1. Record Nr. UNINA9910254000303321

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Titolo	The Earth's Lower Mantle : Composition and Structure / / by Felix V. Kaminsky
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017
ISBN	3-319-55684-3
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (XIII, 331 p. 150 illus., 131 illus. in color.)
Collana	Springer Geology, , 2197-9545
Disciplina	551.116
Soggetti	Geochemistry Mineralogy Planetology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Introduction: History of the problem.- Models of the Earth’s mantle -- High-pressure experimental data on ultramafic and mafic systems -- Natural lower-mantle minerals.- Lower-mantle mineral associations. - Some problems in the mineral composition of the lower mantle.- Iron spin crossover in lower mantle minerals.- Phase transitions in lower-mantle minerals.- Crystallographic features (regularities) of lower-mantle mineral phases.- Changes in properties of chemical elements under high pressures and possible new mineral compounds in Deep Earth.- Seismic inhomogeneities in the lower mantle and their nature -- Local inhomogeneities in the lower mantle.- Geochemistry of the lower mantle.- Oxidation potential in the lower mantle.- D" layer: transition from the lower mantle to the Earth’s core. (Postperovskite and other minerals in the D" layer).- Conclusions, Compositional model of the lower mantle, and further problems.- References.- Subject index.
Sommario/riassunto	This book presents the first overview of the composition and structure of the Earth’s lower mantle. The first part focuses on the study of lower-mantle minerals, identified as inclusions in diamonds from different regions of the world. Three associations are established among the lower-mantle minerals: ultramafic, mafic, and carbonatic.

The carbonatic association is of particular interest because it characterizes the media of natural diamond formation. In turn, the second part analyzes the structure of the lower mantle, revealing its heterogeneous composition. It is based on the results of experiments demonstrating phase transitions in lower-mantle minerals, and on seismological data. Deep-seated earthquakes point to the presence within the lower mantle of numerous seismic boundaries caused by mineral structure transitions. In closing, the last part of the book compares observed data with experimental data, highlighting several discrepancies that indicate Earth may have a more complex planetary history than previously assumed, and examining its primarily non-chondritic composition.