

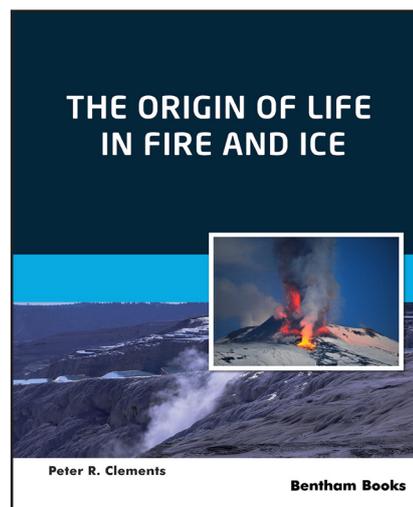
## The Origin of Life in Fire and Ice

**Written by:** Peter R Clements.

**Published By:** Bentham Books

**Information :** <https://benthambooks.com/book/9789815040319/>

**Audience:** general readers interested in molecular evolution and the origin of life.



This book is only 96 pages long and is available both as an ebook and in print; the print version is nicely presented and contains numerous colour photographs. The author is an enthusiast about his subject, which is to explain how life on Earth started — a question that intrigues us all.

However, reading this book requires more biochemical background than this reviewer possesses to follow all the reasoning of Clements' hypothesis, and to be certain that it provides answers to questions about the origin of life on Earth. The Australian Academy of Science site includes a webpage which states: 'And the fact is, we don't really know exactly how life arose from inorganic matter all those billions of years ago (AAS, n.d.). An earlier article in the *Scientific American* also gives reasons for doubting similar hypotheses (Horgan, 2011).

*The Origin of Life in Fire and Ice* consists of a preface and seven chapters. The preface provides the starting point for the book; it is clear and very well written. It describes the evolutionary processes going backwards from the present day to the time when there was a last universal common ancestor (LUCA). The science behind the preface is largely accepted. The other seven chapters of the book describe the origin of life from inorganic matter to a living entity and it is in this section that the author has new ideas. Many authors consider deep vents or black smokers are the places where the LUCA emerged. However, the author's opinion is that hot springs with hot and cold thermal cycling was

the likely place for the LUCA to have emerged (p. 41).

I was surprised to find that page v of the preface — describing bacteria and archaea is — repeated word for word on pages 31 and 32. There are also minor typographical errors such as the personal pronoun being written with a lower case 'i' (page 1). I also think that the book's editor should have insisted on more consistency in the size and format of the chemical equations.

The author's review of past research included the Urey-Miller experiments of 1952 and pointed out the way in which these experiments ignited interest in the question of the origin of life. It is remarkable that a recent repetition of the experiment comparing the use of ordinary glass reacting vessels and Teflon-coated glass vessels showed that the glass vessels produced a greater variety of organic compounds than the Teflon-coated vessels (Withers, 2021, pp. 30–31). This is supporting evidence for the important role that rocks and minerals played in providing a framework that allowed complex organic compounds to form.

I found that the writing was very uneven in terms of the academic knowledge required. Some sections are clear and provide a good basis for understanding the problem. Other sections contain non-simplified research quotations written in dense scientific jargon. The author confuses the twin aims of justifying a complex scientific truth and providing a readable scientific account suited to year twelve students, so a major problem lies in deciding the purpose of the

book. For schools to purchase the book, it should address the question of the origin of life on Earth in a way that is accessible to the younger, less knowledgeable readers.

My opinion is that *The Origin of Life in Fire and Ice* is too advanced for most school libraries, but that it is a colourful, well-produced book that could motivate the occasional student into a biochemical career path.

Bill Palmer — Retired senior lecturer in science education, Charles Darwin University.

## REFERENCES

AAS (The Australian Academy of Science). (n.d.). *The origins of life on Earth*. <https://www.science.org.au/curious/space-time/origins-life-earth>

Horgan, J. (2011, February 28). Pssst! Don't tell the creationists, but scientists don't have a clue how life began. *Scientific American Blog Network*. <https://blogs.scientificamerican.com/cross-check/pssst-dont-tell-the-creationists-but-scientists-dont-have-a-clue-how-life-began/>

Withers, N. (2021). Glassware promotes reactions in Miller-Urey experiment, *Chemistry World*, 18(12), 30–31.



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