomaly due to its evident scientific and industrial significance.

Expected first origin of increased energy release.

According to quantum chemistry, gas molecules in their conventional spherical shape due to rotations are ready for chemical reactions. For instance, in reaction

$$H_2 + O_2 / 2 \rightarrow H_2O + 57 \text{ Kcal / mol},\qquad(3.3)$$

it is sufficient that the spherically symmetry hydrogen atoms enters in contact with the oxygen atom to activate the exchange and other molecular forces, thus creating the water molecule.

According to hadronic chemistry this is basically not the case. As one can see via a visual inspection of the isochemical model of the hydrogen molecule (Fig. 1.6) and of the water molecule (Fig. 1.7), *the creation of the water molecule requires the prior elimination of rotational motions.*

It is then evident that *the magnetic polarization eliminates molecular rotations, thus preparing the atoms in the form needed for bonding with other atoms, with consequential increase of the efficiency of the chemical reaction and resulting higher energy release.*

Preliminary calculations have however indicated that the above origin of the

energy anomaly is insufficient to provide a quantitative explanation of the more than doubling of the energy release.

Expected second origin of increased energy release.

Ordinary molecules have no mutual attractions, again, due to their rotations, while *magnetically polarized molecules can instead attract each other, thus implying an additional increase in the efficiency of reactions* such as (3.3).

Despite their plausibility, the above two origins of the energy anomaly are still insufficient to explain how AquaFuel can cut a steel bar as fast and efficient as acetylene.

Expected third origin of increased energy release.

A third plausible origin is suggested by the anomaly of the IR signature of conventional polarized molecules, such as those of Figs. 3.4 and 3.8. In fact, such anomaly implies the presence of *new internal bonds in conventional molecules, with consequential increase of the binding energy and resulting increase of energy release in esorthermic reactions.*

Note that a 125 % increase of energy release implies the increase of energy released by reaction (3.3) from 57 Kcal/mole to 137 Kcal/mole.

In summary, *the dramatic increase of energy release by magnetically polarized gases, more than double that of the same unpolarized gases, is the most convincing evidence I have encountered to date on the insufficiencies of quantum chemistry in its most important topic, the molecular structure.*

3.5. The new technology of magnetically polarized gases at Toups Technology Licensing. It is evident that all the above properties imply the birth of the *new technology of magnetically polarized gases* which is currently under systematic development and comprehensive patenting at *TOUPS TECHNOLOGY LICENSING* (TTL).

This new technology is based on new means for inducing the polarization of the orbits of (come of) the electrons of conventional gases, and includes comprehensive structural analyses of the gases, as well as measurements of their anomalous physical characteristics and chemical behavior.

As an indication, the *measurement of the number of octanes of AquaFuel as a fuel have* not been possible because readings went over the upper limit of the instrument scale (160 octanes) and no octane measuring equipment is apparently available for over that limit.

This evidence alone is sufficient to establish Anomaly 3.6 on the mutation of

physical characteristics.

Since a number of developments are currently under patenting, I am not at liberty to identify in detail the various aspects and applications of the new technology. I therefore limit myself to the following indications:

More efficient methods of liquefaction of conventional gases. A strong magnetic polarization of any gas is expected to create significant molecular attractions. Less energy for liquefaction is then expected.

Better fuels. The magnetic polarization of any fuel (whether gaseous or liquid) is expected to yield: 1) an increase in energy content as studied in Sect. 3.4; 2) an increase in number of octanes without any chemical manipulation; and 3) a consequential improvement of the combustion exhausts. The automotive implications are evident and so are others, such as the use of k,magnetically polarized hydrogen and oxygen gases in rocket propulsion is expected to permit a significant increase of the payload for the same amount of fuel or its decrease for the same payload.

More efficient fuel cells. As it is well known, current practical applications of fuel cells are limited by their low efficiency. An enhancement of their efficiency is evidently expected from any enhancement of energy release.

I hope to present in some future papers more technical disclosures of the new technology.

4. EXPERIMENTAL EVIDENCE OF MAGNECULES IN LIQUIDS AND SOLIDS AT GIVAUDAN–ROURE CORPORATION

4.1. Creation of magnecules in liquids. The way in which I first created magnecules in liquids is the following.

In early 1998 I obtained a number of samples of fragrance oils thanks to the courtesy of the multinational giant in the perfumes industry, *GIVAUDAN ROURE CORPORATION* (GR) with headquarters in Teaneck, New Jersey, and thanks in particular to: Mr. *Andrew J. Herskee,* Senior Vice President; Dr. *Thomas McGee,* Senior Vice President for; Mr. *Kenneth L. Purzycki,* Director of Fragrance Science; Dr. *Konrad Lerch,* Senior Vice President and Director of Corporate Research Laboratories in Dubendorf, Switzerland; and other GR members. The samples were obtained also via the collaboration of Mr. *Lawrence Perovetz,*

President of *MILLENNIUM CORPORATION* (MC) of Orlando, Florida.

I then placed about 50 cc of various samples of perfectly transparent fragrance oils in individual glass containers and immersed in the oils one polarity of an alnico permanent magnet with 12,000 G and dimension $1/2'' \times 1'' \times 2''$ supplied by *BUNTING MAGNETIC CORPORATION* of Newton, Kansas.

Starting with perfectly clear oils of known viscosity, I observed after a few days a visible darkening of the oils, jointly with a visible increase of the viscosity, changes which evidently varied from oil to oil. Both the darkening and the viscosity increased progressively in subsequent days, to reach in certain cases a dark brown color completely opaqueness to light and an increase in viscosity to such an extent to lose all fluidity.

Following the darkening, in certain samples there was the creation of floating objects which grew in time to such a size to be visible to the naked eye.

I should stress that the above visible effects are of pure magnetic origin because of the lack of any other contribution, e.g., the complete absence of any additives. After the immersion of the permanent magnets, all samples were left open and undisturbed at ordinary room conditions.

The above tests established beyond scientific doubt that the alteration of the characteristics of the oil was of sole magnetic origin, thus excluding all other possible sources.

My main hypothesis on the reason for the darkness of the oils is that their molecules acquire a magnetic polarization of in the orbits of at least some of their electrons (cyclotron resonance orbits), by therefore bonding to each other along lines similar to those for gases.

I should indicate that the samples of fragrance oils were sent from Givaudan–Roure Corporation for novel applications I am not at liberty to disclose at this writing. In this presentation I merely disclose essential scientific aspects.

Moreover, the reader should be aware that immersion of one polarity of a permanent magnet in fragrant oils is, evidently, the most rudimentary possible way to create magnecules and that a number of more sophisticated magnetic polarization techniques are now available with a rather complex geometry which also I am not at liberty of disclosing at this time.

4.2. Photographic evidence of magnecules in liquids. The following Figures 4.1 and 4.2 were taken via an optical microscope by Dr. *Konrad Lerch,* Senior Vice President and Director of the GR Corporate Research Laboratories in Dubendorf, Switzerland, and his associates, with the assistance of Mr. *Lawrence*
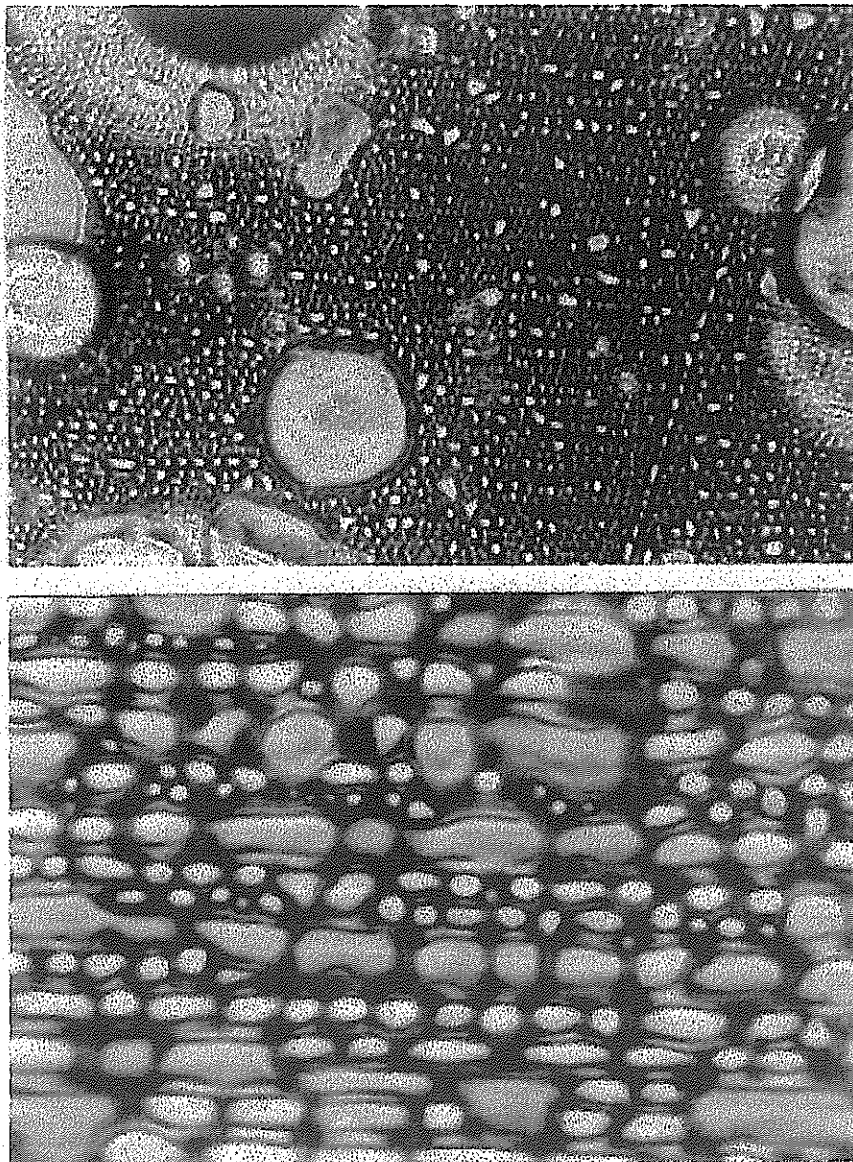
FIGURE 4.1: *First photographic evidence of magnecules in liquids* obtained by Dr. *Konrad Lerch,* Director of the GR Research Laboratory in Dubendorf, Switzerland, on in the GR fragrance oil "ING258IN Test 2" under magnifications 10X and 100X.
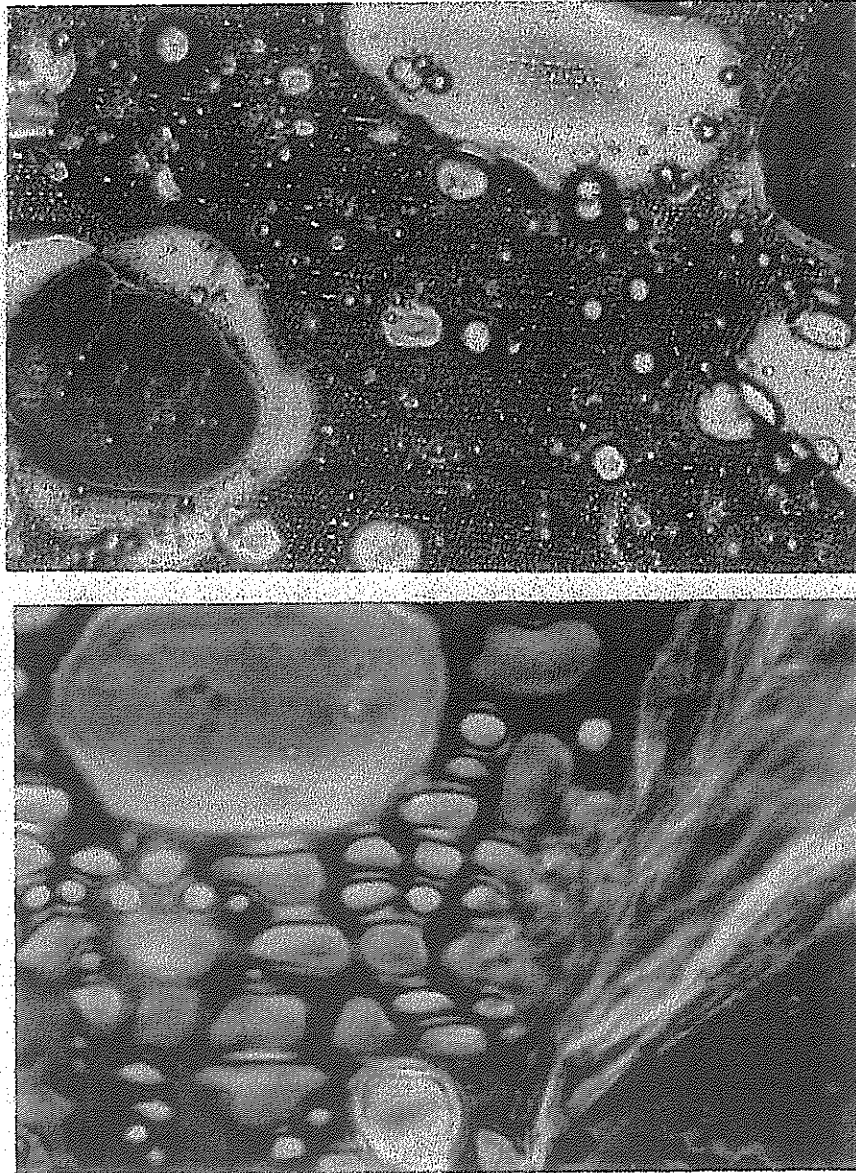
FIGURE 4.2: Additional photographs of magnecules also in "ING258IN Test 2" under magnifications 10X and 100X and also obtained at the GR Research Laboratory in Dubendorf, Switzerland. Note the difference in magnecule sizes with the preceding figure.
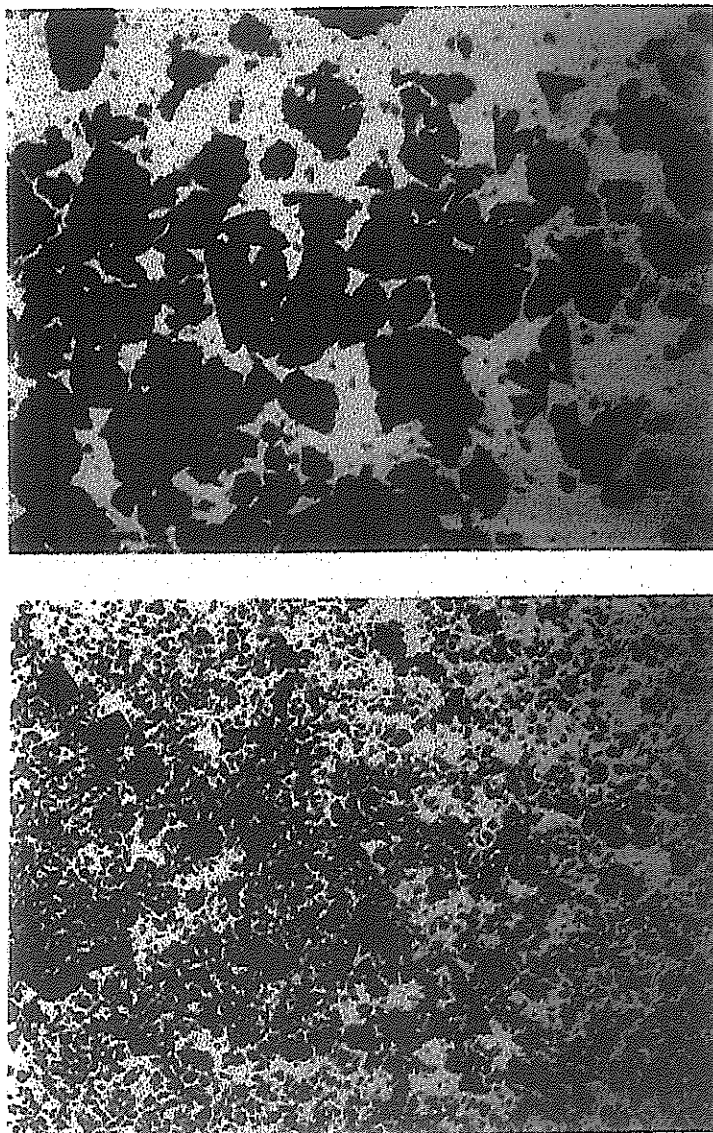
FIGURE 4.3: Confirmation of magnecules in GR fragrance oil "Mixture 2" under 10X and 100X obtained by analyst *David Fries* at USF. Note the difference in sizes of the magnecules and their difference with those of Figs. 4.1 and 4.2.
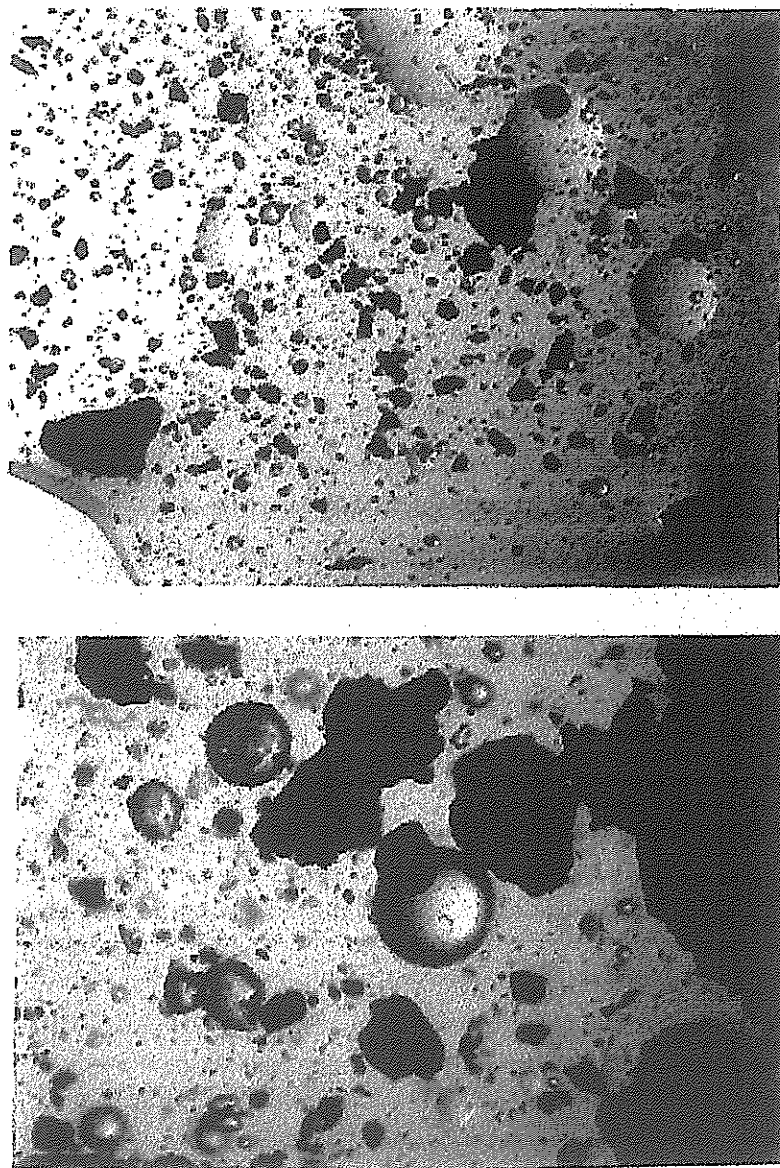
FIGURE 4.4: Additional photographs of magnecules, this time in GR fragrance oil "INX–02349", also obtained by analyst **David Fries** at the USF. The visible bubbles are of unknown composition.

Perovetz, MC President.

The pictures refer to the GR fragrance oil received under the code "ING258AIN, Text 2" subjected to the rudimentary magnetic polarization indicated in the preceding section under the respective magnification 10X and 100X

As one can see, these photographs establish that, under the indicated magnetic treatment, the oil has acquired a structure of the type of "brick layering" which is visible under only 10X magnification (top of Figs. 4.1 and 4.2), which is per se highly anomalous for a liquid that was originally fully transparent. The magnecules are constituted by the individual "bricks" shown in the 100X magnification (bottom of the figures).

Inspection of the various photograph shows a variety of sizes of magnecules, thus establishing their lack of unique characteristics for any given oil. This evidently confirms the *lack* of a valence bond (evidently because the latter would imply a fixed maximal size). The photographs also show the magnecules capability for accretion, that is, the capability of increasing their size via the addition of further oil molecules.

The photographs in Figures 4.3 and 4.4 were taken by analyst *David Fries* of the *CENTER FOR OCEAN TECHNOLOGY* of the *UNIVERSITY OF SOUTH FLORIDA* (USF) in St. Petersburg, thanks to financial support by *TOUPS TECHNOLOGY LICENSING* (TTL) of Largo, Florida.

These additional photographs are for the same magnifications 10X and 100X, but refer to different GR fragrance oils. Fig. 4.3 depicts the GR oil "Mixture 2" magnetically treated to such a point to completely lose transparence and fluidity while Fig. 4.4 depicting GR oil "INX–01349" with a visible change in color and increase in viscosity.

As one can see, the latter picture provide incontrovertible confirmation that, following exposure to a 12,000 G magnetic field, fragrance oil molecule bond together into rather large clusters estimated to be well in excess of 10,000 a.m.u., thus confirming Anomaly 3.1 for liquids.

Other photographic documentations of various magnecules in liquids are available confirming the above findings. They are not reproduced here for brevity.

4.3. Spectroscopic evidence of magnecules in liquids.

The first experimental evidence on magneclusters in liquids was established on May 5, 1998, by analysts *Brian Wallace* and *Mia Burnett* at *TEKMAR–DOHRMANN CORPORATION* (TDC) in Cincinnati, Ohio, by operating a Tekmar 7000 HT Static Headspacer Autosampler equipped with a Flame Ionization Detector (FID). The tests were repeated on May 8 and 11, 1998, by confirming the preceding results. The
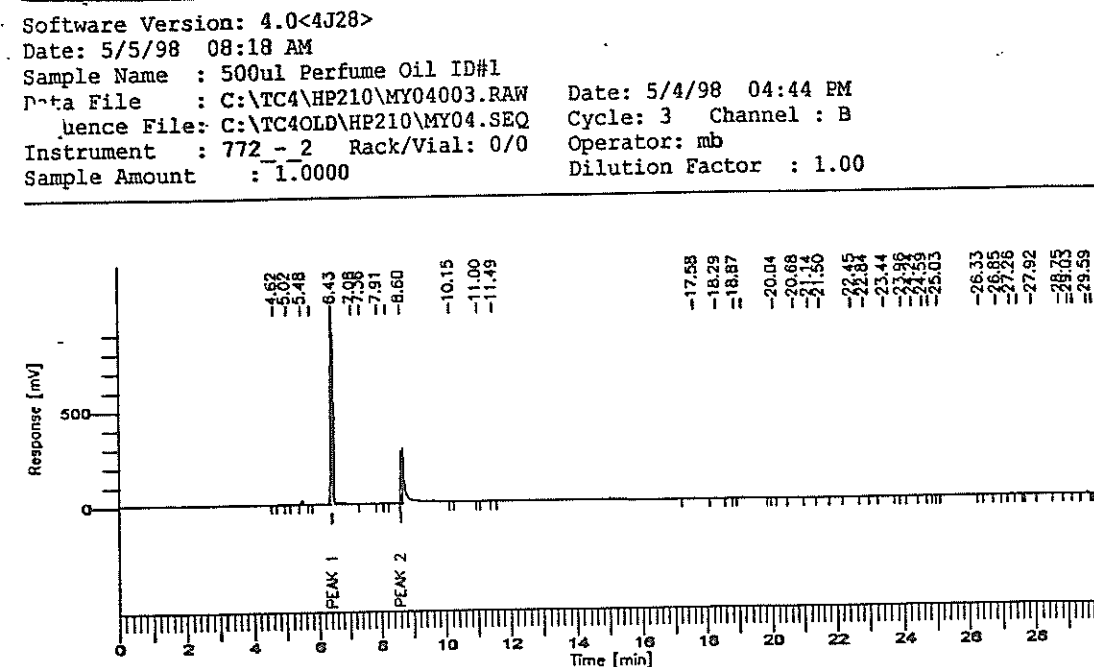
tests were done with the assistance of Mr. *Lawrence Perovetz*, MC President.

The measurements were done on: Sample 1, pure (magnetically untreated) GR "Fragrance Oil 2"; Sample 2, magnetically utreated tap water; and Sample 3, a magnetically treated mixture of the two.

It should be noted that the Tekmar equipment lacks the computer search as well as the UV scan. Also, recall that magnecules in a *light gas* can have molecular weight all the way to 1,000 a.m.u. and more, as established in AquaFuel.

It then follows that magnecules in *liquids* can have much bigger molecular weight all the way to 10,000 amu and more, thus requiring instruments cryogenically operated and kept at room temperature, equipped with extra large feeding lines, and capable to scan all the way to very high molecular weights. The latter features were absent in the considered Tekmar instrument.

Despite that, the results of the Tekmar tests constitute *the first direct spectroscopic experimental evidence of the existence of magnecules in liquids,* including *the first direct experimental evidence of water magneplexes* as per Definition 2.1 (see the complete documentation in Appendix IV of Ref. [3f]).

```
Software Version: 4.0<4J28>
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Data File     : C:\TC4\HP210\MY04003.RAW    Date: 5/4/98  04:44 PM
  uence File: C:\TC4OLD\HP210\MY04.SEQ      Cycle: 3    Channel : B
Instrument    : 772_-_2  Rack/Vial: 0/0     Operator: mb
Sample Amount    : 1.0000                   Dilution Factor  : 1.00
```

DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [µV·s]	Area [%]
1		4.620	2106.00	0.01
2		5.022	432.00	0.00
3		5.479	68060.38	0.43
4		5.731	1120.12	0.01
5	peak 1	6.430	3894142.72	24.38
6		7.077	23106.00	0.14
7		7.355	8426.66	0.05
8		7.911	1549.62	0.01
9		8.163	190.00	0.00
10	peak 2	8.604	509716.00	3.19
11		10.146	829.00	0.01
12		10.999	338.00	0.00
13		11.485	798.00	0.00
14		17.582	9646.00	0.06
15		18.294	814.50	0.01
16		18.871	748.51	0.00
17		19.082	12390.99	0.08
18		20.043	582.50	0.00
19		20.679	4000.46	0.03
20		21.139	654.15	0.00
21		21.500	716.38	0.00
22		22.452	4196.12	0.03
23		22.837	1128.88	0.01
24		23.437	10546.00	0.07
25		23.958	1292.73	0.01
		24.241	5968.77	0.04
		24.587	980.85	0.01
..		24.764	700.15	0.00
29		25.034	221.00	0.00
30		26.330	189.00	0.00
31		26.849	7912.00	0.05
32		27.264	19913.14	0.12
33		27.461	10844.36	0.07
34		27.918	1332.00	0.01
35		28.753	751.69	0.00
??		29.026	3094.14	0.02
		29.163	2312.68	0.01
		29.589	30846.00	0.19
39		29.750	383.00	0.00
40		30.320	6254.00	0.04
41		31.370	3617.37	0.02
42		31.720	51605.63	0.32
43		32.296	268.00	0.00
44		32.519	87913.29	0.55
45	Peak 3	32.742	11181133.21	70.00

15973772.00 100.00

FIGURE 4.5: A reproduction of one of the scab conducted on May 5, 1998, at 8.18 a.m., by analysts *Brian Wallace* and *Mia Burnett* at *TEKMAR–DOHRMANN CORPORATION* (TDC) in Cincinnati, Ohio, by operating a Tekmar 7000 HT Static Headspacer Autosampler equipped with a Flame Ionmization Detector (FID). The scan is for a sample of magnetically untreated GR fragrance oil received under the label of "Mixture 2" which results to be composed by three primary molecular constituents with: Peak 1 at 6.430 min and 24.28 %; Peak 2 at 8.604 min and 3.19 %; and Peak 3 at 37.742 and 70.00 % (off scan scale), totaling 97.57 %. This provides the chemical structure of the fragrance oil in Fig. 4.3.

oftware Version: 4.0<4J28>
ate: 5/5/98 08:20 AM
ample Name   : 500ul H2O ID#2
ata File   : C:\TC4\HP210\MY04005.RAW   Date: 5/4/98 06:06 PM
  uence File: C:\TC4OLD\HP210\MY04.SEQ   Cycle: 5   Channel : B
 .strument   : 772 - 2   Rack/Vial: 0/0   Operator: mb
ample Amount   : 1.0000   Dilution Factor : 1.00
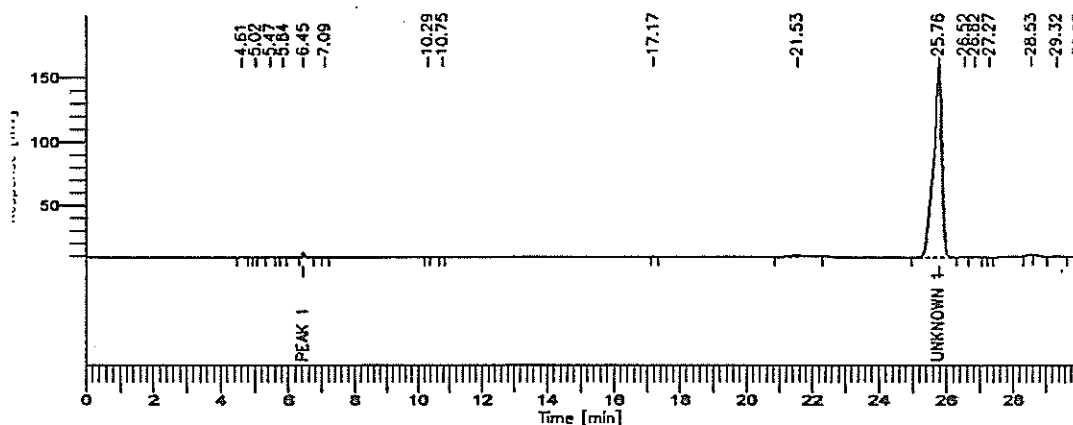
DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [μV·s]	Area [%]
1		4.614	2904.00	0.07
2		5.024	375.50	0.01
3		5.469	1328.00	0.03
4		5.844	322.00	0.01
5	peak 1	6.446	17310.50	0.43
6		7.088	390.00	0.01
7		10.288	164.00	0.00
8		10.746	189.00	0.00
9		17.171	970.50	0.02
10		21.527	32334.00	0.81
11	unknown 1	25.763	2565644.21	64.24
12		26.522	2794.13	0.07
13		26.821	3354.66	0.08
14		27.271	184.00	0.00
15		28.534	3914.50	0.10
16		29.315	9941.00	0.25
17		30.048	1062.00	0.03
18		30.981	1916.00	0.05
19	unknown 2	31.653	1339095.00	33.53
20	Peak 3	32.680	9951.00	0.25

3994144.00 100.00

FIGURE 4.6: The *first spectroscopic experimental evidence of magneplexes in magnetically treated tap water,* achieved on May 5, 1998, at 8.20 a.m. by analyst *Mia Burnett* and her associates at TDC. The magneplexes are characterized by the large "unknown" peak at 25.763 min for 64.24 % identifying an anomalous water clustering

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   uence File: C:\TC4OLD\HP210\MY04.SEQ   Cycle: 9   Channel : B
Instrument   : 772_- 2 Rack/Vial: 0/0   Operator: mb
Sample Amount   : 1.0000   Dilution Factor : 1.00
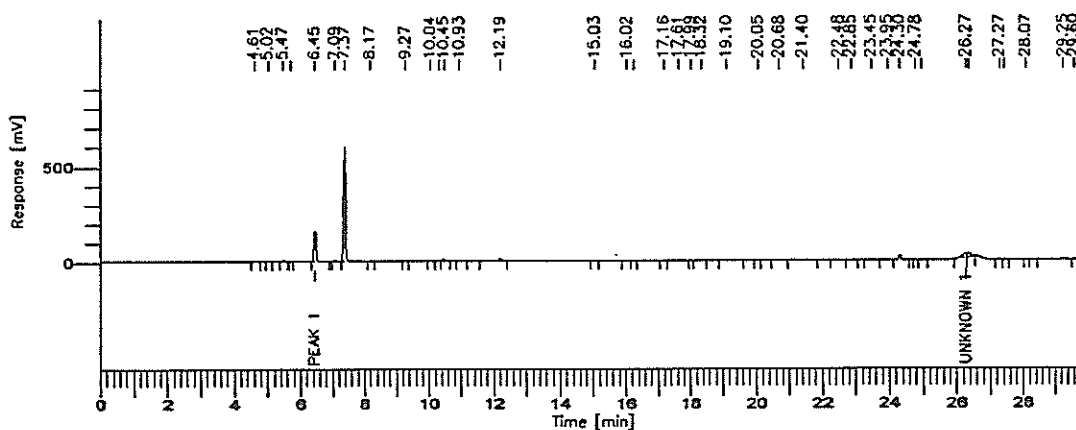
DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [µV·s]	Area [%]
1		4.612	2960.00	0.02
2		5.021	482.50	0.00
3		5.466	14446.00	0.11
4		5.716	302.00	0.00
5	peak 1	6.449	700997.00	5.33
6		7.085	17702.00	0.13
7		7.373	2463631.95	18.74
8		8.174	1041.55	0.01
9		9.273	398.50	0.00
10		10.038	693.50	0.01
11		10.287	407.59	0.00
12		10.454	32776.91	0.25
13		10.932	455.00	0.00
14		12.185	45046.00	0.34
15		15.029	735.50	0.01
16		16.018	363.50	0.00
17		16.215	289.50	0.00
18		17.163	405.10	0.00
19		17.607	8138.75	0.06
20		17.989	258.64	0.00
21		18.323	773.50	0.01
22		19.101	7936.00	0.06
23		20.050	1513.00	0.01
24		20.684	3329.49	0.03
25		21.403	6640.01	0.05
--		22.477	3417.00	0.03
		22.848	1399.00	0.01
		23.453	8746.50	0.07
29		23.945	5373.77	0.04
30		24.296	89748.23	0.68
31		24.777	1228.40	0.01
32		24.964	2011.60	0.02
33	unknown 1	26.272	229566.61	1.75
34		26.347	152811.39	1.16

Peak #	Component Name	Time [min]	Area [µV·s]	Area [%]
35		27.273	23098.00	0.18
		27.410	13015.00	0.10
}		28.070	324.00	0.00
˞˞		29.254	52774.58	0.40
39		29.599	19904.00	0.15
40		30.345	65596.75	0.50
41		30.880	2408.67	0.02
42		31.387	6170.93	0.05
43	unknown 2	31.491	59456.07	0.45
44		32.089	664.00	0.01
45		32.528	64277.94	0.49
46	Peak 3	32.758	9034646.06	68.71

                                        13148362.00 100.00

FIGURE 4.7: The *first spectroscopic experimental evidence of magnecules in liquids* achieved on May 5, 1998, at 8.21 a.m., by analysts *Brian Wallace* and *Mia Burnett* at TDC, on a magnetically treated combination of GR "Mixture 2" and tap water. Note the primary constituents: a first peak at 6.449 for 5.33 %; a second peak at 7.373 min for 18.74 %; a third peak listed by the equipment as "unknown 1" at 26.272 min for 1.75 %; a fourth peak at 26.347 for 1.16%; a fifth peak listed by the equipment as "unknown 2" at 31.491 for 0.45 %; and a sixth peak at 32.758 min for 68.71 %; totaling 96.14 %. Comparison of these data with those on the untreated oil as well as untreated water establish numerous macroscopic alterations (mutations) of chemical constituents, their ramp time and their percentages which can only be interpreted as due to magnecules.

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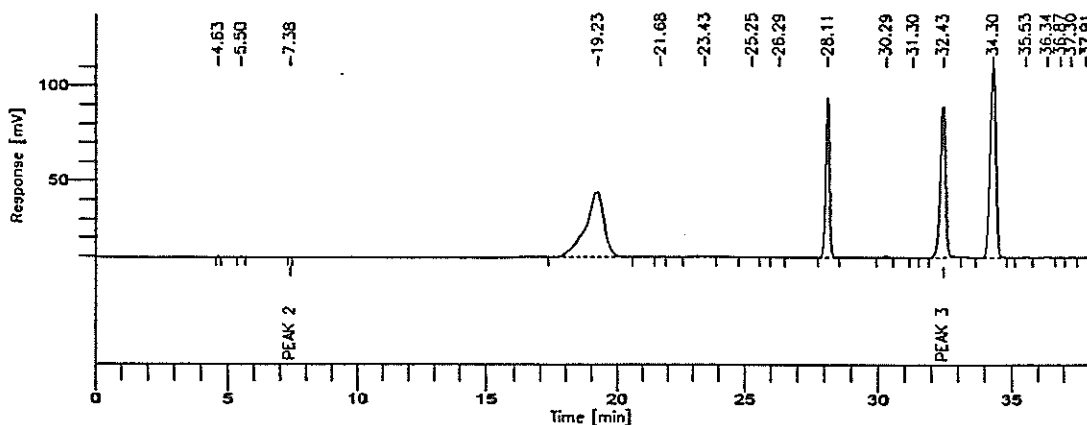Sequence File: C:\TC4OLD\HP210\MY05.SEQ   Cycle: 1   Channel : B
Instrument   : 772 - 2   Rack/Vial: 0/0   Operator: mb
Sample Amount   : 1.0000   Dilution Factor : 1.00

DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [µV·s]	Area [%]
1		4.633	2621.00	0.05
2		5.496	695.50	0.01
3	peak 2	7.379	293.00	0.01
4		19.227	1795761.00	33.57
5		21.679	1071.00	0.02
6		23.432	18393.00	0.34
7		25.247	6824.50	0.13
8		26.290	2393.00	0.04
9		28.110	835986.00	15.63
10	.	30.291	12877.00	0.24
11		31.296	1435.00	0.03
12	Peak 3	32.425	1135236.50	21.22
13		34.296	1508602.50	28.20
14		35.532	6202.50	0.12
15		36.344	9033.76	0.17
16		36.866	1934.19	0.04
17		37.297	7005.45	0.13
18		37.914	2731.10	0.05

5349096.00 100.00

FIGURE 4.8: The *first spectroscopic experimental evidence of anomalous adhesion of magnetically treated liquids* achieved on May 5, 1998, at 2.06 p.m., by analysts *Brian Wallace* and *Mia Burnett* and her associates a TDC, depicting a background following the tests similar to the tests themselves, including new "unknowns". It should be noted that, at the time of the tests, the analysts were unaware of the anomaly.

```
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Instrument   : 772_-_2   Rack/Vial: 0/0    Operator: mb
Sample Amount    : 1.0000                  Dilution Factor  : 1.00
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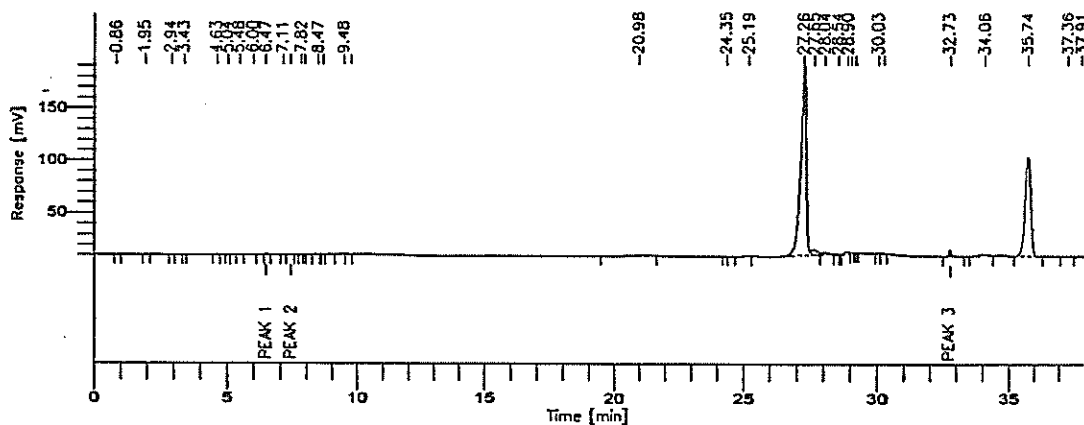

Peak #	Component Name	Time [min]	Area [µV·s]	Area [%]
1		0.863	336.50	0.01
2		1.945	352.50	0.01
3		2.935	260.00	0.01
4		3.431	138.00	0.00
5		4.627	6093.50	0.14
6		5.039	267.00	0.01
7		5.403	1176.05	0.03
8		6.000	614.95	0.01
9	peak 1	6.472	10192.00	0.23
10		7.110	531.26	0.01
11	peak 2	7.401	1525.24	0.03
12		7.819	240.00	0.01
13		7.952	113.00	0.00
14		8.465	600.50	0.01
15		8.656	221.00	0.00
16		9.481	548.00	0.01
17		9.758	562.00	0.01
18		20.976	30735.50	0.69
19		24.346	263.00	0.01
20		25.192	1078.00	0.02
21		27.258	2656625.73	59.56
22		27.649	89561.00	2.01
23		28.040	43010.33	0.96
24		28.544	2008.94	0.05
25		28.897	20488.43	0.46
26		29.049	3501.57	0.08
27		29.202	1250.00	0.03
28		30.032	1069.56	0.02
29		30.228	2652.44	0.06
30	Peak 3	32.732	34944.00	0.78
31		34.063	37651.00	0.84
32		35.738	1505974.50	33.76
33		37.364	3314.42	0.07
34		37.912	2763.58	0.06

FIGURE 4.9: The subsequent print-out of the TDC tests at 2.08 p.m. on the magnetically treated water. Note the visible difference with the test of Fig. 4.6 due to the anomalous adhesion of oil molecules which remained in the instrument.

```
Software Version: 4.0<4J28>
Date: 5/5/98  02:08 PM
Sample Name  : Blank
Data File    : C:\TC4\HP210\MY05005.RAW   Date: 5/5/98  12:08 PM
Sequence File: C:\TC4OLD\HP210\MY05.SEQ   Cycle: 5   Channel : B
Instrument   : 772_-_2   Rack/Vial: 0/0   Operator: mb
Sample Amount    : 1.0000               Dilution Factor  : 1.00
```
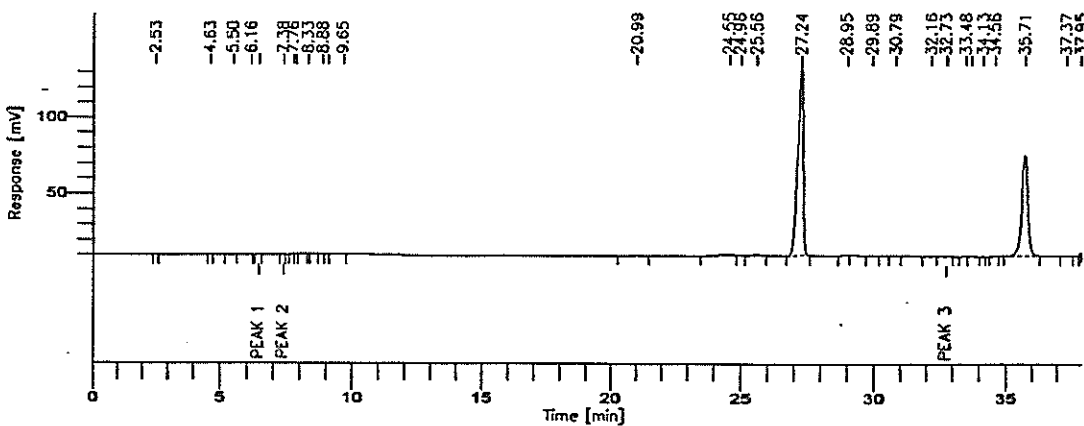

Peak #	Component Name	Time [min]	Area [µV·s]	Area [%]
1		2.531	220.50	0.01
2		4.630	2765.00	0.09
3		5.497	880.34	0.03
4		6.163	532.66	0.02
5	peak 1	6.451	1531.00	0.05
6	peak 2	7.384	392.00	0.01
7		7.764	293.00	0.01
8		7.877	217.00	0.01
9		8.331	164.50	0.01
10		8.883	359.00	0.01
11		9.077	255.38	0.01
12		9.646	1118.62	0.04
13		20.988	13301.50	0.45
14		24.547	38775.96	1.31
15		24.956	4804.04	0.16
16		25.558	19220.00	0.65
17		27.244	1776561.00	60.11
18		28.947	4845.00	0.16
19		29.892	1725.00	0.06
20		30.786	1475.00	0.05
21		32.163	2189.31	0.07
22	Peak 3	32.731	6240.69	0.21
23		33.483	2329.61	0.08
24		33.671	3667.39	0.12
25		34.127	221.00	0.01
26		34.558	900.00	0.03
27		35.714	1063544.50	35.99
28		37.367	2864.00	0.10
29		37.953	3895.00	0.13

```
                    2955288.00 100.00
```

FIGURE 4.10: The subsequent print-out of the TDC tests at 2.08 p.m. on the background which confirms the anomalous adhesion of magnecules.

Software Version: 4.0<4J28>
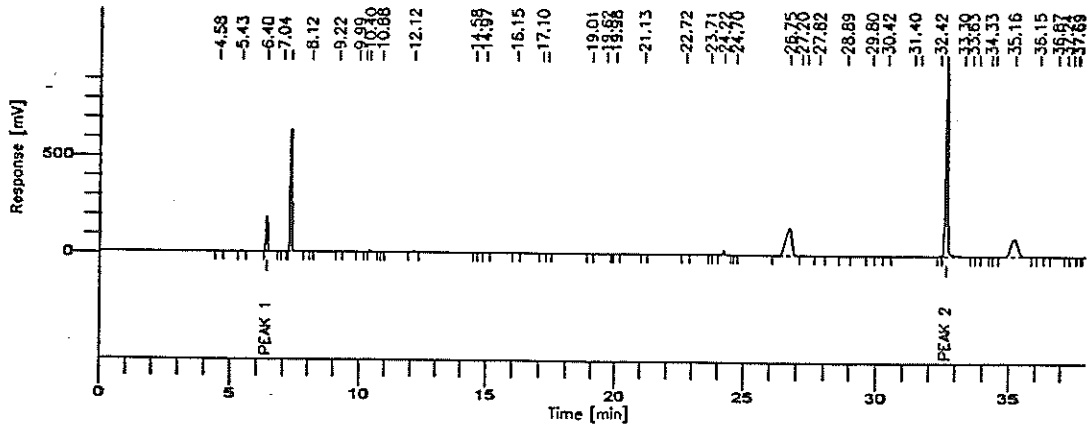Date: 5/8/98 12:21 PM
Sample Name : Mixture bottom H2O layer 500ul
Data File   : C:\TC4\HP210\MY08004.RAW   Date: 5/8/98 11:32 AM
Sequence File: C:\TC4\HP210\MY08.SEQ   Cycle: 4   Channel : B
Instrument   : 772 - 2   Rack/Vial: 0/0   Operator: mb
Sample Amount   : 1.0000   Dilution Factor : 1.00

DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [μV·s]	Area [%]
1		4.583	3494.00	0.03
2		5.431	16223.50	0.12
3	peak 1	6.404	792172.00	5.94
4		7.039	16982.00	0.13
5		7.325	2550078.00	19.12
6		8.124	630.00	0.00
7		9.220	415.00	0.00
8		9.985	627.00	0.00
9		10.230	309.00	0.00
10		10.398	30885.50	0.23
11		10.877	298.50	0.00
12		12.123	39988.00	0.30
13		14.575	241.00	0.00
14		14.967	986.50	0.01
15		16.152	365.00	0.00
16		17.103	2121.00	0.02
17		17.308	924.00	0.01
18		19.011	267.50	0.00
19		19.619	4481.50	0.03
20		19.981	428.00	0.00
21		21.133	2269.00	0.02
22		22.716	613.00	0.00
23		23.708	214.00	0.00
24		24.220	81808.50	0.61
25		24.704	168.50	0.00
26		26.751	2431379.65	18.23
27		27.197	8519.35	0.06
28		27.396	589.00	0.00
29		27.819	405.00	0.00
30		28.890	2294.00	0.02
31		29.804	752.00	0.01
32		30.417	607.50	0.00
33		31.395	21039.50	0.16
34		31.648	1279.00	0.01

Result File : MY08004.RST, Printed On 5/8/98 12:21 PM   page 2

Peak #	Component Name	Time [min]	Area [µV·s]	Area [%]
35		32.420	30869.65	0.23
36	peak 2	32.650	5704719.54	42.77
37		33.298	22792.00	0.17
38		33.629	4363.61	0.03
39		33.849	2192.20	0.02
40		34.329	146.22	0.00
41		34.476	841.46	0.01
42		35.160	1547684.32	11.60
43		36.148	1621.00	0.01
44		36.868	2830.75	0.02
45		37.244	577.25	0.00
46		37.506	3180.55	0.02
47		37.691	1038.45	0.01

13336712.00 100.00

FIGURE 4.11: The *first spectroscopic experimental evidence of the mutation of magnecules in liquids* achieved on May 8, 1998, at 12.21 p.m., by analysts *Brian Wallace* and *Mia Burnett* and her associates at TDC. The scan deals with the magnetically treated combination of GR fragrance oil "mixture 2" and tap water with: a first peak at 6.404 min for 5.94 %; a second peak at 7.325 min for 19.12 %; a third peak at 26.751 min for 18.23 %; a fourth peak at 32.650 min for 42.77 %; and a fifth peak at 35.160 min for 11.60 %; totaling 97.66 %. The mutation is established by the comparison of this scan with the preceding ones.

Software Version: 4.0<4J28>
Date: 5/11/98 08:07 AM
Sample Name : Mixture bottom H2O layer 500ul
Data File   : C:\TC4\HP210\MY08004.RAW   Date: 5/8/98 11:32 AM
Sequence File: C:\TC4\HP210\MY08.SEQ Cycle: 4   Channel : B
Instrument   : 772 - 2   Rack/Vial: 0/0   Operator: mb
Sample Amount   : 1.0000   Dilution Factor : 1.00

DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [µV·s]	Area [%]
1		4.583	3494.00	0.03
2		5.431	16223.50	0.12
3	peak I	6.404	792172.00	5.94
4		7.039	16982.00	0.13
5		7.325	2550078.00	19.12
6		8.124	630.00	0.00
7		9.220	415.00	0.00
8		9.985	627.00	0.00
9		10.230	309.00	0.00
10		10.398	30885.50	0.23
11		10.877	298.50	0.00
12		12.123	39988.00	0.30
13		14.575	241.00	0.00
14		14.967	986.50	0.01
15		16.152	365.00	0.00
16		17.103	2121.00	0.02
17		17.308	924.00	0.01
18		19.011	267.50	0.00
19		19.619	4481.50	0.03
20		19.981	428.00	0.00
21		21.133	2269.00	0.02
22		22.716	613.00	0.00
23		23.708	214.00	0.00
24		24.220	81808.50	0.61
25		24.704	168.50	0.00
26		26.751	2431379.65	18.23
27		27.197	8519.35	0.06
28		27.396	589.00	0.00
29		27.819	405.00	0.00
30		28.890	2294.00	0.02
31		29.804	752.00	0.01
32		30.417	607.50	0.00
33		31.395	21039.50	0.16
34		31.648	1279.00	0.01

Result File : ~RST2255.RST, Printed On 5/11/98 08:07 AM   page 2

Peak #	Component Name	Time [min]	Area [µV·s]	Area (%)
35		32.420	30869.65	0.23
36	peak 2	32.650	5704719.54	42.77
37		33.298	22792.00	0.17
38		33.629	4363.61	0.03
39		33.849	2192.20	0.02
40		34.329	146.22	0.00
41		34.476	841.46	0.01
42		35.160	1547604.32	11.60
43		36.148	1621.00	0.01
44		36.868	2830.75	0.02
45		37.244	577.25	0.00
46		37.506	3180.55	0.02
47		37.691	1038.45	0.01

13336712.00 100.00

FIGURE 4.12: A print-out of the TDC tests on May 11, 1998, at 8.07 a.m. on the magnetically treated combination of GR "Mixture 2" and tap water. Comparison with the preceding scans provides additional confirmation of the mutation of magnecules.

Software Version: 4.0<4J28>
Date: 5/11/98 08:08 AM
Sample Name : Blank
Data File   : C:\TC4\HP210\MY08006.RAW   Date: 5/8/98 01:02 PM
Sequence File: C:\TC4\HP210\MY08.SEQ   Cycle: 6   Channel : B
Instrument   : 772_-_2   Rack/Vial: 0/0   Operator: mb
Sample Amount   : 1.0000   Dilution Factor : 1.00
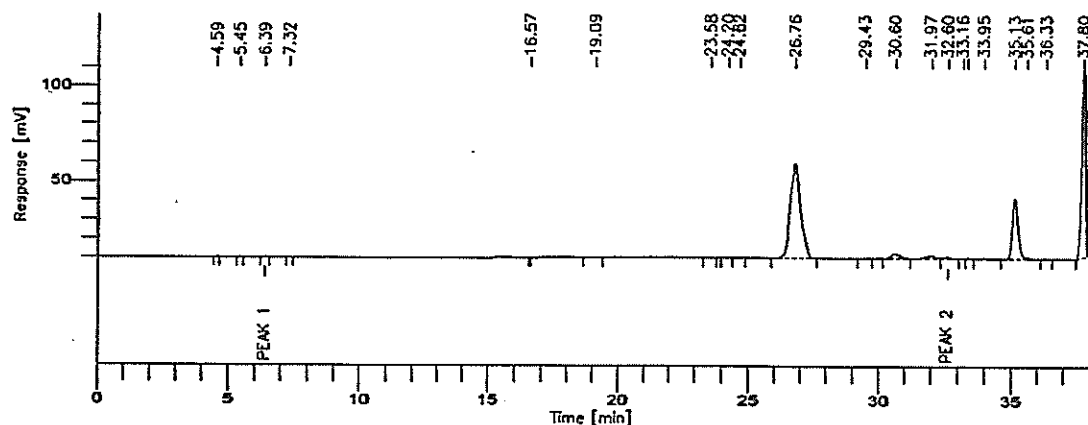
DEFAULT REPORT

Peak #	Component Name	Time [min]	Area [µV·s]	Area [%]
1		4.587	2121.00	0.07
2		5.445	607.00	0.02
3	peak 1	6.394	568.50	0.02
4		7.321	269.00	0.01
5		16.567	212.50	0.01
6		19.085	4509.00	0.14
7		23.578	1010.00	0.03
8		24.197	1671.22	0.05
9		24.615	3891.78	0.12
10		26.755	1407264.00	43.59
11		29.425	3470.00	0.11
12		30.597	63266.66	1.96
13		31.973	49614.67	1.54
14	peak 2	32.600	21457.42	0.66
15		33.156	4631.00	0.14
16		33.346	5647.06	0.17
17		33.947	12421.18	0.38
18		35.131	501128.63	15.52
19		35.612	14386.19	0.45
20		36.329	3586.18	0.11
21		37.804	1126495.00	34.90

3228228.00 100.00

FIGURE 4.13: A print-out of the TDC tests on May 11, 1998, at 8.08 a.m. on the background which confirms the anomalous adhesion of magnetically polarized liquids.

Comprehensive tests via a very modern equipment for Liquid Chromatographic Mass Spectroscopy (LC–MS) with UltraViolet Detector (UVD) were conducted on the same GR fragrance oil "ING258IN Test 2" of Figures 4.1 and 4.2, on December 1, 1998, by Prof. **Kenneth G. Furton,** Chairman, and Prof. **Piero R. Gardinali, Laboratory Director,** DEPARTMENT OF CHEMISTRY of FLORIDA INTERNATIONAL UNIVERSITY (FIU), Miami, Florida. The tests were then repeated on December 117 and 18 by confirming the preceding results.

The tests were conducted under a number of technical charfacterizations specifically selected to detect magnecules, among which I recall:

1) Total Ion Chromatogram (TIC) collected under the positive ion atmospheric pressure electrospray ionization (ESI+) mode;

2) Integrated TIC with retention times and areas for the most abundant peaks;

3) Raw mass spectra for all peaks identified in item 2;

4) HPLC chromatograms collected at fixed wavelength of 254 cm;

5) UV–visible spectra form the HPLC diode array detector from 230– to 700 mm.

The tests were conducted on the following samples:

A) Sample GR331, the magnetically untreated, fully transparent GR fragrance oil "ING258IN Test 2";

B) Sample GR332, magnetically treated "ING258IN Test 2" with 10 % DiproPylene Glycol (DPG);

C) Sample GR332S, bottom layer of the preceding sample;

D) Sample GR335, magnetically treated mixture 4 % GR fragrance oil "ING258IN Test 2", 0.4 % DPG and 95 % tap water;

E) Sample GR335O, visible dark clusters in the preceding sample.

To avoid a prohibitive length of this presentation, in the following I only reproduce ten main print-out of the comprehensive and detailed documentation obtained at FIU (which is available in its entirety as Appendix V of Ref. [3f]).

Inspection of the print-outs (as well as the comprehensive documentation) shows that **the tests conducted at FIU on GR fragrance oil "ING258IN Test 2" provide conclusive experimental evidence on the existence of magnecules in liquids.**
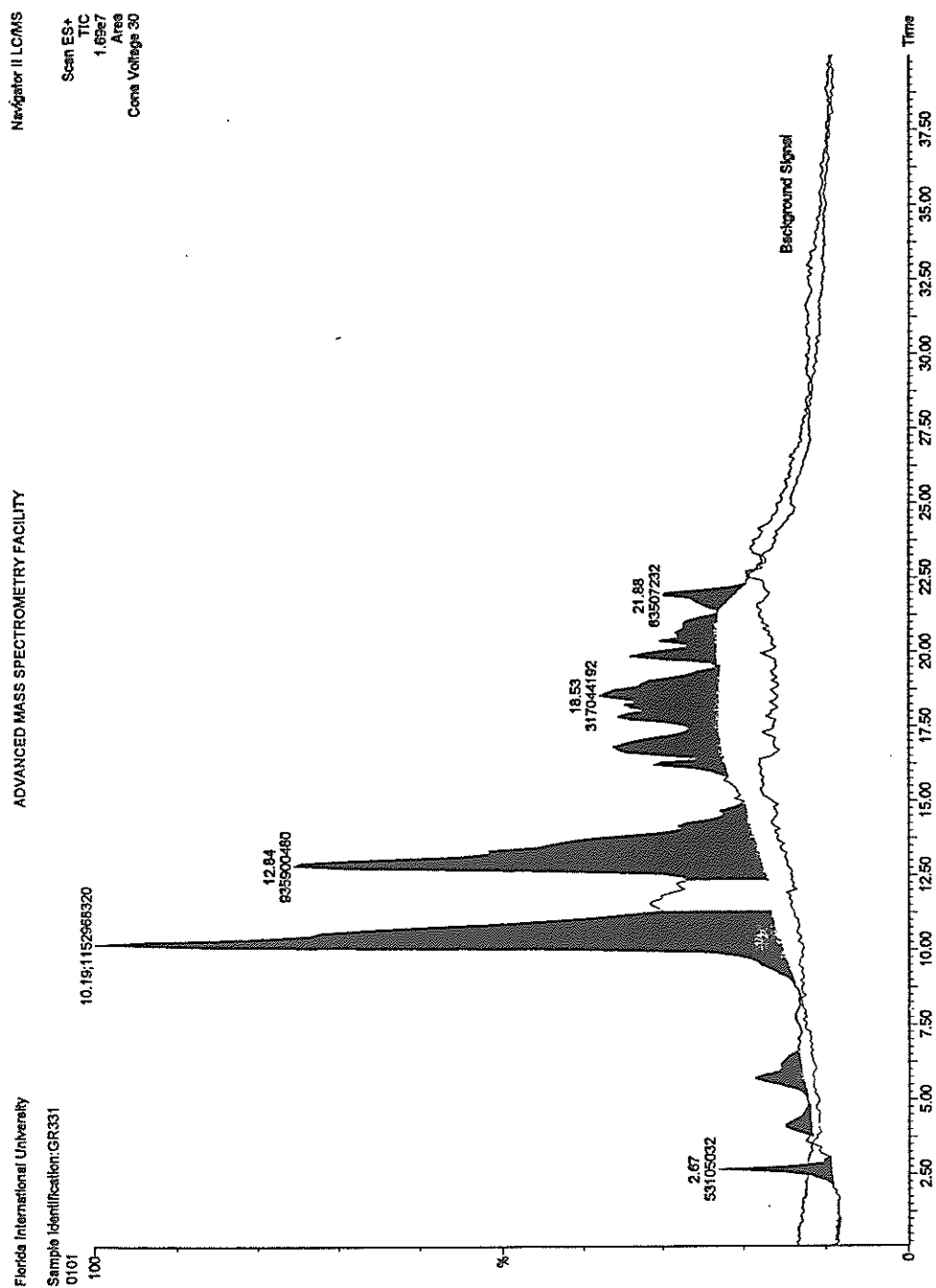
FIGURE 4.14: FIU scan on the untreated GR oil "ING258IN Test 2" of Figs. 4.1, 4.2.
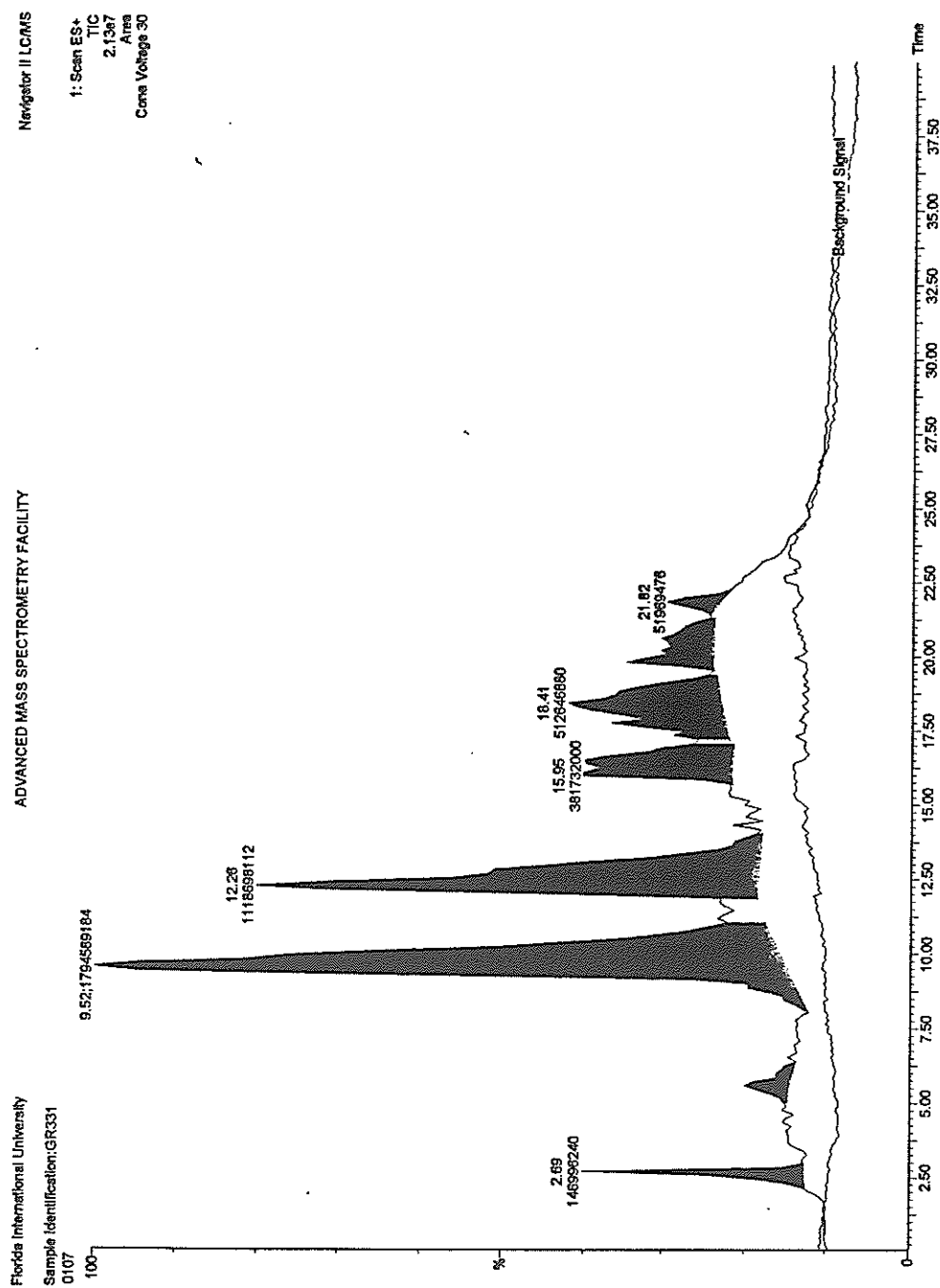
FIGURE 4.15: Confirmation of the preceding chemical structure.
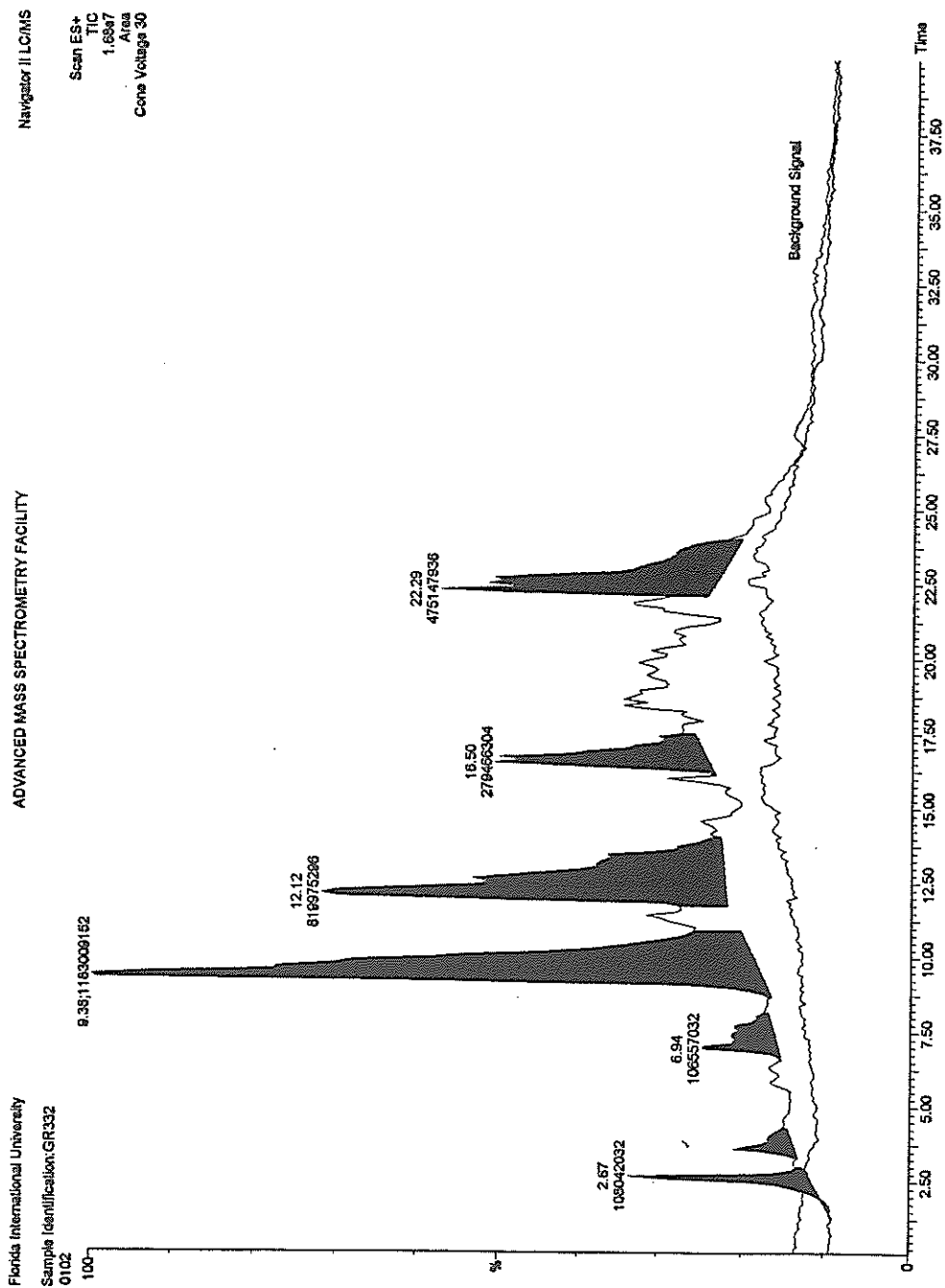
FIGURE 4.16: FIU scan on the chemical structure of the magnetically treated GR oil "ING258IN Test 2" with 10% DPGF. Note the initiation of the *appearance of new peaks.*
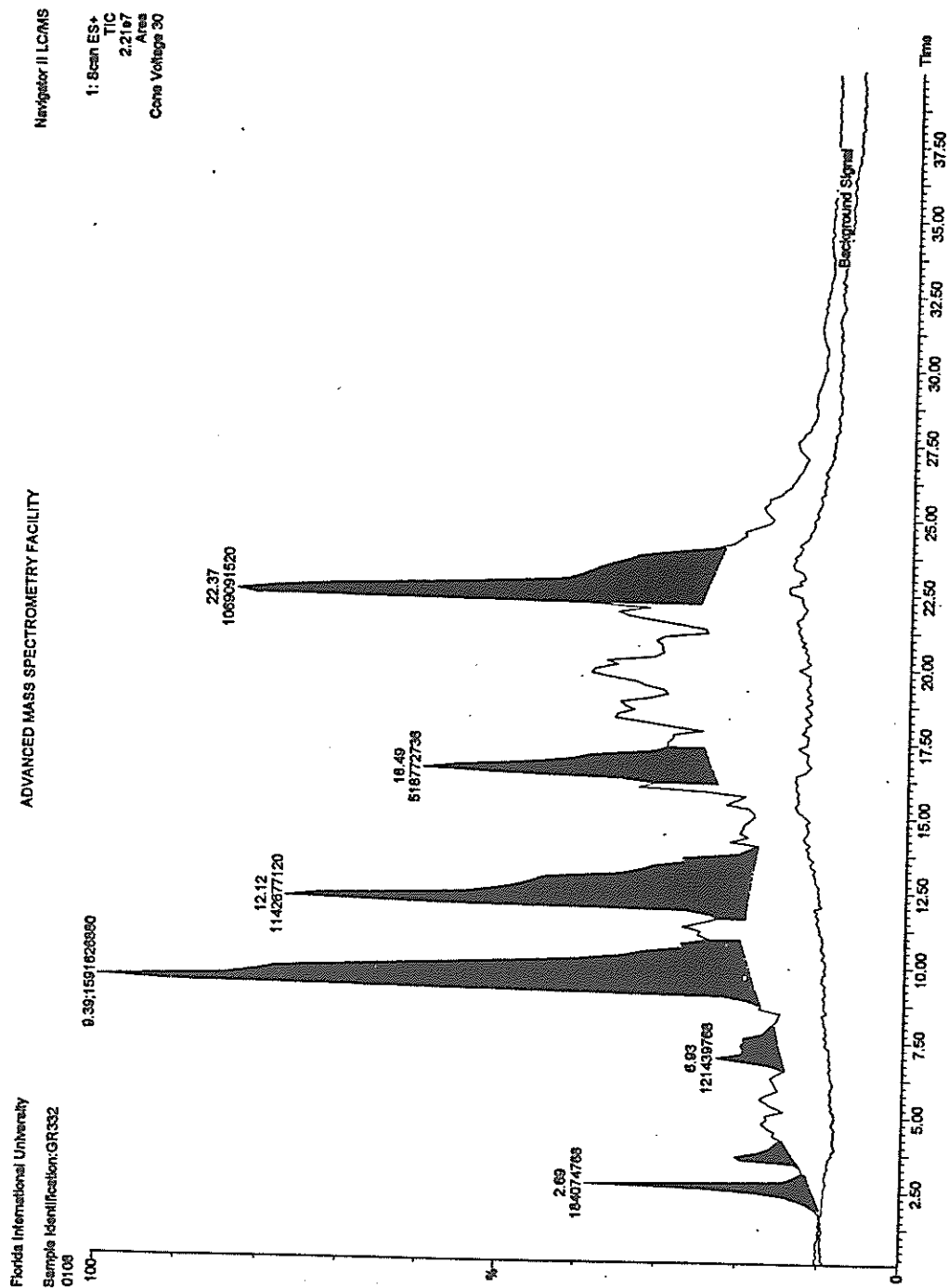
FIGURE 4.17: FIU scan on the chemical structure of the magnetically treated GR oil "ING258IN Test 2" with 10% DPGF. Note the *large new peak on the r.h.s.*
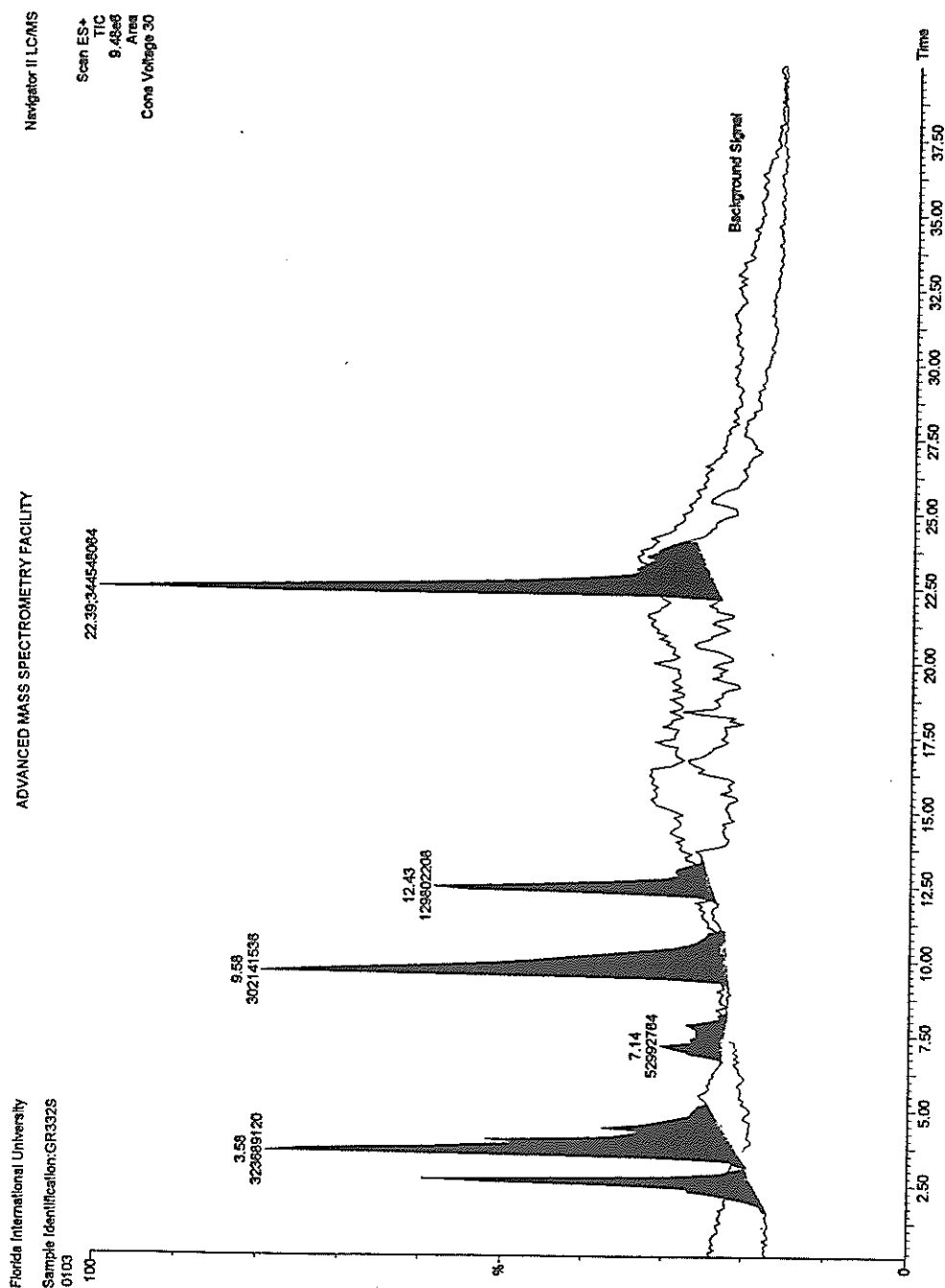
FIGURE 4.18: FIU scan on the chemical structure of the bottom layer of the sample of the preceding print-out. Note the *large increase of the new peak in the r.h.s.*
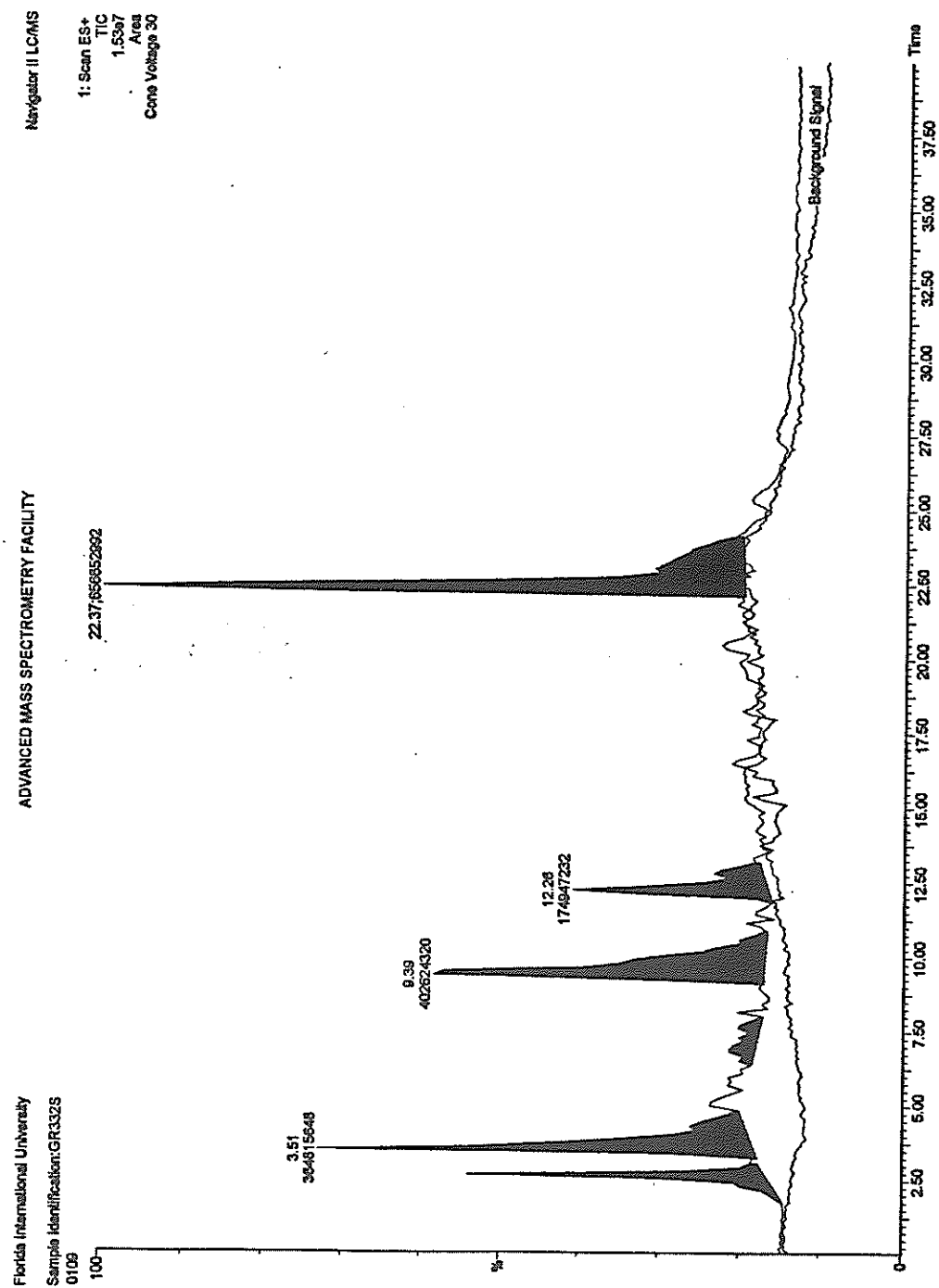
FIGURE 4.19: Confirmation of the preceding results.
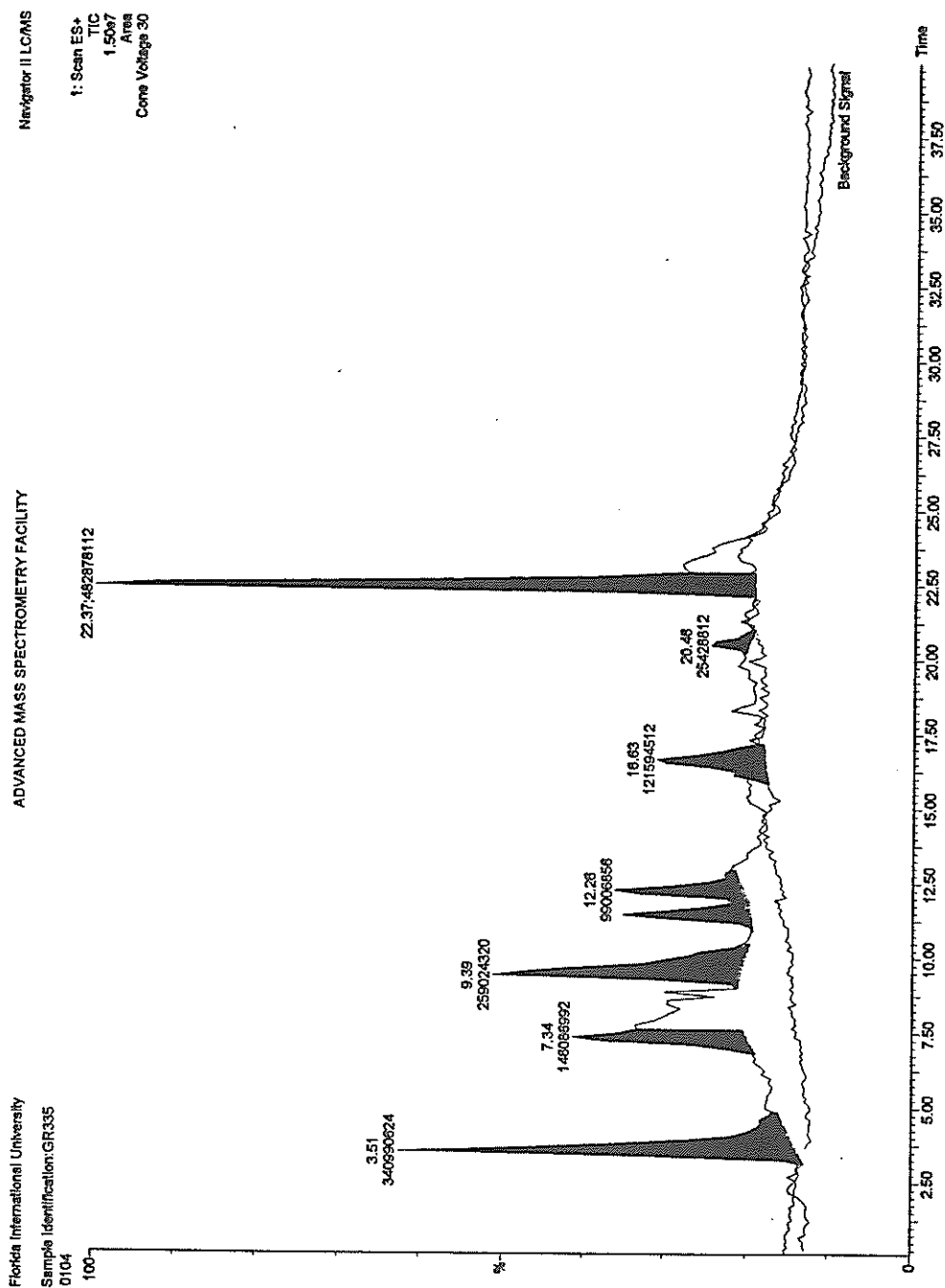
FIGURE 4.20: FIU scan on the magnetically treated 4 % GR oil "ING258IN Test 2", 0.4 % % DPG and 95 % tap water. Note *the persistence of the large new peak in the r.h.s.*
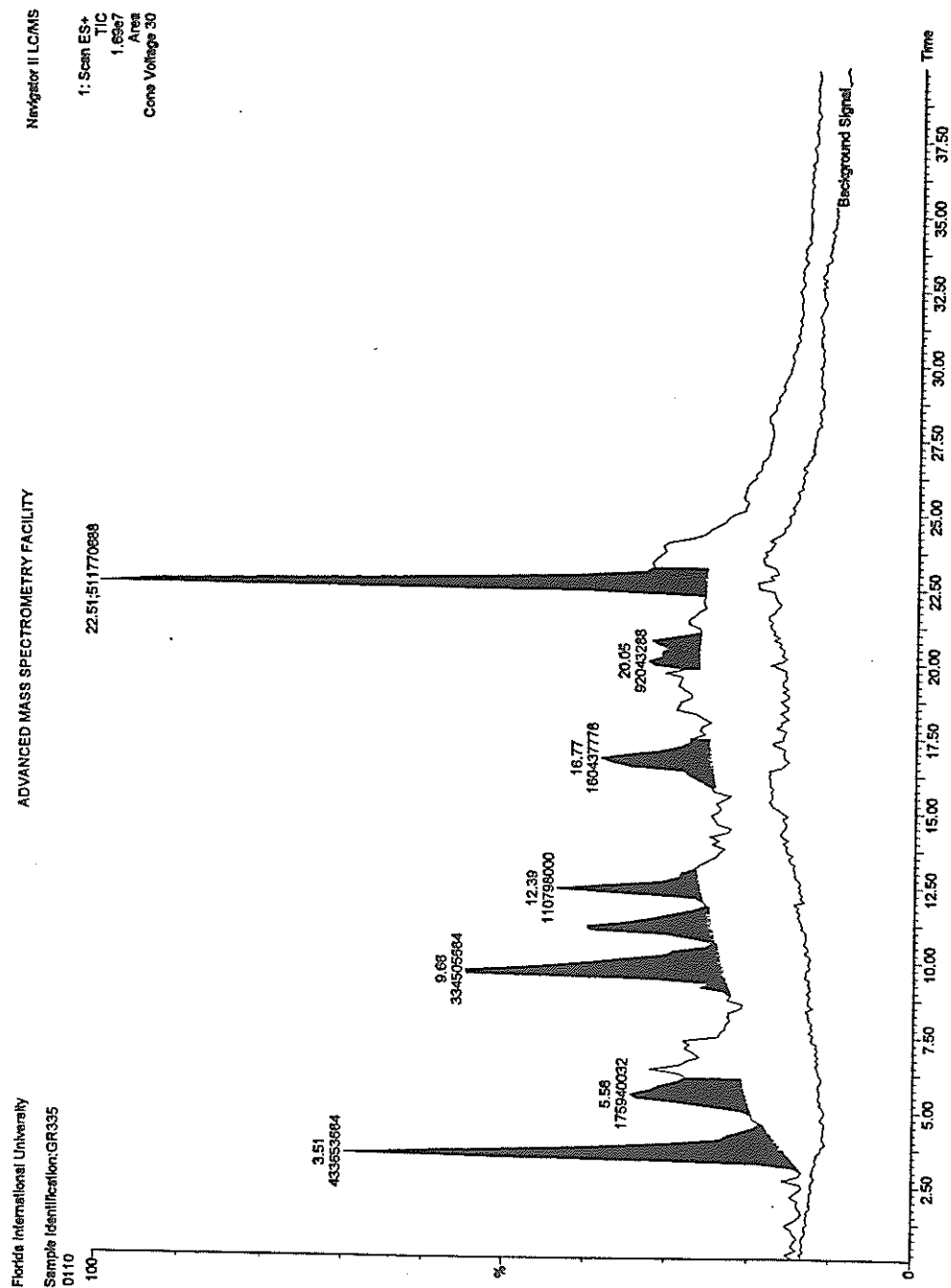
FIGURE 4.21: Confirmation of the preceding results.
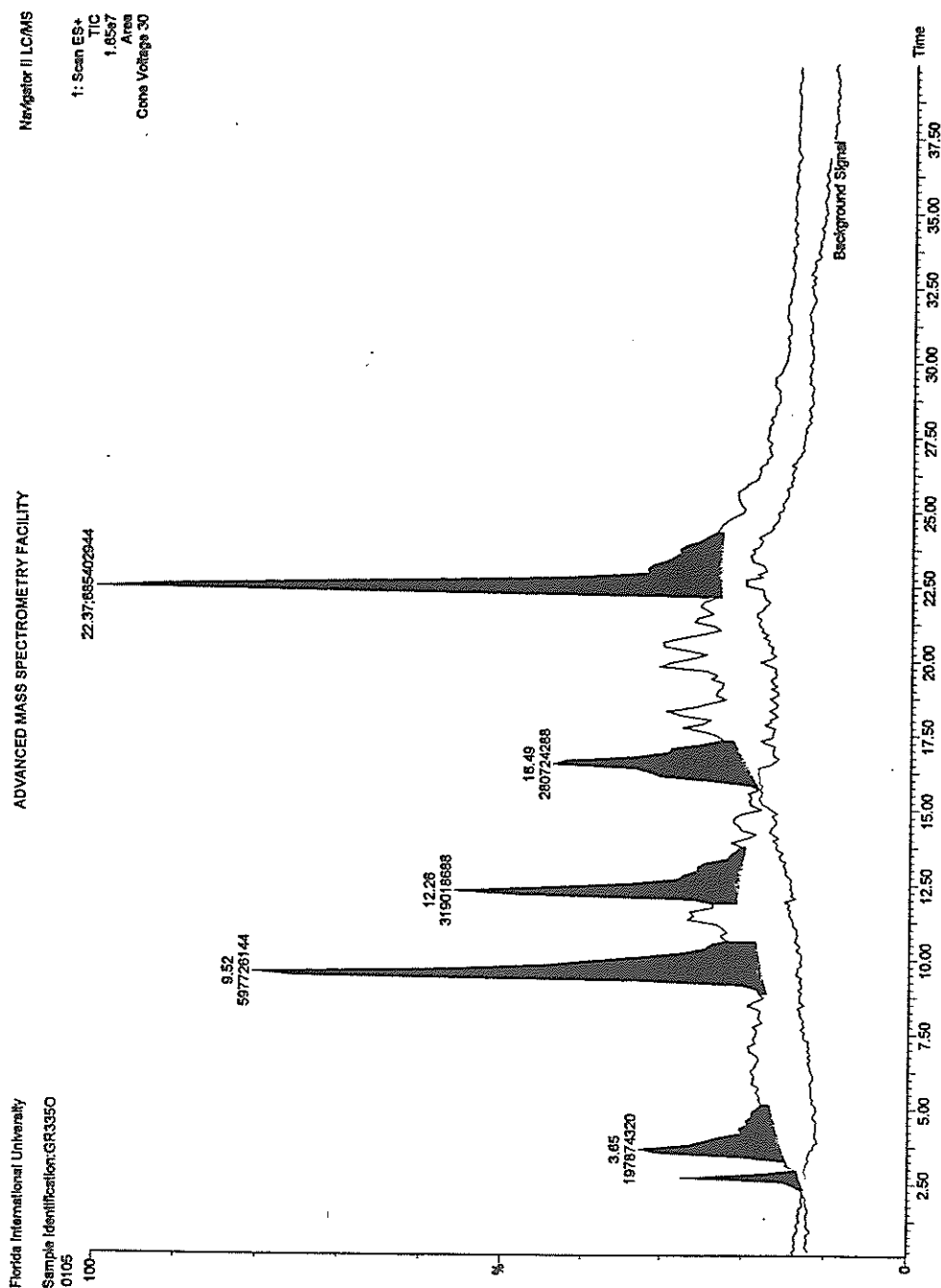
FIGURE 4.22: FIU scan on the large dark structures in the samples of the preceding print-out. Note the *persistence again of the large new peak in the r.h.s.*

– 881 –
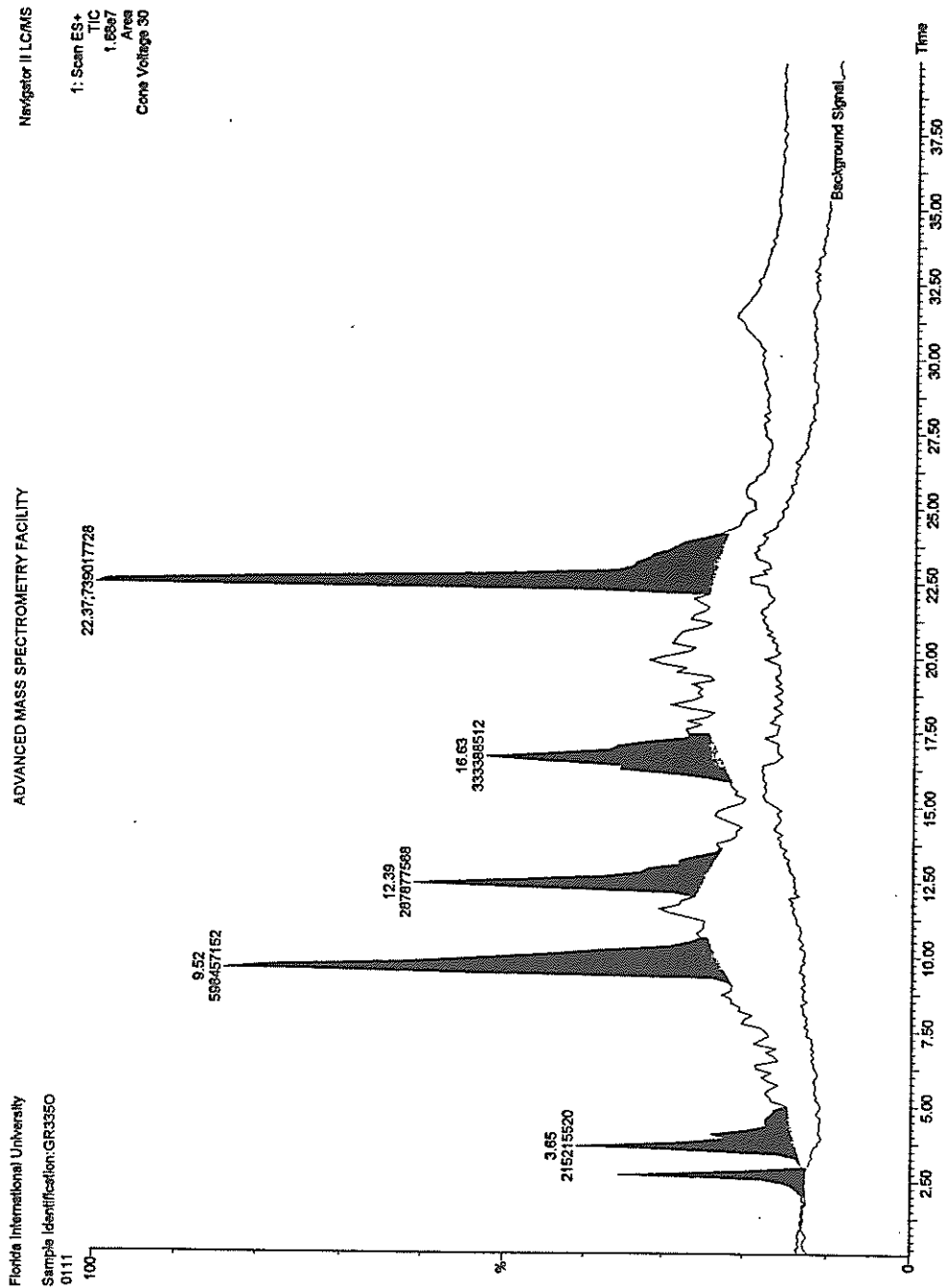
FIGURE 4.23: Additional confirmation of the preceding results.

4.4. Magnetic mutations of physical characteristics in liquids. The existence of magnecules in liquids implies necessary alterations, called *mutations,* of physical characteristics, such as increase of the specific density and viscosity. This is due to the fact that magnetic bonds among ordinary molecules imply an evident reduction of intermolecular distances, thus resulting in more molecules per unit volume as compared to the magnetically untreated liquid. The increase in viscosity is then consequential.

The reader should be aware up-front that I am not referring to esoteric changes in minute amounts, but rather to large macroscopic alterations often visible to the naked eye, which are at times such to alter completely the original state, as it was the case the complete loss of transparency and fluidity in the magnetically treated oils of Figures 4.3.

At a deeper level, it appears that the mutation of physical characteristics are due to various contributions, such as :

1) the elimination under a suitable magnetic field of (at least some of the) rotational motions of the molecules which, per se, implies a decrease of their average volume with consequential increase of the specific density;

2) the polarization of the orbits of the valence electrons which imply an additional decrease of the average molecular volume and consequential increase of the specific density, viscosity and other characteristics; and

3) the magnetic bond among different molecules which implies additional contributions to the indicated mutations.

In this section I report direct experimental evidence on measurements of specific density, viscosity and other characteristics which confirms the above prediction.

In all samples I used ordinary tap water and a number of GR fragrant oils. All samples here considered were prepared by conventionally mixing tap water and one fragrant oil and then submitting that mixture to rather weak permanent magnets of 200 G (much weaker than those used for Pictures 4.1 and 4.2) via an equipment protected by patent applications I am not at liberty to disclose at this time. All samples resulted to be very stable without any measurable change over a period of about year.

In early 1998 I prepared various samples along the above procedure numbered from 1 to 25. The measurements of the specific density were conducted on March 9, 1998 by analyst Dr. *A. Sibille* at the *SGS U.S. TESTING COMPANY, INC.* (USTC) of Fairfield, New Jersey under assistance by Mr. *Lawrence Perovetz,* President of *Millennium Corporation* (MC) of largo, Florida. The

results of the tests are presented in the following figure.

Sample 1 is ordinary untreated tap water. Sample 2 is ordinary tap water magnetically treated for about 5 minutes. Samples 3 and 4 were tap water treated with other magnetic equipment. Sample 5 was ordinary untreated GR fragrance oil received under the code of "APC Fragrance". Sample 6 was a mixture of fragrance oil 5 with tap water magnetically treated for about 5 minutes. Mixtures 7 and 8 were the same mixture 5 although treated with other equipment. Magnetically treated fragrance 17 was a GR oil received under the code "Air Freshener 1". Mixture 19 was Fragrance 17 with tap water 16 magnetically treated for 5 minutes. Note that all measurements, of the following figure were done to an accuracy of the fourth digit. Therefore, numerical results up to the third digit can be considered accurate.

In the transition from Sample 1 [untreated water] to Sample 2 [magnetically treated water] there is an increase of the specific density in the macroscopic amount of 0.86% thus confirming the indicated magnetic mutation of water.

In turn, the increase in density clearly supports the existence of magneplexes in magnetically treated water, as detected earlier.

As well known, fragrance oils are (generally) *lither* than water, i.e., the specific density of the untreated fragrance in Sample 5 is *smaller* than that of the untreated water in Sample 1. According to quantum chemistry, the specific density of any mixture of the above two liquids, whether solution, suspension or dispersion, must be *in between* the lither and heavier specific densities.

On the contrary, as one can see in the following figure, *the specific density of the magnetically treated mixture of GR "APC fragrance 1" with tap water, Sample 6, resulted to be bigger than that of the densest liquid, the water. This measurement constitutes additional, rather strong, direct experimental verification of the magnetic mutation of physical characteristics in liquids.*

The reader should be made aware that the above anomaly (a mixture of two liquids whose specific density is bigger than that of the heaviest of the two) *cannot* be explained via conventional quantum chemical knowledge. The presentation of scientifically credible opposing views is here solicited.

On the contrary, the anomaly is theoretically predicted and quantitatively treatable by the covering hadronic chemistry [3] via the creation of magnecules.

A remarkable point is that the *magnetic mutations of density are macroscopically large.* In fact, they were called by an analyst "UPS-type anomalies", meaning that the shipment via UPS of a given volume of a magnetically treated liquid requires an increase of the shipping cost due to the

macroscopic increase of the weight.

A further prediction of magnetically polarized liquids is the increase of its viscosity . This is evidently due to the arbitrary size of an individual magnecule, as well as the tendency of the same to bond near–by molecules, resulting in accretions, not mention the anomalous adhesion to the walls of the container which has been systematically detected for all magnetically polarized liquids.

As indicated earlier, in certain cases the increase of viscosity is so large to be first visible to the naked eye and, when the treatment is sufficiently protracted, the increase of viscosity is such to lose the customary liquid mobility.

Ordinary engine oils are particularly suited for magnetic treatment because their increase in viscosity is so dramatic to be rapidly visible to the naked eye jointly with a visible, also dramatic change in visual appearance (color, texture, opacity, etc.).

The measurements on viscosity are reported in a subsequent figure. They were done on March 9, 1998 by analyst **J. R. Tyminski** at *SGS U.S. TESTING COMPANY, INC.* of Fairfield, New Jersey, under assistance by *MILLENNIUM CORPORATION.* The selected engine oil was an ordinarily available 30–40 Castrol Motor Oil subjected to magnetic treatments via two different equipment called of Type A and B. All treatments were done at ordinary conditions in the outsider of the oil container without any additive or change of conditions of any type.

An one can see, *measurement 2 shows a dramatic increase of the viscosity in the magnetically treated oil of 44.5% as compared to the viscosity of the untreated oil, while measurement 3 shows an increase in viscosity of 51.2%.*

The above experimental results evidently provide additional support for the the existence of magnecules.

The tests on viscosity also provide evidence of the anomalous adhesion of liquids with magnecules which is establishes in this case by a dramatic, macroscopic increase of adhesion of the oil to the walls of the glass container visible by the naked eye.

The same macroscopic anomaly is confirmed at the microscopic level. During the measurement of viscosity there was such an anomalous adhesion of the magnetically treated oils to the walls of the instrument that could not be removed via routine cleaning with acetone and required the use of strong acids.

This anomalous adhesion is further experimental evidence on the existence of magnecules because of their predicted capability to induce the polarization of the orbits of the valence electrons of the atoms in the walls of the container, thus resulting in anomalous adhesion via magnetic bonds due to induction.

SGS U.S. Testing Company Inc.

291 Fairfield Avenue
Fairfield, NJ 07004-3833
Tel: 973-575-5252
Fax: 973-244-1694

Report Number: 103947

Millennium Results

Density of	g/mL	% Change Density vs Ordinary Water
Sample #1	0.9805	0
Sample #2	0.9889	+0.86
Sample #3	0.9804	0
Sample #4	0.9853	+0.49
Fragrant #5	0.9720	NA
Mixture #6	0.9967	+1.85
Mixture #7	0.9982	+1.80
Mixture #8	0.9902	0.99
Treated Water #16	0.9893	0.89
Frag Treated # 17	0.9453	NA
Mixture #18	0.9902	0.99
Mixture #19	0.9929	1.28

Samples were transferred to a separatory funnel. The layers were allowed to separate. The water layer was withdrawn into a funnel with Whatman #4 filter paper. The filtrate was transferred to a preweighed 10 mL volumetric flask. The sample was weighed to 0.0001 grams and the density calculated.

When the samples were pure substances, they were transferred directly to preweighed 10 mL volumetric flasks.

Calculations:

Weight flask with sample - weight flask ÷ volume of flask = g/mL

Arlyn Sibille, Ph.D.

REPORT OF TEST

FIGURE 4.24: USTC measurements of specific density on magnetically treated liquids.

REPORT OF TEST

SGS SGS U.S. Testing Company Inc.

291 Fairfield Avenue
Fairfield, NJ 07004-3833
Tel: 973-575-5252
Fax: 973-244-1694

Report Number: 103947
Date: 03/09/98
Page: 1 of 1

SUBJECT: Three (3) samples received on 02/09/98

PURPOSE: Determine the density and viscosity of the three samples.

TEST DATE: 02/25/98

PROCEDURE: Three 10 milliliter volumetric flasks were pre-weighed. One of the samples was transferred to each of the volumetric flasks with a pipet. The samples were weighed again. The density of each sample was calculated.

The three oil samples were measured for viscosity using a Kinematic viscometer (ASTM D-445).

RESULTS:

Sample Identification	Density, g/mL)	Viscosity (cps)	Increase Viscosity, %
1) Motor Oil, "as is"	0.8682	199.8	0
2) Motor Oil, Treatment Type A	0.8714	288.7	44.5
3) Motor Oil, Treatment Type B	0.8689	302.0	51.2

SIGNED FOR THE COMPANY BY:

James R. Tyminski
Laboratory Supervisor

Arlyn Sibille, Ph.D.
Laboratory Director

/mo

FIGURE 4.25: USTC measurements of viscosity on magnetically treated liquids.

It is evident that the magnetic mutations of density and viscosity implies the expected mutation of *all* other physical characteristics of the liquid considered. Measurements along these lines are solicited (see next section).

The existence of mutation of *physical* characteristics then implies the mutation of *chemical* features. At this moment I can indicate the visual evidence reported by the analysts of USTC according to whom the reaction of magnetically treated oils with acetone is dramatically different than that with untreated oil, beginning with a visual mutation in color, texture and other appearances. I am not at liberty at this moment to report additional evidence of chemical anomalies.

More importantly, the reader should be aware that *chemical reactions of magnetically polarized liquids are predicted to experience a mutation of their thermodynamical behavior, resulting in certain case in an increase of calories per mole.*

Systematic studies on chemical mutations are under way and they will be reported at some future time.

4.5. Examples of industrial applications of magnetically polarized liquids.

It is evident that *all the anomalies in liquids identified in this section have novel industrial applications in a variety of fields, including, but not limited to, the fragrance industry, automotive industry, paint industry, adhesive industry, medicine, etc. These applications are under patent pending and other industrial protections.*

Evidently I am not at liberty to disclose these applications in the necessary details at this time. I can nevertheless present below illustrative lines (all under patent pending) that any scientist can easy derive form the indicated anomalies.

Applications to automotive industry, such as: the use in a gear box of a lubricant subjected to an appropriate magnetic treatment implies the presence of sufficient lubrication at start-ups after lack of use. When conventional lubricants are used, non-immersed gears are virtually dry after a few hours of lack of use; the enhancement of energy content and octanes; and others.

Application to paint industry, such as: the use of the increased penetration of magnetically treated liquids within porous surface to produce more efficient and longer lasting paints; or the use of magnetically treated marine paints for hulls of metal ships, which is expected to last longer than conventional paints, evidently. In fact, the magnetically treated paints induce a polarization of the atoms in the metal walls, thus resulting in an anomalous adhesion which is

typical of liquids with magnecules.

Applications to medicine, such as lotions subjected to the magnetic treatment herein considered, which are expected to penetrate the human skin much deeper than the same untreated lotions; or the study of conceivable new forms of local delivery of medications thru the skin (e.g., the deep local penetration of antibiotics in wounds), by therefore avoiding its current delivery to the entire body.

The above (and other) novel applications warrant additional scientific and industrial research and development on magnecules in liquids.

4.6. Evidence of magnecules in solids. In the preceding sections I have presented theoretical and experimental evidence of the existence of magnecules in gases and liquids.

The direct experimental evidence on the existence of magnecules in solids available at this writing is so simple to appear naive.

It is given by the evidence that *all liquids with magnecules systematically preserve the new species when frozen, as established by the recovering of anomalous features when returning to the liquid state, as well as the preservation at the solid state of opacity and other features.*

Also, magnecules can be directly verified under microscopic observation to persist at the solid state.

Needless to say, the above simplest possible evidence in solids is only the beginning of various possibilities. I merely mention here in depth study on the true chemical composition of *solids created under intense magnetic fields,* such as fullerenes [5] and other composites.

The latter study is under way and I shall report the results in some future paper.

5. CONCLUDING REMARKS

In this memoir I have presented the theoretical prediction and several independent experimental verifications of the existence of a *new chemical species* I submitted under the name of *magnecules,* which is composed by clusters of atoms and molecules under a new strong bond of non-valence type and which is

stable at ordinary conditions.

The reason why this new species was not discovered time ago is the silence throughout this century in the vast literature of both quantum mechanics and chemistry of the magnetic moment created by the orbiting of valence and other electrons.

These magnetic moments are been ignored because of the general distribution in space of the motion of electrons, with consequential impossibility of their detection.

However, one of the most rigorous disciplines of this century, quantum electrodynamics, has established that electron orbits must acquire a polarization in a plane under sufficiently intense external magnetic fields, as well known in atomic physics.

Simple calculations for the hydrogen atom then show that the magnetic moment of its polarized electron orbit is 1,316 times *bigger* than the magnetic moment of the nucleus (the proton).

Such a large value of the orbital magnetic moment then sets the foundations of the new species of magnecules, as well as of the new technology for their production.

Quite remarkable are the variety and amount of alterations, called *mutations,* of physical and chemical characteristics under said magnetic polarization, which provide the foundations for numerous novel industrial applications.

Intriguingly, the results presented in this memoir constitute the most compelling experimental evidence known to me at this time on the *insufficiency* of quantum mechanics for the treatment of the hydrogen and other *molecules,* while being *exact* for the structure of the hydrogen *atom,* as illustrated in Fig. 1.4. The insufficiency of quantum chemistry is then consequential.

In fact, the assumption of quantum mechanics as being exact for molecular structures requires a point−like approximation of overlappings wavepackets of valence electrons, with numerous irreconcilable consequences in disagreement with experimental evidence, such as correlations among an arbitrary number of electrons, prediction of molecules with an arbitrary number of atoms, the ferromagnetic character of all molecules, and other inconsistencies.

The use instead of the covering quantum mechanics and chemistry allows the resolution of the above inconsistencies, by permitting the theoretical prediction and quantitative treatment of the new species of magnecules in a way compatible with experimental data to several digits.

Among the various macroscopic mutations induced by magnetic

> *ENVIRONMENTAL CONSERVATION LABORATORIES* of Orlando, Florida;

> *BIOMEDICS LABORATORIES* of Orlando, Florida;

> *SOUTHWEST MACHINE CORPORATION* of Nika, Missouri.

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> *BUNTING MAGNETICS CORPORATION* of Newton, Kansas;

> *ELECTRON ENERGY CORPORATION* of Landsville, Pennsylvania;

> *ADAMS MAGNETIC PRODUCTS,* of Elizabethtown, Kentucky;

> *SHIN-ETSU RARE EARTH MAGNETS* of Tokyo, Japan;

> *CHEMYR P9OLYTECH LABORATORIES* of Maryland Height, Montana;

> *WELDING AUTOMATIC CORPORATION* of Anaheim, California;

> Various corporations producing high voltage pulse power units;

> Several other analytic laboratories, testing facilities and corporations.

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Needless to say, I am solely responsible for the content of this memoir.

References

1. D. J. Boyer, *Bonding Theory,* McGraw Hill, New York (1968) [1a]. M. W. Hanna, *Quantum Mechanical Chemistry,* Benjamin, New York (1965) [1b]. D. Eisenberg and W. Kauzmann, *The Structure and Properties of Water,* Oxford University Press, New York, 1969 [1c].

2 R.M. Santilli, Hadronic J. $\underline{1}$, 228, 574 and 1367 (1978) [1a]; *Foundations of Theoretical Mechanics,* Vol. I ()1978) and II (1983), Springer-Verlag, Heidelberg-New York [2b]; *Elements of Hadronic Mechanics,* Vols. I and II, Ukraine Academy of Sciences, Kiev, 2-nd ed. (1995) [2c]; Found. Phys. $\underline{27}$, 625 (1998) [2d]; Infinite Energy, $\underline{22}$, issue 4, p. 33 (1998) [2e].

3 R. M. Santilli and D. D. Shillady, *Ab Initio* hadronic chemistry, I: Basic

methods, Hadronic J. <u>21</u>, 633 (1998) [3a]; *Ab Initio* hadronic chemistry, II: Isochemical model of the hydrogen molecule, Hadronic J. <u>21</u>, 715 (1998) [3b]; *Ab Initio* hadronic chemistry, III: Isochemical model of the water molecule, Hadronic J. <u>21</u>, 759 (1998) [3c]; A new isochemical model of the hydrogen molecule, and A new isochemical model of the water molecules, Intern. J. Hydrogen Energy, in press (1999) [3d]. R. M. Santilli and D. D. Shillady, *Ab Initio Hadronic Chemistry*, Ukraine Academy of Sciences, Kiev (1999) [3e]. R. M. Santilli, *Theoretical Prediction and Experimental Verifications of the New Species of Magnecules*, Ukraine Academy of Sciences, Kiev (1999) [3f].

4. J. D. Memory, *Quantum Theory of Magnetic Resonances Parameters*, McGraw–Hill, New York (1968).

5. P. Jenna, B. K. Rao and S. N. Khanna, Editors, *Physics and Chemistry of Small Clusters*, Plenum, new York (1982).

6. Web site of Toups Technology Licensing
http://www.toupstech.com [6a];
http://www.toupstech.com/aquafuel/[6b];
http://www.toupstech.com/aquafuel/aquaII-pIII.html [6c].

7. H. Eldridge, U. S. Patent no. 603,058, Spril [7a]. W. A. Dammann and D. Wallman, U. S. Patents nos. 5,159,900 (1992) and 5,417,817 (1995) [7b]. W. H. Richardson, jr., U. S. Patents nos. 5,435,274 (1995), 5,692,459 (1997), 5,792,325 (1999) [7c]. For the Brown Gas one may consult the Web Site htt://www.eagle-research.com [7d]. For SkyGas one may consult the Web Site httop://www.mpmtech.com [7e].