



The Early Earth: Accretion and Differentiation (Geophysical Monograph Series)

From James Badro

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The Early Earth: Accretion and Differentiation provides a multidisciplinary overview of the state of the art in understanding the formation and primordial evolution of the Earth. The fundamental structure of the Earth as we know it today was inherited from the initial conditions 4.56 billion years ago as a consequence of planetesimal accretion, large impacts among planetary objects, and planetary-scale differentiation. The evolution of the Earth from a molten ball of metal and magma to the tectonically active, dynamic, habitable planet that we know today is unique among the terrestrial planets, and understanding the earliest processes that led to Earth's current state is the essence of this volume. Important results have emerged from a wide range of disciplines including cosmochemistry, geochemistry, experimental petrology, experimental and theoretical mineral physics and geodynamics.

The topics in this volume include:

- Condensation of primitive objects in the solar nebula, planetary building blocks
- Early and late accretion and planetary dynamic modeling
- Primordial differentiation, core formation, Magma Ocean evolution and crystallization

This volume will be a valuable resource for graduate students, academics, and researchers in the fields of geophysics, geochemistry, cosmochemistry, and planetary science.

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Editorial Review

Review

"This book reviews our current understanding of the fundamental processes, which took a cloud of gas and dust in the solar nebula to the highly differentiated world we know in a relatively short period of time (probably less than 100 million years, or about 2% of the age of the solar system)."

"The papers follow a standard scientific research style - clear, but terse and to the point with frequent use of acronyms, and an expectation of considerable subject matter knowledge from the reader."

William R. Green (05/09/2016)

About the Author

James Badro is a Professor and Research Director at the Institute of Earth Physics in France. He is a Fellow of the American Geophysical Union and a Life Fellow of the Mineralogical Society of America. His research interests involve deep earth geophysics and geochemistry through high pressure experiments, with special focus on experimental petrology, experimental geochemistry, mineral physics mantle and core composition, structure and dynamics, earth formation and evolution, earth accretion and differentiation. He is a well-known author with numerous research publications including in Science, Nature Materials and Geophysical Monograph Series.

Michael J. Walter is the Professor and Head of School of Earth Sciences at the University of Bristol, UK. His research interests involve high pressure-temperature experimental petrology, geochemistry, and mineral physics with special focus on topics including the differentiation of the mantle and core, Earth accretion, subsolidus lower-mantle phase relations and crystal chemistry, origin and evolution of deep-seated carbonatite magmas and mineral inclusions in diamond. He is a well-known author with numerous publications including in Science and Journal of Geophysical Research.

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