JOURNALS

Go Mobile

CJO Mobile (CJOm) is a streamlined Cambridge Journals Online (CJO) for smartphones and other small mobile devices



- Use CJOm to access all journal content including FirstView articles which are published online ahead of print
- Access quickly and easily thanks to simplified design and low resolution images
- Register for content alerts or save searches and articles – they will be available on both CIO and CIOm
- Your device will be detected and automatically directed to CJOm via: journals.cambridge.org



CAMBRIDGE

JOURNALS

Proceedings of the International Astronomical Union

Published for The International Astronomical Union (IAU)

Chair of the IAU Editorial Board

Thierry Montmerle, Institut d'Astrophysique de Paris, France

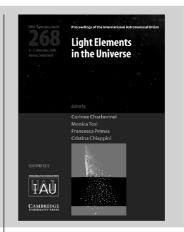
Proceedings of the International Astronomical Union comprises high-quality and timely previews and reviews of fundamental and state-of-the-art astrophysical developments around the world, as presented at some ten IAU-sponsored conferences per year. Subjects covered are broad, and in the past have included fundamental astronomy; the sun and heliosphere; planetary systems; stars and variable stars; interstellar matter; the galactic system; galaxies and the Universe; optical and infrared techniques; radio astronomy; and space and high-energy astrophysics. The Series is essential reading for both professional astrophysicists and students, for finding comprehensive reviews and for studying new developments in specialized fields.

Price information

is available at: http://journals.cambridge.org/iau

Free email alerts

Keep up-to-date with new material – sign up at http://journals.cambridge.org/iau-alerts



Proceedings of the International Astronomical Union

is available online at: http://journals.cambridge.org/iau

To subscribe contact Customer Services

in Cambridge:

Phone +44 (0)1223 326070 Fax +44 (0)1223 325150 Email journals@cambridge.org

in New York:

Phone +1 (845) 353 7500 Fax +1 (845) 353 4141 Email subscriptions_newyork@cambridge.org

For free online content visit: http://journals.cambridge.org/iau



CAMBRIDGE

JOURNALS

Geological Magazine

Editors

Mark Allen, University of Durham, UK Graham E. Budd, University of Uppsala, Sweden Philip Leat, British Antarctic Survey, UK Andy Whitham, CASP, University of Cambridge, UK

Geological Magazine, established in 1864, is one of the oldest and best-known periodicals in the Earth Sciences. Its worldwide circulation, broad scope and high production values keep the journal at the forefront of the field. It publishes original papers, review articles, rapid communications and discussions about all aspects of the geosciences. It covers petrology, geochemistry, palaeontology, sedimentology, stratigraphy, structural geology, geophysics, and geomorphology, and it includes contributions on volcanology, marine geology, glaciology, palaeoclimatology, palaeoceanography, geochronology, biostratigraphy, geohazards and Earth history, providing a niche for interdisciplinary papers on regional geology and Earth history.

Price information

is available at: http://journals.cambridge.org/geo

Free email alerts

Keep up-to-date with new material – sign up at http://journals.cambridge.org/geo-alerts



Geological Magazine

is available online at: http://journals.cambridge.org/geo

To subscribe contact Customer Services

in Cambridge:

Phone +44 (0)1223 326070 Fax +44 (0)1223 325150 Email journals@cambridge.org

in New York:

Phone +1 (845) 353 7500 Fax +1 (845) 353 4141 Email subscriptions_newyork@cambridge.org

For free online content visit: http://journals.cambridge.org/geo



CAMBRIDGE

JOURNALS

Polar Record

A Journal of Arctic and Antarctic Research

The official journal of the Scott Polar Research Institute

Editor-inChief

lan R. Stone, Scott Polar Research Institute, Cambridge, UK

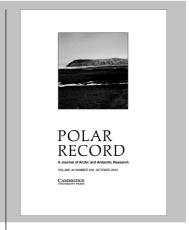
Polar Record is the premier international, peer-reviewed, scholarly journal, publishing articles on a wide variety of areas of polar research in both the Arctic and the Antarctic and keeping its readers up-to-date with an extensive range of topics and concerns. The journal includes original primary research papers in the physical sciences, life sciences, polar technology, humanities, and social sciences, as well as papers concerning current political, economic, legal, and environmental issues. Polar Record provides rapid publication, normally within nine months of the initial submission.

Price information

is available at: http://journals.cambridge.org/pol

Free email alerts

Keep up-to-date with new material – sign up at http://journals.cambridge.org/pol-alerts



Polar Record

is available online at: http://journals.cambridge.org/pol

To subscribe contact Customer Services

in Cambridge:

Phone +44 (0)1223 326070 Fax +44 (0)1223 325150 Email journals@cambridge.org

in New York:

Phone +1 (845) 353 7500 Fax +1 (845) 353 4141 Email subscriptions_newyork@cambridge.org

For free online content visit: http://journals.cambridge.org/pol



AIMS AND SCOPE

International Journal of Astrobiology publishes original papers and review articles on Astrobiology Science. News of interest to the astrobiology community and book reviews will also feature. Contact one of the editors if you have questions regarding suitability of a subject area, news submission or book review.

The fields covered include:

- * Cosmic prebiotic chemistry
- * Planetary evolution
- * Search for planetary systems and habitable zones
- * Origins, evolution and distribution of life
- * Extremophile biology and experimental simulation of extraterrestrial environments
- * Life detection in our solar system and beyond
- * Technologies and space missions for astrobiology, and planetary protection
- * Human expansion, ecosystems beyond Earth and terraforming
- * Ecosystems beyond Earth
- * Intelligent life and societal aspects of astrobiology

There are no page charges or length restrictions. All articles are submitted to peer-review.

SUBMISSION OF MANUSCRIPTS

Contributions for consideration for publication should be submitted via our online website at http://mc.manuscriptcentral.com/submit_ija

During the submission process authors will be asked to select an appropriate Editor for their paper. Areas of interest for the Editors are as follows:

Dr. Simon Mitton – General Papers, Philosophy, Astronomy

Dr. Rocco Mancinelli – Extremophiles, Microbiology, Nitrogen Cycling

Dr. Frances Westall – Origin of Life in a Geological Context, Search for Life on Mars, Biosignatures of Early Earth Sediments.

The *initial* submission should preferably be in Word or PDF format. If your paper is accepted you will need to submit a Word document with illustrations as separate eps or tif files. LateX files can also be accepted for the final version; however a PDF must also be supplied for printing.

For papers with high resolution figures or micrographs please *also* submit a hard copy version – in colour if appropriate. Black and White halftones and colour illustrations have to be scanned at a high resolution (minimum 300dpi). For very large files contact our production department for further instruction.

Please consult our full Instructions for Contributors at journals.cambridge.org/ija

Cover Photograph: The Orion Nebula (ESO PR Photos 03a-d/01) obtained with the ISAAC multi-mode instrument at the VLT ANTU 8.2.-m telescope at the ESO Paranal Observatory. Photograph courtesy of and reproduced with permission of Mark McCaughrean and the European Southern Observatory (ESO).

International Journal of Astrobiology

Volume 10 Issue 2 April 2011

CONTENTS

Research papers

- 77 A failure of serendipity: the Square Kilometre Array will struggle to eavesdrop on human-like extraterrestrial intelligence D.H. Forgan & R.C. Nichol
- 83 **The origin of life from primordial planets** *Carl H. Gibson, Rudolph E. Schild & N. Chandra Wickramasinghe*
- 99 Studies on ultrasmall bacteria in relation to the presence of bacteria in the stratosphere
 - Fawaz Alshammari, Milton Wainwright, Khalid Alabri & Sulamain A. Alharbi
- 105 Microstructural investigation of the Carancas meteorite
 Kani Rauf, Anthony Hann, Chandra Wickramasinghe & Barry E. DiGregorio
- 113 Intelligence's likelihood and evolutionary time frame Marc Bogonovich
- 123 Limits to biodiversity cycles from a unified model of mass-extinction events Georg Feulner
- 131 Temporal dispersion of the emergence of intelligence: an inter-arrival time analysis *Thomas W. Hair*



