NASA Technical Memorandum 88382

Publications of the Exobiology Program for 1984

A Special Bibliography

FEBRUARY 1986

NASA

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A Special Bibliography

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National Aeronautics
and Space Administration

Scientific and Technical Information Branch

1986

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INTRODUCTION

The Exobiology Program, within the Office of Space Science and Applications of the National Aeronautics and Space Administration, is an integrated program to methodically investigate those processes that may have been responsible for, or related to, the origin, evolution, and distribution of life in the universe.

This report contains a listing of 1984 publications emanating from research supported by the Exobiology Program. Our intent in compiling this report is twofold: we want to provide the scientific community with an annual publication listing (as we have done since 1975) of current NASA-supported research in this field, and we hope to stimulate the exchange of information and ideas among scientists working in the different areas of the program.

Research supported by the Exobiology Program is carried out in the areas of Chemical Evolution, Organic Geochemistry, Origin and Evolution of Life, Planetary Environments, Life in the Universe, and Search for Extraterrestrial Intelligence (SETI).

Each area is defined as follows:

CHEMICAL EVOLUTION focuses on the nonbiological synthesis of biologically significant organic molecules under conditions presumed to have existed on the primitive earth or on any primitive planet before the advent of life.

ORGANIC GEOCHEMISTRY involves 1) analyzing ancient terrestrial rocks for organic molecules and inclusions of biological origin, and 2) developing techniques to isolate organic matter and to distinguish organic matter of biological origin from that of nonbiological origin.

ORIGIN AND EVOLUTION OF LIFE includes studies of 1) the origin of essential life processes and systems including the nucleic acid and protein biopolymers, mechanisms, genetic information transfer, energy collection and cellular and subcellular structures, and 2) the evolution of primitive microbial ecologies.

PLANETARY ENVIRONMENTS includes 1) characterizing microorganisms capable of surviving and/or growing in extreme conditions approaching those of planetary environments, 2) developing methodologies and techniques to detect and characterize life-related molecules in extraterrestrial environments, and 3) developing methods to determine planetary environmental characteristics important for chemical evolution processes.

LIFE IN THE UNIVERSE involves research and analysis in two distinct but related areas: 1) forms, abundances, and reactivity of the biogenic elements; and 2) effect of planetary, solar, and astrophysical phenomena on evolution of complex life.

SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) involves the search for extraterrestrial intelligent life by detecting signals in the microwave region of the spectrum.

The bibliography is divided into the six research areas noted above and a miscellaneous section. Within each research area, references are listed alphabetically by author. Authors who are principal investigators are identified by an asterisk. In addition, current addresses for all Principal Investigators are given in the Appendix.

We wish to thank all the participants in the Exobiology Program for their cooperation in responding to our request for a listing of their 1984 publications.

Donald L. DeVincenzi
December 1985

CHEMICAL EVOLUTION

AJELLO, J.M.; SHEMANSKY, D.; KWOK, T.L.; YUNG*, Y.L.
STUDIES OF EXTREME-ULTRAVIOLET EMISSION FROM RYDBERG SERIES OF H_2 BY ELECTRON IMPACT.
PHYSICAL REVIEW-A
29(2): 636-653, 1984.
(GWU 6415)

BASILE, B.P.; MIDDLEDITCH, B.S.; ORO*, J.
POLYCYCLIC AROMATIC HYDROCARBONS IN THE MURCHISON METEORITE.
ORGANIC GEOCHEMISTRY
5(4): 211-216, 1984.
(GWU 6332)

BONNER*, W.A.
EXPERIMENTAL EVIDENCE FOR BETA-DECAY AS A SOURCE OF CHIRALITY BY ENANTIOMER ANALYSIS.
ORIGINS OF LIFE
14: 383-390, 1984.
(GWU 5503)

BONNER*, W.A.; LIANG, Y.
BETA-DECAY, BREMSSTRAHLEN, AND THE ORIGIN OF MOLECULAR CHIRALITY.
JOURNAL OF MOLECULAR EVOLUTION
21(1): 84-89, 1984.
(GWU 6433)

CARR, S.A.; BIEMANN*, K.
IDENTIFICATION OF POSTTRANSLATIONALLY MODIFIED AMINO ACIDS IN PROTEINS BY MASS SPECTROMETRY.
METHODS IN ENZYMOLOGY
106: 29-58, 1984.
(GWU 6446)

CHU, B.C.F.; ORGEL*, L.E.
PREPARATION OF LIGATION INTERMEDIATES AND RELATED POLYNUCLEOTIDE PYROPHOSPHATES.
BIOCHIMICA ET BIOPHYSICA ACTA
782: 103-105, 1984.
(GWU 5703)

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ROOM-TEMPERATURE LUMINESCENCE FROM KAOLIN INDUCED BY ORGANIC AMINES.
CLAYS AND CLAY MINERALS
32(1): 58-66, 1984.
(GWU 5389)

FAKHRAI, H.; INOUE, T.; ORGEL*, L.E.
TEMPERATURE-DEPENDENCE OF THE TEMPLATE-DIRECTED SYNTHESIS OF OLIGOGUANYLATES.
TETRAHEDRON
40(1): 39-45, 1984.
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FERRIS*, J.P.
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62(35): 22-35, 1984.
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FERRIS*, J.P.; BOSSARD, A.; KHWAJA, H.
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JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
106: 318-324, 1984.
(GWU 5347)

FERRIS*, J.P.; HAGAN, W.J., JR.
HCN AND CHEMICAL EVOLUTION: THE POSSIBLE ROLE OF CYANO COMPOUNDS IN PREBIOTIC SYNTHESIS.
TETRAHEDRON
40(7): 1093-1120, 1984.
(GWU 5718)

FERRIS*, J.P.; YANAGAWA, H.; HAGAN, W.J., JR.
THE PREBIOTIC CHEMISTRY OF NUCLEOTIDES.
ORIGINS OF LIFE
14: 99-106, 1984.
(GWU 5508)

FERRIS*, J.P.; YANAGAWA, H.; DUDGEON, P.A.; HAGAN, W.J., JR.; MALLARE, T.E.
THE INVESTIGATION OF THE HCN DERIVATIVE DIIMINOSUCCINONITRILE AS A PREBIOTIC CONDENSING AGENT. THE FORMATION OF PHOSPHATE ESTERS.
ORIGINS OF LIFE
15: 29-43, 1984.
(GWU 6088)

FRIEDSON, A.J.; YUNG*, Y.L.
THE THERMOSPHERE OF TITAN.
JOURNAL OF GEOPHYSICAL RESEARCH
89(A1): 85-90, 1984.
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14: 643-648, 1984.
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176(2): 279-306, 1984.
(GWU 6056)

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CHIRAL SELECTION IN POLY(C)-DIRECTED SYNTHESIS OF OLIGO(G).
NATURE
310(5978): 602-604, 1984.
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KASTING, J.F.[1]
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ORIGINS OF LIFE
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CHANGES IN ATMOSPHERIC CO_2: INFLUENCE OF THE MARINE BIOTA AT HIGH LATITUDE.
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89(D3): 4629-4637, 1984.
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IN: ABSTRACTS WITH PROGRAMS 1984, 97TH ANNUAL MEETING OF THE GEOLOGICAL SOCIETY OF AMERICA, RENO, NEVADA, NOVEMBER 5-8, 1984, P. 575.
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IN: SATELLITE SENSING OF A CLOUDY ATMOSPHERE: OBSERVING THE THIRD PLANET (HENDERSON-SELLERS, A., ED.).
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NEW YORK: PLENUM PRESS, P. 295-312, 1984.
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PRATHER, M.J.; MCELROY*, M.B.; WOFSY, S.C.
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312: 227-231, 1984.
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20: 147-156, 1984.
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15: 7-15, 1984
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This work was performed under NASA Contract NASw-3165.

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
NASA TM-88382		

4. Title and Subtitle	5. Report Date
PUBLICATIONS OF THE EXOBIOLOGY PROGRAM FOR 1984 - A SPECIAL BIBLIOGRAPHY	February 1986
	6. Performing Organization Code
7. Author(s)	8. Performing Organization Report No.
Janice S. Wallace and Donald L. DeVincenzi, Compilers	
	10. Work Unit No.
9. Performing Organization Name and Address	11. Contract or Grant No.
Science Communication Studies, DCE The George Washington University Washington, DC 20036 and NASA Office of Space Science and Applications Washington, DC 20546	NASW-3165
	13. Type of Report and Period Covered
12. Sponsoring Agency Name and Address	Technical Memorandum
National Aeronautics and Space Administration Washington, DC 20546	14. Sponsoring Agency Code EBR

15. Supplementary Notes

Janice S. Wallace: The George Washington University, Washington, D.C.
Donald L. DeVincenzi: NASA Office of Space Science and Applications, Washington, D.C.

For previous bibliography in this series, see NASA TM-86653.

16. Abstract

List of 1984 publications resulting from research pursued under the auspices of NASA's Exobiology Program.

17. Key Words (Suggested by Author(s))	18. Distribution Statement
Chemical Evolution, Organic Geochemistry, Life Detection, Origin of Life, Exobiology, Extraterrestrial Life, SETI, Planetary Protection, Bibliography	Unclassified - Unlimited Subject Category 55

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	41	A03

For sale by the National Technical Information Service, Springfield, Virginia 22161

NASA-Langley, 1986

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