

Marie-Paule BASSEZ

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Full University Professor since 1st October 1985 (1st class in 2000)

- Functions
- * PROFESSEUR DES UNIVERSITES
Université de Strasbourg, Institute of Technology, Illkirch-Graffenstaden, Fr
 - * ADJUNCT PROFESSOR (summer 1990, 1991 and 1992)
Texas Tech University, Lubbock, TX, USA.
 - * GUEST LECTURER (1995 et 1996)
International Space University, Strasbourg, Illkirch-Graffenstaden, France
 - * GUEST EDITOR (09/2008-08/2009) for the volume "Origin of Life" of the
Open Access "International Journal of Molecular Sciences" IJMS.

DIPLOMATA

12 October 1981: "Doctorate of State" n° 2498, Université de **Paris-Sud**, centre d'**Orsay**
DOCTEUR ès SCIENCES speciality **PHYSICAL SCIENCES (CHEMISTRY)**

« *Spectroscopic Study of Glycine and some Related Molecules. Rotational Analysis and Observations of the Interstellar Medium.* Etude spectrochimique de la glycine et de quelques molécules connexes.
Analyse rotationnelle et observations du milieu interstellaire »

This pluridisciplinary thesis has been submitted without research director and with two principal examiners: R. Wertheimer for the microwave spectroscopy results and J. Lequeux for the radioastronomy results. The research work was completed in Australia and in the United States.

The examiners are french: Rose MARX and Jean FAURE (**Physical-Chemists, Orsay**);

Raymond WERTHEIMER (**Lille**) and Alain OMONT (**Grenoble**) (**Physicians**);

James LEQUEUX (Observatoire de **Paris-Meudon**) and Michel GUELIN (**Grenoble**) (**Astronomers**).

The results of this thesis are entirely independent of the 1971 thesis.

July 1980: **DOCTOR of PHILOSOPHY, Ph.D., PHYSICAL SCIENCES (CHEMISTRY)**

« *Microwave Spectroscopy and Radioastronomy of Glycine and Related Molecules* »

The experiments were conducted in the laboratory of Professor Ron D. Brown, in **Monash** University, Clayton, **Melbourne, Australia**, and considered as a post-doctorate. My goal was a french "doctorat d'état" and on the way I wrote a PhD thesis which was examined by American scientists: William D. GWINN, **University of California, Berkeley** and Patrick THADDEUS, **Goddard Institute for Space Studies, NASA, New-York**. As a consequence, Pr. P. Thaddeus proposed that I work in his laboratory.

30 June 1971: **DOCTOR** speciality **PHYSICAL CHEMISTRY: SPECTROSCOPY**

« *Contribution to the study of the reactions of active nitrogen with elements of the group VI B, by spectroscopy of electronic transitions and by electron paramagnetic resonance.* Contribution à l'étude par spectroscopie électronique et résonance paramagnétique électronique des réactions de l'azote activé sur des éléments du groupe VI B »

Univ. Sciences et Techniques **Lille 1, Fr.** Examiners: M. BÉCART, P. GOUDMAND, M. DELHAYE

June 1969: **DISSERTATION, MEMOIRE**, for the Diplôme d'Etudes Approfondies (DEA) de **PHYSICAL CHEMISTRY-PHOTOCHEMISTRY, CHIMIE-PHYSIQUE-PHOTOCHIMIE**

« *Etude des Radicaux libres par spectroscopie optique et spectroscopie des radiofréquences* »
Univ. Sciences et Techn. **Lille 1, Fr.** Examiners: M.GOUDMAND, O.DÉSSAUX, C.LOUCHEUX

Sept.1968: **MAITRISE** de **Chimie-Physique**

June 1966: **PROPEDEUTIQUE: Mathématiques, Physique, Chimie,**

Université des Sciences et Techniques, **Lille 1-France**

"La véritable industrie ne consiste pas à exécuter avec tous les moyens connus et donnés. L'art, le génie est d'accomplir en dépit des difficultés et de trouver par là peu ou point d'impossible." Las Cases 1801.

RESEARCH AND SCIENTIFIC PRODUCTION

ARTICLES*, EDITORIAL* in International Journals with Reviewers,
POSTERS, ORAL PRESENTATIONS, cyberBOOKS, ARTICLES without reviews,
DIRECTIONS, ORGANIZER of SPECIAL DAYS

* **Research Articles*, Editorial*** published in International Journals with peer-reviewers committees: 40 articles including 22 articles with only 1 author: M.-P. Bassez. These 40 articles are thus equivalent to 110,34 articles with 4 co-authors.

- **Pioneer** since 2013 for the new concept of **geobiotropy** and the importance of high subcritical water for the concomitant anoxic formation of ferric iron and molecules of life.

* **Communication in International Conferences:** 33 and in **National French Conferences:** 12

* **Articles and Documents not submitted to reviewers comments:** 13 including 10 with one author.

* **Softwares, Computer-Based Training and Didactic Publications:** 6 (n°28-26; 24-23,11)

* **Books:** 1 e-Book, 6 *cyberBooks*, 1 volume in a Journal.

- Editor of the special volume "*Origin of Life*" for the International Journal of Molecular Sciences, IJMS (n°77)
- Author and Publisher of two *cyberBooks*, "*Physical Chemistry*" (n°63) "*Instrumental Analysis*" (n°55) and one *e-book* "*Chemphys*" (n°106)
- Director, Author and Publisher of one *cyberBook*, "*Life, Origins and Diversity*" (n°72)
- Editor and Publisher of three *cyberbooks* "*Professional Chemistry*" (n°54), "*Atoms, Energy and Kinetics*" (n°62), "*A Sustainable Earth*" (n°68).
- **Pioneer** for the opening of the 1st **Scientific and Didactic Server** in Strasbourg and France: *ChemPhys* (n°53).

* **Scientific Organizer** of "*Three Days Dedicated to Space*" (n° 21)

* **Laboratory Direction** (n° 9)

* **Financial Support:**

- from the French National Agency for Research and Pr. Kensei Kobayashi (n°78)
- from the French Embassy in Australia (n° 16)
- from the French Government to conduct Research in Australia (n°12)
- from the Food and Agriculture Organization of the United Nations (n°9)

113* M.-P. BASSEZ (2019) "*High Subcritical Water-Rock Interaction for the Formation of Ferric Minerals, in the Absence of Oxygen, UV Light and Microorganism*". open **Article***, EDP Sciences-WRI 16, Tomsk, Russia, 21-26 July 2019. accepted for publication.

112* M.-P. BASSEZ (2019) "*Follow the High Subcritical Water*". open **Article***, Geosciences. (revised)

111 M.-P. BASSEZ (2018) "*Geobiotropy or the Water Below the Critical Point for the Formation of Ferric Minerals and Molecules of Life*, La Géobiotropie ou l'eau dans l'état en dessous du point critique pour la formation des minéraux de fer ferrique et des molécules de la vie". **Oral** 16 Oct, SFE'2018, Rencontres de la Société Française d'Exobiologie, Observatoire de Haute Provence, **Saint Michel l'Observatoire**, 15-18 Oct.2018.
<http://www.exobiologie.fr/index.php/actualites/evenements/rencontres-sfe-2018/>

110 M.-P. BASSEZ (2018) "*Water in High-Subcritical Conditions as a Trigger for the Formation of Ferric Minerals and Geobiotropic Molecules of Life*". **Oral**, EANA'2018, **Berlin**, De, 24-28 Sept.2018.
http://www.eana-net.eu/index.php?page=Conferences/Docs_EANA18/schedule

- 109*** M.-P. BASSEZ (2018) "*Water near its Supercritical Point and at Alkaline pH for the Production of Ferric Oxides and Silicates in Anoxic Conditions. A New Hypothesis for the Synthesis of Minerals Observed in Banded Iron Formations and for the Related Geobiotropic Chemistry inside Fluid Inclusions*". open **Article***
Origins of Life and Evolution of Biospheres 48(3):289-320 (on-line 08 August 2018)
<https://doi.org/10.1007/s11084-018-9560-y>
- 108** M.-P. BASSEZ (2018) **Selected** for the visit and the observation of the geological **Terrain** "*Grand Tour of the Pilbara Craton*", **Western Australia**, 2-11 July 2018.
- 107** M.-P. BASSEZ (2018) "*High-Subcritical Water for the Synthesis of the Minerals observed in Banded Iron Formations and for the Related Geobiotropic Chemistry inside Fluid Inclusions*" **Poster**, Australasian Astrobiology Conference, **Rotorua**, N.Z., 25-26 June 2018.
- 106*** M.-P. BASSEZ (2018) **Author, Publisher** of the *e-book Chemphys*.
prefaced by Jean-Pierre Sauvage, 2016 Nobel Laureate in Chemistry.
Two publishers required an epub format, which is not appropriate. Thus, I constructed the book with Acrobat Reader Pro. <http://chemphys.u-strasbg.fr/mpb/index.html>
- 105** M.-P. BASSEZ (2018) "*Anoxic Formation of Ferric Iron*". **Oral**, 16 March 2018, University of **Johannesburg**, South Africa, dept. Geology.
- 104** M.-P. BASSEZ (2017) "*Rocks, Minerals, Prebiotic Chemistry and Geobiotropy*". **Oral**:17h15 Tues.15 August and **Convener** of the session 14a: "*Exogenous Organic Compounds, Minerals, Prebiotic Molecules and Geobiotropy*." Goldschmidt'2017, **Paris**, Fr.; **Session and Abstract**:
https://goldschmidt.info/2017/program/programViewThemes#period_269_2923_5173
- 103** M.-P. BASSEZ (2017) "*A Hypothesis to Explain the Presence of Amino Acids in the Tagish Lake Meteorite*". **Oral**:3pm July 25th, LPI#1987, MetSoc#6035.
80th Annual meeting of the meteoritical society, MetSoc'2017, **Santa Fe**, NM, USA,
Session: Volatiles, carbon and organics-the universal cycle,
Abstract: <https://www.hou.usra.edu/meetings/metsoc2017/pdf/sess251.pdf>
- 102** M.-P. BASSEZ (2017) "*Geobiotropy: the Evolution of Rocks in Symbiosis with Prebiotic Chemistry*". **Poster and Oral**:LPI#1967, #ISSOL4045, July 18th, XVIIIth International Conference on the Origin of Life, ISSOL'2017, **San-Diego**, CA, 16-21 July.
Abstract: <https://www.hou.usra.edu/meetings/issol2017/pdf/sess302.pdf>
- 101** M.-P. BASSEZ (2017) "*Fluid Inclusions in Radioactive Rocks and Geobiotropy*".
Poster #S2.P02, European Current Research on Fluid Inclusions, ECROFI'2017, **Nancy**, Fr, 23-29 June. Session : New Frontiers in inclusion research.
<http://2017.ecrofi.univ-lorraine.fr/files/2016/03/catalogue-ecrofi-basseresolution2.pdf> p175
- 100*** M.-P. BASSEZ (2017) "*Anoxic and Oxidation of Rocks Containing Fe(II)Mg- Silicates and Fe(II)- Monosulfides as Source of Fe(III) Minerals and Hydrogen. Geobiotropy*". **Article***
Origins of Life and Evolution of Biospheres, 47(4): 453-480 (on-line March 2017)
DOI : 10.1007/s11084-017-9534-5; <http://rdcu.be/qxSs/>
- 099*** M.-P. BASSEZ (2016) "*Ferromagnesian Silicate and Ferrosulfide Rocks as a Source of Magnetite and Hydrogen*". **Oral** presentation, WRI'2016, Water Rock Interaction, **Evora**, Portugal, 16-21Oct.2016.
open **Article***: Procedia Earth and Planetary Science 17, 492-495, 2017.
<http://www.sciencedirect.com/science/article/pii/S1878522016301588>
<https://www.facebook.com/wri15portugal>
- 098** M.-P. BASSEZ (2016) "*Geobiotropy : the evolution from the world of rocks to the world of life*". **Oral** presentation, 27 Sept., EANA'2016, **Athens**, Greece, 27-30 Sept.2016.

- 097*** M.-P. BASSEZ (2016) "*Geobiotropy*", **Abstract** 1853, 47th LPSC2016, Lunar and Planetary Science Conference, **The Woodlands**, Texas, 21-25 March 2016.
<https://www.hou.usra.edu/meetings/lpsc2016/pdf/sess804.pdf>
- 096*** M.-P. BASSEZ (2015) "*Water, Air, Earth and Cosmic Radiation*" Article*
DOI: 10.1007/s11084-015-9402-0, *Origins of Life and Evolution of Biospheres* 45:5-13, 2015.
<https://link.springer.com/article/10.1007%2Fs11084-015-9402-0>
- 095** M.-P. BASSEZ (2014) "*Ferromagnesian Rocks in Association with Carbonates as a Signature for Life*". **Oral** presentation, 13 Oct., EANA'2014, European Astrobiology Network Associat., **Edinburgh**, England: "Signatures of Life (From Gases to Fossils)" 13-16 Oct. 2014.
http://chemphys.u-strasbg.fr/mpb/CV/EANA14_Programme.pdf
- 094** M.-P. BASSEZ "*Water, Air, Earth and Cosmic Radiation*". **Poster**, Origins'2014, Early Earth session, 2nd Joint conference, ISSOL (Int. Society for the Study of the Origin of Life)-Int. Astrobiology Society and Bioastronomy, **Nara**, Japan, 06-11 July 2014.
<http://www.origin-life.gr.jp/origins2014/>
- 093** M.-P. BASSEZ (2013) "*Geochemical origin of biological molecules*". **Oral** presentation, 9 Apr., EGU'2013-22, European Geosciences Union, session: Planetary Evolution and Life, PS8.1, **Vienna, Austria**, 07-12 Apr. 2013.
<http://meetingorganizer.copernicus.org/EGU2013/orals/11892>
<http://adsabs.harvard.edu/abs/2013EGUGA..15...22B>
- 092** M.-P. BASSEZ (2013) "*The Search for Life in the Universe, La recherche de vie dans l'univers*". **Oral** Presentation, Université de Strasbourg,
<https://pod.unistra.fr/video/8916-la-recherche-de-vie-dans-lunivers/> archive which was first registered at the address: audiovideocast.unistra.fr/avc/courseaccess?id=8916. The screen is not perfectly readable, therefore, the slides have been added on the left side by the video office of the university. I recommend listening with the video and change the slides manually.
and: <http://chemphys.u-strasbg.fr/mpb/teach/originevie.html> **Strasbourg**-Fr.31 Jan. 2013.
- 091** M.-P. BASSEZ, Y. TAKANO, K. KOBAYASHI (2012) "*Prebiotic organic microstructures*". **Poster** P2-05, 12th European Workshop on Astrobiology, EANA (European Astrobiology Network Association), **Stockholm**, Sweden, 15-17 Oct. 2012.
<http://agenda.albanova.se/conferenceDisplay.py?confId=2996>
- 090*** M.-P. BASSEZ, Y. TAKANO, K. KOBAYASHI (2012) "*Prebiotic organic microstructures*", open access **Article***, DOI: 10.1007/s11084-012-9290-5
Origins of Life and Evolution of Biospheres 42 (4): 307-316, 2012.
<https://link.springer.com/article/10.1007/s11084-012-9290-5>
- 089** M.-P. BASSEZ*, Y. TAKANO, K. KOBAYASHI (2012) "*Prebiotic organic microstructures*", **Poster** P4, Gordon Research Conf. on the Origin of Life, 2012 **Galveston**, TX, 08-13/01/2012.
<https://www.grc.org/origin-of-life-conference/2012/>
- 088** M.P. BASSEZ, Y. TAKANO, K. KOBAYASHI (2011) "*Prebiotic organic microstructures*" **Article**, *Nature Precedings*, posted 12 Nov. 2011,
<http://precedings.nature.com/documents/4694/version/2>
- 087*** M.-P. BASSEZ "**Emergence of Life** " **Editorial*** for *Life*, 1(1): 7-8, 2011
doi:10.3390/life1010007 open <https://www.mdpi.com/2075-1729/1/1/7/htm>
- 086** M.-P. BASSEZ, Y. TAKANO, "*Organic microstructures*". **Poster** P2-34, Origins'2011 ISSOL and Bioastronomy joint Conference, **Montpellier**-France, 04-08 July 2011.
http://www.origins2011.univ-montp2.fr/pages/scientific-program_accepted-posters.html

- 085** M.-P. BASSEZ, Y. TAKANO, N. OKHOUCI, "*Detection of molecular biosignatures inside rocks*". **Poster** P2-17, Origins 2011, ISSOL and Bioastronomy joint Conference, **Montpellier-France**, 04-08 July 2011.
http://www.origins2011.univ-montp2.fr/pages/scientific-program_accepted-posters.html
- 084** M.-P. BASSEZ, Y. TAKANO, N. OHKOUCHI (2011) "*A search for molecular biosignatures inside rocks*". **Poster**, International Conference on Geobiology in Space Exploration, **Marrakech**, Morocco, 7-14 Feb. <https://ian.arc.nasa.gov/issues/2011-01-issue/#78>
- 083** M.-P. BASSEZ, Y. TAKANO, N. OHKOUCHI (2010) "*Organic analysis of peridotite rocks from the MAR*". **Poster**, Colloquium on the First Chemical Steps towards the Origin of Life, **Torino-Italy**, 16-17 Sept. 2010. www.nis.unito.it/st
- 082** M.-P. BASSEZ, Y. TAKANO (2010) "*Prebiotic organic globules*". **Article**, Nature Precedings, posted 21 July 2010. <http://precedings.nature.com/documents/4694/version/1>
- 081** M.-P. BASSEZ, Y. TAKANO, N. OHKOUCHI (2009) "*Organic analysis of peridotite rocks from the MAR*". **Poster** P43C-1441 (scientific abstracts-Planetary Science/Potential Biomarkers on Mars) AGU Fall Meeting, **San Francisco**, Ca, 14-18 Dec. 2009.
<http://abstractsearch.agu.org/meetings/2009/FM/P43C-1441.html>
- 080*** M.-P. BASSEZ, Y. TAKANO, N. OHKOUCHI, "*Organic analysis of peridotite rocks from Ashadze and Logatchev hydrothermal sites*", open access **Article***, Int. J. Molecular. Science 10 (7), 2986-2998, 2009. <https://www.mdpi.com/1422-0067/10/7/2986>
- 079** M.-P. BASSEZ (2008) "*Prebiotic Synthesis under Hydrothermal Conditions*", **Oral Seminar** in Pr. Kensei Kobayashi Laboratory, dept of Chemistry and Biotechnology, **Yokohama Univ.**, Japan, 29 Oct.2008.
- 078** M.-P. BASSEZ (2008) With the help of André Brack, I became the **Recipient** of a small grant from the French ANR, National Agency for Research: 2000 euros, managed by the CNRS, National Center for Scientific Res., Orleans,Fr. and from Pr. K. Kobayashi :1000 euros for collaborative work.
- 077*** M.-P. BASSEZ (Sept. 2008- Aug. 2009) **Editorial; Guest Editor** of 23 articles for the special issue "*Origin of Life*" of the open access Journal, IJMS, Int. Journal of Molecular Sciences.
https://www.mdpi.com/journal/ijms/special_issues/origin-of-life
- 076** M.-P. BASSEZ (2008) "*Prebiotic Synthesis under Hydrothermal Conditions*". **Poster** P-2-6, 15th Int. Conference on the Origin of Life, ISSOL'08, **Florence-Italy**, 24-29 August 2008. **Abstract** in the special issue "abstracts from the ISSOL'08 meeting" Origins of Life and Evolution of Biospheres, 39 (3-4) p. 223-225, 2009.
<http://link.springer.com/journal/11084/39/3/page/1>
- 075*** M.-P. BASSEZ (2009) "*Prebiotic Synthesis under Hydrothermal Conditions*". **Article***, C. R. Chimie Académie des Sciences, Paris-Fr, 12 (6-7) : 801-807 (publ. on-line 05 Dec. 2008)
<https://www.sciencedirect.com/journal/comptes-rendus-chimie/vol/12/issue/6>
Erratum of the editor (2013): article qualified as article and not as review, 16(11): 1071.
<https://www.sciencedirect.com/science/article/pii/S1631074808002348>
- 074*** M.-P. BASSEZ (2008) "*Contribution to the Elaboration of a code of Conduct for the Development of Nanotechnologies and other Technologies*, Contribution à la rédaction d'un Code de Conduite pour le développement des nanotechnologies et autres technologies". **Oral presentation** CNRIUT'08, Lyon-France, 29-30 May 2008
Proceedings on-line: [/liris.cnrs.fr/~cnriut08/actes/](http://liris.cnrs.fr/~cnriut08/actes/) 29 May/période-1/salle A.
<http://projet.liris.cnrs.fr/cnriut08/actes/#id126>

- 073*** M.-P. BASSEZ (2008) "*Prebiotic Synthesis in Hydrothermal Conditions*, Synthèse prébiotique dans les conditions hydrothermales". **Oral** presentation CNRIUT'08, Lyon-Fr, 29-30 May 2008 **Proceedings** on-line: /liris.cnrs.fr/~cnriut08/actes/ 29 May/période-1/salle C.
<https://projet.liris.cnrs.fr/cnriut08/actes/#id126>
- 072** M.-P. BASSEZ (2008-2019) **Director, Author, Publisher**, "*Life, Origins and Diversity*, La Vie, ses Origines, sa Diversité" **cyberBook**.
<http://chemphys.u-strasbg.fr/mpb/teach/originevie.html>
- 071** M.-P. BASSEZ (2007) "*Polar and Apolar Water, a solvent for Life*, L'eau polaire et apolaire, un solvant pour la vie". **Oral** presentation (in place of Nathalie Cabrol, 26/06) 9th International Symposium on Water, **Cannes**-France, 26-28 June 2007.
<http://chemphys.u-strasbg.fr/mpb/CV/Cannes-9th-Water-Conf.pdf>
- 070** M.-P. BASSEZ (2006) "*The Structure and Polarity of Water, and Life*, L'eau, sa structure, sa polarité et la vie", short **Oral** presentation at the School: *L'eau dans les milieux biologiques*, **Roscoff**, Fr, 25-28 Oct.2006.
www-llb.cea.fr/eau-cellulaire/programme.html
- 069** M.-P. BASSEZ (2006) "*Polar and Apolar Water, a solvent for Life*, L'eau polaire et apolaire, un solvant pour la vie". **Poster** P12 National Colloquium on Exobiology, **Orléans**-Fr, 22-24 May 2006.
Member of the GDR, Groupe De Recherche, Exobiology since its opening on 01 Jan.1999.
- 068** M.-P. BASSEZ (2005-2011) **Editor, Publisher**, "*A Sustainable Earth*, Le développement durable" **cyberBook** with student contributions between 2005 and 2011.
<http://chemphys.u-strasbg.fr/mpb/teach>
- 067** M.-P. BASSEZ (2003) "*Return on an Example of cyberLearning in Chemistry*, Réflexions sur un exemple de cyberenseignement en chimie". **Oral** presentation, Journée: Apprendre autrement; ADIUT-Bruno Rossetto, **Montrouge**-France, 11 Dec. 2003.
- 066** M.-P. BASSEZ (2003) "*Is high pressure water the cradle of life?*". **Poster**, Exobio'03, **Propriano**, France, 20-27 Sept. 2003.
- 065*** M.-P. BASSEZ (2003) "*Is high pressure water the cradle of life?*" **Article*** J. of Physics: Condensed Matter, 15, L353-L361.
<http://iopscience.iop.org/article/10.1088/0953-8984/15/24/101/pdf>
- 064** M.-P. BASSEZ (2003) "*The University on-line*, L'université en ligne". **Document** with suggestions given to the ambassador Michel Peissek, PrepCom2, World Summit on the Information Society, Geneva, Swiss, 27 Feb. 2003.
- 063** M.-P. BASSEZ (2003-2012) **Author, Publisher**, "*Physical Chemistry on-line*, La Chimie-Physique en ligne" **cyberBook**. <http://chemphys.u-strasbg.fr/mpb/teach/coursenligne.html>
- 062** M.-P. BASSEZ (2002-2005) **Editor, Publisher**, "*Atoms, Energy and Kinetics*, L'Atome, l'Energie, la Cinétique" **cyberBook** with student contributions between 2002 and 2005.
<http://chemphys.u-strasbg.fr/mpb/teach>
- 061*** M.-P. BASSEZ (2000) "*An Example of cyberLearning in Chemistry*, Un exemple de cyberenseignement en chimie". **Article***, EPI, Enseignement Public et Informatique, Public Teaching and Computing, Paris, ISSN:1254-3985, n°99, 123-127.
<http://www.epi.asso.fr/revue/99/b99p123.htm>

- 060** M.-P. BASSEZ (2000) "*Water as a polar and apolar solvent*, L'eau, solvant polaire et non-polaire". **Oral** presentation at the Conference "L'eau, arme stratégique au XXI ème siècle?" **Strasbourg-Fr**, 25-26 May 2000.
- 059** M.-P. BASSEZ (1999) "*The Network of Science*, La Science en Réseau". Participation of the server *ChemPhys* to the Week of Science from **Strasbourg-France**, 18-24 Oct.1999
http://chemphys.u-strasbg.fr/mpb/CV/semaine_sciences/semaine_sciences/biblio/index.html
- 058*** M.-P. BASSEZ (1999) "*The Structure of Water and the Origin of Life*, La structure de l'eau supercritique et l'origine de la vie". **Article***, Science et Technologie, ed. l'Harmattan, Paris, ISBN 2-7384-7367-9, p. 583-591, 1999.
- 057** M.-P. BASSEZ (1999) "*The Structure of Supercritical Water and the Origin of Life*, La structure de l'eau supercritique et l'origine de la vie".
Oral presentation, CNRS workshop of the Group of Research, GDR, in Exobiology: Oceanic Hydrothermalism and Exobiology, CNES-**Paris**, France, 21-22 Sept. 1999.
- 056** M.-P. BASSEZ (1999) "*The structure of supercritical water and the origin of life*". **Poster**, Life Odyssey Symposium, 7th European Symposium on Life Sciences Research in Space, ESA, **Maastricht-Netherlands**, 29 May-02 June 1999.
<http://chemphys.u-strasbg.fr/mpb/CV/ESA1999/ESA-Maastricht-1999.jpg>
<http://chemphys.u-strasbg.fr/mpb/CV/ESA1999/Abstract-Poster.jpg>
- 055** M.-P. BASSEZ (1999-2012) **Author, Publisher**, "*Instrumental Analysis*, Les Techniques Instrumentales d'Analyse" **cyberBook**.
<http://chemphys.u-strasbg.fr/mpb/teach/coursenligne.html>
- 054** M.-P. BASSEZ (1998-2002) **Editor, Publisher**, "*Professional Chemistry*, La Chimie Professionnelle" **cyberBook** with student contributions between 1998 and 2002.
<http://chemphys.u-strasbg.fr/mpb/teach/index.html>
- 053** M.-P. BASSEZ (1998) **Pioneer** in Strasbourg and in France, for the Opening on the Web of the open access "*Server ChemPhys for Science and Pedagogy*, Serveur scientifique et pédagogique ChemPhys". 5th Oct. 1998, Strasbourg-Fr. (F.D.S.P. Fecit De Sua Pecunia from 1998 until 2007. Since Sept 2007, the sites are hosted by a server of the IUT, Univ. Strasbourg.)
<http://chemphys.u-strasbg.fr>
- 052** M.-P. BASSEZ (1997-1998) **Director** of Thomas WITZEL report: "*Test of a Molecular Geometry Software and Study of Supercritical Water*". IUT, Univ. Robert Schuman, Strasbourg.
- 051** M.-P. BASSEZ (1997) "*Energy and the Origin of Life*". **Oral** Exchanges. Colloque de prospective en exobiologie, CNRS, **Roscoff**, Fr, 1-4 July 1997.
- 050** M.-P. BASSEZ, "*The first study of the free rotating glycine molecule*". **Poster** 163 11th Int. Conference on the Origin of Life, ISSOL'96, **Orléans**, France, 7-12 July 1996.
- 049** M.-P. BASSEZ (1995, 1996) "*Could Life on Earth have Originated in Space?*" **Conferences**, International Space University, **ISU**, **Strasbourg-Illkirch**, Fr, Nov.1995 and Nov.1996.

The above list concerns achievements in the international open access communication of my lectures and of student reports with the server and site *ChemPhys* that I created in 1998. It concerns also the continuation of my research on the *Origin of Life* that I started with the spectroscopy of diatomic molecules (1969-1973), the spectroscopy and radioastronomy of interstellar molecules (1976-1985) and the structure of liquid water (1986-1990). Since 1995, I consider life near hydrothermal vents, studying the structure of supercritical & high-pressure water and the interaction of high subcritical water with the minerals hosted by rocks. I propose that organic molecules of biological interest can form inside pores

and inclusions in the rocks considering the rock as reactant and not only catalyst, and I call *Geobiotropy* this process of transformation of the rock to form molecules of life.

- 048** M.-P. BASSEZ (1997) "*Several Propositions for the Organization in Semesters, of the Studies in University Institutes of Technology, for Pluridisciplinary Diplomata and for a Library in the University of Strasbourg*". **Document** written for the Management Assembly of the Institute Robert Schuman, 7 mai 1997.
<http://chemphys.u-strasbg.fr/mpb/CV/Bassez/Bassez1997Plurid.pdf>
- 047** M.-P. BASSEZ (1996) "*Several Suggestions for a Reform of the 1st Cycle in the University (Semesters, Semester of orientation, Student Choice, Various Modules, Pluridisciplinary Diplomata)*". **Propositions** written for the National Education Forum, Etats généraux de l'Université, organized by François Bayrou, ONISEP-Paris, Oct. 1995 - April 1996, with a note concerning Research.
- 046** M.P. BASSEZ (1995) "*Several Suggestions for a Reform of the University 1st Cycle*", *Quelques suggestions pour une réforme du 1^{er} cycle universitaire*". **Poster**, 12th JIREC, Journées de l'Innovation et de la Recherche dans l'Enseignement de la Chimie, Days on Innovation and Research in Chemistry Teaching".
Chemical Society of France and University Louis Pasteur, Strasbourg, 31 May-2 June 1995.
<http://www.societechimiquedefrance.fr/IMG/pdf/JIREC-Compil-2.pdf>
<http://chemphys.u-strasbg.fr/mpb/CV/Bassez/Bassez1995JIREC.pdf>
- 045** F.F. MUGUET, M.-P. BASSEZ (1998) "*Vibrations and VRT Dynamics of the Ammonia Dimer*" **Conference on line**, ECCC5, 5th electronic computational conference on line,
<http://chemphys.u-strasbg.fr/mpb/papers/eccc5A/abstract.html>
/hackberry.chem.niu.edu/ECCC5 Nov.1998.
- 044*** F.F. MUGUET, M.-P. BASSEZ, G.W. ROBINSON (1998) "*An ab-initio UHF Study of the Equilibrium and Dissociation Saddle Point Geometries of the Hydronium Radical*". **Article***, Internet Journal of Chemistry www.ijc.com/articles/1998v1/24 08 May 1998
- 043** F.F. MUGUET, M.-P. BASSEZ, G.W. ROBINSON (1996) "*Ab-initio Study of the Hydronium Radical. Investigation of the UHF Potential Energy Surface*". **Conference on-line**, ECCC3, 3rd electronic computational conference.
<http://chemphys.u-strasbg.fr/mpb/papers/eccc3A/abstract.html>
<https://hackberry.chem.niu.edu/ECCC3> Nov. 1996
- 042*** F.F. MUGUET, G.W. ROBINSON, M.-P. BASSEZ (1995) "*Evaluation of the Vibration-Rotation Tunneling Dynamics at the BSSE-corrected Global Minimum. Geometry of the Ammonia Dimer*". **Article***, J. Chemical Physics, 102, 9, p. 3655-3661.
- 041*** F.F. MUGUET, G.W. ROBINSON, M.-P. BASSEZ (1991) "*The Intermolecular Vibrations of the Bifurcated Water Dimer: an Ab-initio Study*". **Article***
International Journal of Quantum Chemistry, 39, p.449-454.
<https://onlinelibrary.wiley.com/toc/1097461x/39/3>
- 040** M.-P. BASSEZ, F.F. MUGUET, G.W. ROBINSON (1990) "*The Hydrated Electron*". **Poster**, Symposium on the solvated electron, **Argonne** national Laboratory, Illinois, 16-17 July 1990.
- 039** M.-P. BASSEZ, F.F. MUGUET, G.W. ROBINSON (1990) "*The Hydrated Electron*", **Poster**, Gordon Research Conf. on Radiation Chemistry, **Newport**, Rhodes-Island, 8-13 July 1990.
- 038*** F.F. MUGUET, M.-P. BASSEZ (1990) "*Ab-Initio Computations of one and two Hydrogen or Deuterium Atoms in the Palladium Tetrahedral Site*". **Article***, J. Fusion Energy 9, p. 383-389, 1990.
Poster at the Workshop "*cold fusion phenomena*", **Santa Fe**, New Mexico 23-25 May 1989.

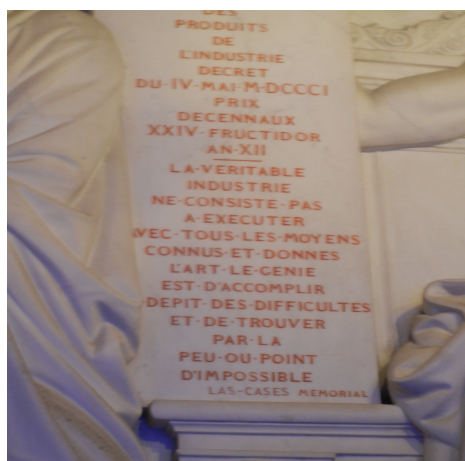
- 037** M.-P. BASSEZ (1988) "*The Hydrated Electron, L'électron hydraté*". **Poster**, Congress of the Chemical Society of France, **Nice**, France, 5-8 September 1988.
- 036** M.-P. BASSEZ, F.F. MUGUET, G.W. ROBINSON (1988) "*The Hydrated Electron as a Rydberg Electron. Ab-initio Calculation*". **Poster**, Gordon Research Conference on Radiation Chemistry, **Newport**, Rhodes Island, USA, 11-15 July 1988.
- 035*** F.F. MUGUET, M.-P. BASSEZ, G.W. ROBINSON (1988) "*Aquated electrons, H₂O anions and OH/H₃O units*". **Article***, J. Physical Chemistry 92, p. 7262-7263.
- 034** M.-P. BASSEZ (1987) "*The so-called anomalous properties of water. A molecular explanation*". **Poster**, Forum on Physical Chemistry, university of **Texas**, Austin, USA.
- 033*** M.-P. BASSEZ, J. LEE, G.W. ROBINSON (1987) "*Is liquid water really anomalous?*". **Article***, J. Physical Chemistry 91, p. 5818-5825.
- 032*** G.W. ROBINSON, J. LEE, M.-P. BASSEZ (1987) "*Cooperativity in liquid water*". **Article*** Chemical Physics Letters 137, p. 376-380.
- 031*** G.W. ROBINSON, J. LEE, M.-P. BASSEZ (1986) "*What is liquid water?*" **Article*** J. Chemical Society, Faraday Trans. 2: Molecular and Chemical Physics 82, p. 2351-2359.
- 030*** J. LEE, G.W. ROBINSON, M.-P. BASSEZ (1986) "*Temperature dependence of proton recombination and proton induced quenching for 2-naphtholate*". **Article*** J. American Chemical Society 108, p. 7477-7480.
- 029** M.-P. BASSEZ (1985) "*Days of Space, Journées de l'espace*". **Bibliographical Booklet**, deposited in the Documentation Base of the CNES, National Center for Space Studies, Centre National d'Etudes Spatiales, Paris-France, 40 p., 4 November 1985.
- 028** M.-P. BASSEZ (1985) "*Structure: Combined Spectroscopic Analysis of Organic Compounds, Structure: Analyse spectroscopique combinée des composés organiques*". **Didactic Publication** for the 1st university cycle, deposited in the Base: ReCoDic Inventory of Softwares, Inventaire ReCoDic des Logiciels (Recherches Coopératives en Didactique de la Chimie, Cooperative Research in Didactic Chemistry).
- 027*** M.-P. BASSEZ (1985) "*The Dipole Moment, Le moment dipolaire*". Enseignement Assisté par Ordinateur, EAO-3^{ème} cycle, **Computer-Based Training** for the 3rd university cycle, analog to StarFit (n°23), deposited in the Base: ReCoDic Inventory of Softwares.
- 026** M.-P. BASSEZ (1985) "*Instrumental Analysis in Physical Chemistry, Analyse physico-chimique instrumentale*". **Didactic Publication**, Publications et Documents en Didactique de la Chimie, Publications and Documents in Didactic Chemistry, 116 p.
- 025** F.F. MUGUET, M.-P. BASSEZ (1985) **Inventors**, F.F. MUGUET, Patent Registrant, "*Device and Process for the Absorption of acoustic waves, Dispositif et procédé d'absorption des ondes sonores*". Data Base of the CEDOCAR, Center of Documentation of the Army. Patent Application n°85 06943.
- 024*** M.-P. BASSEZ (1985) "*Software Wangscan, Logiciel Wangscan*" based on the computer software written for the 1981 Thesis (see annexes). **Software Registration** n°LOG 27, at the SCAM, Civil Society for Multimedia Authors.
- 023*** M.-P. BASSEZ (1985) "*Software Starfit, Logiciel Starfit*" based on the computer software written for the 1981 Thesis (see annexes). **Software Registration** n°LOG 26, at the SCAM, Civil Society for Multimedia Authors.

022 M.-P. BASSEZ (1985) Nationally and locally elected as **Full University Professor**, to practice in the University Robert Schuman (today University of Strasbourg) at the IUT, University Institute of Technology.

The above list concerns some achievements since my appointment as a Full Professor

- 021** M.-P. BASSEZ (1983) **Scientific Organizer** of "*Three Days Dedicated to Extraterrestrial Space*, Journées de l'Espace" IUT, University of Angers-France, 9-11 May 1983.
- 020*** M.-P. BASSEZ (1981) "*Spectroscopic study of glycine and of some related molecules. Rotational Analysis and Observations of the Interstellar Medium*, Etude spectrochimique de la glycine et de quelques molécules connexes. Analyse rotationnelle et observations du milieu interstellaire."
Thesis n° 2498 "Doctorate of State, Doctorat d'Etat, Habilitation à Diriger les Recherches", Université de **Paris-Sud**, centre d'Orsay, (1981, etc0, 313, for the title : **Docteur ès Sciences**, specialty Physical Sciences (Chemistry), Sciences Physiques (Chimie) 12th Oct. 1981.
http://chemphys.u-strasbg.fr/mpb/CV/Bassez/Bassez1981_Thesis.pdf
- 019** M.-P. BASSEZ (1979) "*Experimental Microwaves: Techniques in Microwave Spectroscopy*", Australian Universities **Internal Document** Monash Univ. Clayton, Melbourne, Austr. 67 p.
- 018** M.-P. BASSEZ (1979) "*Radioastronomical Observation of Prebiotic Molecules*"
Oral presentation, International conference, **Brisbane**, Australia.
- 017*** R.D. BROWN, P.D. GODFREY, J.W. STOREY, M.-P. BASSEZ, B.J. ROBINSON, R.A. BATCHELOR, M.G. Mc. CULLOCH, O.E. RYDBECK, A.J. HJALMARSON (1979)
"*A Search for Interstellar Glycine*",
Article*, Monthly Notices of the Royal Astronomical Society 186, p.5-8, 01 Jan. 1979.
<https://academic.oup.com/mnras/article/186/1/5P/1041300>
- 016** M.-P. BASSEZ (1978) **Gift** from the French Embassy in Australia of ~40 books written by French Authors, to the Monash Library, **Clayton**, Australia.
- 015** M.-P. BASSEZ (1978) "*Rotational Analysis of Glycine*",
Oral Presentation, International Conference, **Perth**, Australia.
- 014*** R.D. BROWN, P.D. GODFREY, J.W. STOREY, M.-P. BASSEZ (1978)
"*Microwave Spectrum and Conformation of Glycine*",
Article*, J. Chemical Society, Chemical Communications, p.547-548, 05 July 1978.
<https://pubs.rsc.org/en/content/articlelanding/1978/c3/c39780000547#!divAbstract>
- 013*** G.L. BLACKMAN, R.D. BROWN, P.D. GODFREY, M.-P. BASSEZ, A.L. OTTREY, D. WINKLER, B.J. ROBINSON (1977)
"*Detection of J = 2-1 Emission of Acetonitrile CH₃CN in Sgr.B2*"
Article*, Monthly Notices of the Royal Astronomical Society 180, short comm. p.1-3.
- 012** M.-P. BASSEZ (1975) **Recipient** of one-year **Financial** support from the French Government to conduct Research in Australia, on the newly observed Interstellar Molecules.
- 011** M.-P. BASSEZ (1975) "*Crystallography, Cristallographie*" **Booklet** with my lectures, Faculté des Sciences, Alger, Algérie.
- 010** M.-P. BASSEZ (1972-1975) "*Analysis of Food Compounds by Physical Chemistry Methods* Analyse physico-chimique de composés alimentaires".
Director of ~20 **Engineer Reports**, INA, Institut National Agronomique, Alger, Algérie

- 009** M.-P. BASSEZ (1971) **Director** of the Instrumental Analysis Laboratory, I.N.A., National Agricultural Institute, Alger, Algérie.
Recipient of an Important **Financial** Support from the F.A.O., Food and Agriculture Organization of the United Nations, to purchase, for the I.N.A., three Perkin Elmer instruments: Gaz Phase Chromatograph, Infra-Red Spectrometer, Ultra-Violet/Visible Spectrometer and the Varian Instrument for Electronic Spectroscopy,
- 008*** B. VIDAL, M.-P. BASSEZ, P. GOUDMAND (1973) "*Reactions of active nitrogen with tellurium tetrachloride, Réactions de l'azote activé avec le tétrachlorure de tellure*". **Article***, Journal de Chimie-Physique 9, 1278-1284.
- 007*** M.-P. BASSEZ (1971) "*Contribution to the study of the reactions of active nitrogen with elements of the group VI B, by spectroscopy of electronic transitions and by electron paramagnetic resonance, Contribution à l'étude par spectroscopie électronique et résonance paramagnétique électronique des réactions de l'azote activé sur des éléments du groupe VI B*" **Thesis**, Université des Sciences et Techniques de Lille, for the title of **Doctor**, specialty Physical Chemistry, 30th June 1971.
http://chemphys.u-strasbg.fr/mpb/CV/Bassez/Bassez1971_Thesis.pdf
- 006*** B. VIDAL, M.-P. BASSEZ, P. GOUDMAND (1970) "*Reactions of active nitrogen with tellurium atoms*" **Article***, Chemical Physics Letters, 5 (7), 398-400.
- 005*** P. DEVOLDER, M.-P. BASSEZ, P. GOUDMAND (1970) "*Study by Electron Paramagnetic Resonance, EPR, of the polymers formed during the reaction of active nitrogen with sulfur compounds, Etude par résonance paramagnétique électronique des polymères formés dans la réaction de l'azote activé sur les dérivés du soufre*". **Article***, Comptes Rendus de l'Académie des Sciences, Paris, série C, 270, 1344-1347.
- 004** M.-P. BASSEZ (July 1970) "*Rotational Analysis of NS*" **Oral** Presentation, National Research Council of **Ottawa** (Herzberg Institute of Astrophysics since 1975), Ontario, Canada.
- 003*** M.-P. BASSEZ, B. VIDAL, O. DESSAUX, P. GOUDMAND (1970) "*Rotational Analysis of the Bands 0.5 and 0.6 in the 5/2 - X²Π_{3/2} NSe system, Analyse rotationnelle des bandes 0,5 et 0,6 du système 5/2 - X²Π_{3/2} de NSe*". **Article***, Comptes Rendus de l'Académie des Sciences, Paris, série C, 270, 377-380.
- 002** M.-P. BASSEZ (1969) "*Study of the free radical NS by Electron Paramagnetic Resonance, EPR Etude par Résonance Paramagnétique électronique du radical libre NS*". **Oral** Presentation, Congress of the Chemical Society of France, **Lille**.
- 001*** M.-P. BASSEZ (1969) "*Study of free radicals by optical and radiowave spectroscopy, Etude des radicaux libres par spectroscopie optique et spectroscopie des radiofréquences*". **Dissertation**, Univ. of Sciences and Techniques, Lille, Fr, for the obtention of the D.E.A., Diplôme d'Etudes Approfondies, specialty Physical-Chemistry, June 1969.



INTERNATIONAL MOBILITY

Between 1968 and 1985, international mobility was undertaken upon my private initiative, since the international services inside the French universities were not yet open.

LILLE-FRANCE (Oct. 1968 –Sept. 1971)

My teaching load concerned practical classes in general chemistry and tutorials in spectroscopy, at the "**Université des Sciences et Techniques**" while my research work was accomplished in Dr. Pierre Goudmand's Spectroscopy laboratory, on the theme of chemiluminescence of diatomic free radicals with the goal to study the reaction of active nitrogen on sulfur, selenium and tellurium atoms. The study by electron paramagnetic resonance, EPR, of the association in the solid phase of the free radicals NS, led to a novel macromolecular structure with branched side chains on the N-N bonds, and paramagnetic properties. During the month of **July 1970**, **Prof. Dr. Gerhard Herzberg (1971 Nobel Laureate in Chemistry)** permitted that I use his equipment at the **National Research Council of Ottawa**, in order to improve the results I obtained in Lille. This work was reported in 4 original and independent articles published in international journals and in a Doctor thesis, specialty physical chemistry.

"Contribution à l'étude par spectroscopie électronique et résonance paramagnétique électronique, des réactions de l'azote activé sur des éléments du groupe VI B".

ALGER-ALGERIA (Oct. 1971-Feb. 1976)

Attracted by higher grade and salary, and also by the sun, the beauty of the desert and the Mediterranean plants and flowers, I went to the "**Institut National Agronomique**" of Alger, in order to accomplish at the age of 24, some important teaching load and responsibility functions. I was in charge (we would nowadays say: director) of the engineer instrumental physical-chemistry laboratory and of the 4th and last student year of this institute. I had to direct, as far as science and teaching were concerned, a small team of technical cooperants and about twenty engineer students per year. Financial support from international organisms such as F.A.O. was quite consequent and it was necessary to write proposals and to develop the laboratory with a great number of analytical instruments.

My lectures in this "INA", were related to thermochemistry, instrumental analysis, electrochemistry, oenology, food physical-chemistry and I was also in charge of practical classes in instrumental analysis. Between October 1974 and February 1976, I gave lectures and tutorials on the properties of matter and on cristallography, at the "**Ecole Polytechnique**" of Alger and I gave also tutorials and practical classes on physics of the solid state at the "**Faculté des Sciences**".

My research work was in direct connection with wine, cereal and oil companies and consisted in thermal, spectroscopic and chromatographic analyses with the modern equipment acquired by the laboratory. Results were published in about twenty engineer student reports. I could also initiate myself to fundamental research in astronomy, with Professor Svetchnikov, at the **observatory of Bouzareah**, Alger.

A detailed description of the accomplished work can be found in the letters of recommendation written by Professor Arbib, director of the department.

MELBOURNE-AUSTRALIA (March 1976-June 1980)

In the continuation of the spectroscopic work on diatomic molecules that I started in Lille, I was interested in the interstellar medium study of our galaxy, and thanks to Dr. James Lequeux, who was aware of the unique laboratory in the world working both in spectroscopy and radioastronomy, I went to Australia, in the university Monash, at Clayton, **Melbourne**, in the laboratory of Professor Ron D. Brown. There, fundamental research fulfilled my time. Without husband neither children, at a rate of at least 12 h per day, without rest neither on Saturday nor on Sunday and almost without holidays besides around conferences, I spent four and a half years of my life studying **interstellar molecules**.

The main goal was to study the **rotational structure** of a molecule essential for living organisms to exist: **glycine**, the simplest amino-acid. The first results of my experimental work were obtained with a cell conceived by John Storey and were introduced in his Ph.D. thesis. Then, John Storey "kindly provided the portion of his Ph.D. thesis relating to the study of glycine" to American scientists of the N.B.S., National Bureau of Standards: R.D. Suenram and F.J. Lovas (J. Mol. Spectroscopy, Sept.1978, 72 :372) who could consequently build a cell in the required frequency domain for the analysis. I continued in Monash with the non-appropriate cell, working on some experimental improvements. Although very complicated studies, my results were published before those of Suenram and Lovas. This research was accomplished with micro-wave spectroscopy equipment, and also mass and infra-red spectroscopy. Data were exploited through computing theoretical analysis.

With other scientists, I personally **searched** for this amino-acid in the molecular **interstellar clouds** of our galaxy during ~one month at the radiotelescope of Parkes, Australia, and ~one week at Kitt-Peak, Arizona, USA. This molecule has been searched also in Onsala, Sweden. But we did not report any positive detection. An American team: Snyder and Buhl obtained some observation time just before us in Kitt-Peak. Their report was also negative.

The second part of the project concerned studies in spectroscopy and radioastronomy of molecules connected to glycine, such as CH_3CN et CH_3OH and their search in the interstellar medium. Some results are published in articles and some others are reported in my "Docteur es Sciences thesis".

I also taught some practical classes for students in medical and engineering sciences and I was a tutor in French, physics and chemistry in the halls of residence: during two hours per week, I was available for students to answer their questions.

ANGERS-FRANCE (July 1980-December 1985)

At the end of my stay in Melbourne, although P. Thaddeus and C.A. Gottlieb invited me twice (April and July 1980) to work in their laboratory at NASA, Goddard Institute for Space Studies, with the goal to study the spectroscopy of ions, I preferred to return in France and make my country profit of the experience I acquired overseas.

As soon as I arrived at the **Institut Universitaire de Technologie**, Angers, in the applied biology department, I created four new experiments for practical classes: spectroscopic analysis of organic compounds with UltraViolet-Visible, Infra-Red and Nuclear Magnetic Resonance techniques and combined analysis of the spectra including mass spectra. My teaching load concerned tutorials in chemistry-biochemistry molecular structures and also lectures and tutorials in physics considering the instrumentation used in biology, medicine and agriculture. In 1982, my teaching concerned also tutorials and practical classes in computing. I was in charge of the practical classes equipments in chemistry and physics. I was also involved in the organization of some conferences for students given by external speakers, in some student study trips and in communication between the department and some industrial laboratories. I was also member of several committees.

In 1985 and 1986, as a scientific expert, I contributed to the construction of the physico-chemical data base GAPHYOR, on the Orsay-France campus. The director was J.C. Delcroix also director of the Supelec engineering school. I also wrote a software program for the determination of molecular

structures through combined analyses of the UV-Vis, IR, RMN and mass spectra: STRUCTURE and another one for the determination of dipole moments: DIPOLE. I contributed to the study of an absorption process of acoustic waves with ferrofluids. With two other colleagues, I organized a three-days meeting on the theme: SPACE. I was the scientific organizer. One colleague organized a connection between art and science and the third one was the administrative coordinator.

Many other projects could not be achieved. For instance, the construction of a radiometric hygrometer in the range of 22,2 GHz, for which I had found an international collaboration with the Jet Propulsion Laboratory, the Georgia Institute of Technology, and a French laboratory in electronics which abandoned the project, or a collaboration with B.E. Turner of the National Radioastronomy Observatory in Charlottesville-USA, for radioastronomical search with American and French telescopes, project which has not been financed.

LUBBOCK-TEXAS-U.S.A. (Jan. 1986-Dec. 1989)

In the **SPQR**, SubPicosecond and Quantum Radiation laboratory, in Texas Tech University, Lubbock, directed by G. Wilse Robinson, Robert A. Welch Professor, I worked only in research: on the **structure of liquid water**, of **hydrated ions and electrons**, using for a very short time subpicosecond laser spectroscopy, and various computers including the Cray in Pittsburgh for computational chemistry.

STRASBOURG - FRANCE (Jan. 1990-)

In Strasbourg, my research work continued with the SPQR laboratory. Then, in 1995, after an oral lecture on the Origin of Life given as a guest Lecturer at the **ISU**, International Space University, Strasbourg, my research took the orientation towards an **hydrothermal origin of life**, which was coherent with a study in Australia of an origin of life through interstellar molecules and a study in the USA of the structure of water. In 2003, I started to connect the separated world of rocks and world of life, by considering specific rocks as reactants in prebiotic synthesis, through transfer of electrons. I am grateful to the CNRS and the Group of Research in Exobiology for their financial support. During the year 2008-2009, I contributed as a guest Editor of 23 articles for the special volume "Origin of Life" of the open-access International Journal of Molecular Sciences, **IJMS**.

My teaching load, in the **I.U.T.** Robert Schuman, concerned physical-chemistry (thermodynamics, kinetics, atoms and molecules) and instrumental analysis (spectroscopy and chromatography) and various fields concerning reports of DUT students (2 first years after high school). In 1998, I opened on the web, **FDSP** (Fecit De Sua Pecunia) a Linux server, **ChemPhys**, with student reports and my lectures, in open access worldwide, which was for Strasbourg and France a real innovation.

My participation in various activities has been diverse: International Exchange Agreement between universities, Contribution to the elaboration of new teaching national programs, Search for financial funds from companies, Communication with some industrial laboratories, Participation in numerous committees, scientific and administrative boards of directors, boards of examiners for teaching, research, university professors and lecturers appointments, Participation in the annual Week of Science and in numerous commissions, meetings, assemblies, forums, workshops...

In July 2012, I was gratified with the title "Professeur honoraire de l'Université de Strasbourg" and I became more available for research, participation in conferences and writing of articles on the subject of the interaction of water in high subcritical conditions of temperature and pressure, with minerals included inside the rocks. Since 2016, I propose the new concept of geobiotropy to represent the transformation of ferrous silicate rocks, considering them as reactants, and not only as catalysts, towards the synthesis of molecules of life. I also propose a new hypothesis to explain at basic pH and without the presence of microorganisms, the ferric compounds observed in the Archean to early Paleoproterozoic Banded Iron Formations (Bassez OLEB 2018, open).