

1. Record Nr.	UNINA9910784541603321
Titolo	The mantle and core [[electronic resource] /] / edited by R.W. Carlson
Pubbl/distr/stampa	Amsterdam ; ; Boston, : Elsevier, 2005
ISBN	1-281-11875-3 9786611118754 0-08-054901-2
Edizione	[1st ed.]
Descrizione fisica	1 online resource (609 p.)
Collana	Treatise on geochemistry ; ; v. 2
Altri autori (Persone)	CarlsonR. W <1954-> (Richard W.)
Disciplina	551.112
Soggetti	Geochemistry Earth Core Earth Mantle
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front Cover; The Mantle and Core; Copyright Page; Dedication; Table of Contents; Executive Editors' Foreword; Contributors to Volume 2; Volume Editor's Introduction; 1 INTRODUCTION; 2 SOLAR INHERITANCE; 3 WHOLE-MANTLE CHARACTERISTICS; 4 THE IMPORTANCE OF RECYCLING; 5 THE CHEMICAL CONSEQUENCES OF PARTIAL MELTING; 6 IS WHAT WE SEE TODAY THE WAY IT HAS ALWAYS BEEN?; 7 PROBING THE CORE; 8 CLOSING THOUGHTS; Chapter 2.01 Cosmochemical Estimates of Mantle Composition; 2.01.1 INTRODUCTION AND HISTORICAL REMARKS; 2.01.2 THE COMPOSITION OF THE EARTH'S MANTLE AS DERIVED FROM THE COMPOSITION OF THE SUN 2.01.3 THE CHEMICAL COMPOSITION OF CHONDRITIC METEORITES AND THE COSMOCHEMICAL CLASSIFICATION OF ELEMENTS 2.01.4 THE COMPOSITION OF THE PRIMITIVE MANTLE BASED ON THE ANALYSIS OF UPPER MANTLE ROCKS; 2.01.5 COMPARISON OF THE PM COMPOSITION WITH METEORITES; 2.01.6 THE ISOTOPIC COMPOSITION OF THE EARTH; 2.01.7 SUMMARY; REFERENCES; Chapter 2.02 Seismological Constraints upon Mantle Composition; 2.02.1 INTRODUCTION; 2.02.2 UPPER-MANTLE BULK COMPOSITION; 2.02.3 UPPER-MANTLE HETEROGENEITY; 2.02.4 LOWER-MANTLE BULK COMPOSITION; 2.02.5 LOWER-MANTLE HETEROGENEITY; 2.02.6 SUMMARY; REFERENCES

Chapter 2.03 Sampling Mantle Heterogeneity through Oceanic Basalts: Isotopes and Trace Elements 2.03.1 INTRODUCTION; 2.03.2 LOCAL AND REGIONAL EQUILIBRIUM REVISITED; 2.03.3 CRUST-MANTLE DIFFERENTIATION; 2.03.4 MID-OCEAN RIDGE BASALTS: SAMPLES OF THE DEPLETED MANTLE; 2.03.5 OCEAN ISLAND, PLATEAU, AND SEAMOUNT BASALTS; 2.03.6 THE LEAD PARADOX; 2.03.7 GEOCHEMICAL MANTLE MODELS; ACKNOWLEDGMENTS; REFERENCES; Chapter 2.04 Orogenic, Ophiolitic, and Abyssal Peridotites; 2.04.1 INTRODUCTION; 2.04.2 TYPES, DISTRIBUTION, AND PROVENANCE; 2.04.3 MAJOR- AND TRACE-ELEMENT GEOCHEMISTRY OF PERIDOTITES 2.04.4 MAJOR- AND TRACE-ELEMENT GEOCHEMISTRY OF PYROXENITES 2.04.5 Nd-Sr ISOTOPE GEOCHEMISTRY; ACKNOWLEDGMENTS; REFERENCES; Chapter 2.05 Mantle Samples Included in Volcanic Rocks: Xenoliths and Diamonds; 2.05.1 MANTLE XENOLITHS: THE NATURE OF THE SAMPLE; 2.05.2 PERIDOTITE XENOLITHS; 2.05.3 ECLOGITE XENOLITHS; 2.05.4 DIAMONDS; ACKNOWLEDGMENTS; REFERENCES; Chapter 2.06 Noble Gases as Mantle Tracers; 2.06.1 INTRODUCTION; 2.06.2 NOBLE GASES AS GEOCHEMICAL TRACERS; 2.06.3 MANTLE NOBLE GAS CHARACTERISTICS; 2.06.4 NOBLE GASES AS MANTLE TRACERS; 2.06.5 CONCLUDING REMARKS; ACKNOWLEDGMENTS; REFERENCES Chapter 2.07 Mantle Volatiles-Distribution and Consequences 2.07.1 INTRODUCTION; 2.07.2 EVIDENCE FROM MANTLE-DERIVED MAGMAS; 2.07.3 EVIDENCE FROM MANTLE-DERIVED SAMPLES; 2.07.4 SUMMARY AND CONCLUSIONS; ACKNOWLEDGMENTS; REFERENCES; Chapter 2.08 Melt Extraction and Compositional Variability in Mantle Lithosphere; 2.08.1 INTRODUCTION; 2.08.2 PHASE EQUILIBRIUM AND MELT EXTRACTION; 2.08.3 THE MANTLE SAMPLE; 2.08.4 THE ROLE OF MELT EXTRACTION; 2.08.5 PERSPECTIVE ON MANTLE THERMAL EVOLUTION; 2.08.6 SUMMARY; ACKNOWLEDGMENTS; REFERENCES Chapter 2.09 Trace Element Partitioning under Crustal and Uppermost Mantle Conditions: The Influences of Ionic Radius, Cation Charge, Pressure, and Temperature

---

### Sommario/riassunto

Though largely inaccessible, the geochemistry of Earth's mantle and core can be examined through a wide variety of approaches. Volume 2 focuses first on "remote" sensing using evidence from cosmochemical, seismic, petrologic and geochemical approaches. Mantle composition is then examined in detail through descriptions of mantle samples brought to Earth's surface through tectonic, volcanic, and volatile-outgassing processes. The volume concludes with examination of processes that modify the composition of the mantle and core including an early magma ocean, partial melting, element partitioning

---