



Springer

1st  
edition2012, XII, 236 p. 25 illus.,  
22 illus. in color.**Printed book**

Softcover

**Printed book**

Softcover

ISBN 978-1-4419-8443-2

£ 24,99 | CHF 35,50 | 29,99 € |

32,99 € (A) | 32,09 € (D)

Available

**Discount group**

Springer Trade (T)

**Product category**

Popular science

**Series**

Astronomers' Universe

Physics : Physics (general)

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# The Chemical Cosmos

**A Guided Tour**

- **Makes the area of astrochemistry accessible to amateur astronomers and the general educated public**
- **Covers an important, but so far neglected, area of popular science: how do we get from the immediate aftermath of the Big Bang to a chemical rich universe in which life can evolve**
- **Uses a key astronomical molecule- Hydrogen- as guide in the journey through the evolving chemical universe**

If you have ever wondered how we get from the awesome impersonality of the Big Bang universe to the point where living creatures can start to form, and evolve into beings like you, your friends and your family, wonder no more. Steve Miller provides us with a tour through the chemical evolution of the universe, from the formation of the first molecules all the way to the chemicals required for life to evolve. Using a simple Hydrogen molecule – known as H-three-plus – as a guide, he takes us on a journey that starts with the birth of the first stars, and how, in dying, they pour their hearts out into enriching the universe in which we live. Our molecular guide makes its first appearance at the source of the Chemical Cosmos, at a time when only three elements and a total of 11 molecules existed. From those simple beginnings, H-three-plus guides us down river on the violent currents of exploding stars, through the streams of the Interstellar Medium, and into the delta where new stars and planets form. We are finally left on the shores of the sea of life. Along the way, we meet the key characters who have shaped our understanding of the chemistry of the universe, such as Cambridge physicist J.J. Thomson and the Chicago chemist Takeshi Oka. And we are given an insider's view of just how astronomers, making use of telescopes and Earth-orbiting satellites, have put together our modern view of the Chemical Cosmos.

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ISBN 978-1-4419-8443-2 / BIC: PH / SPRINGER NATURE: SCP00002

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