1. Record Nr. UNINA9910826367603321

Titolo	Rheology and deformation of the lithosphere at continental margins / / edited by Garry D. Karner [and three others] ; contributors, Dr. Gary Axen [and twenty one others]
Pubbl/distr/stampa	New York : , : Columbia University Press, , 2004 ©2004
ISBN	0-231-50189-7
Descrizione fisica	1 online resource (367 pages) : illustrations (some color), maps
Collana	MARGINS Theoretical and Experimental Earth Science Series
Disciplina	551.8
Soggetti	Rock deformation Continental margins Earth (Planet) Crust Earth (Planet) Mantle
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Frontmatter -- Contents -- Contributors -- Preface -- 1. Consequences of Asthenospheric Variability on Continental Rifting / Buck, W. Roger -- 2. Velocity Fields, Faulting, and Strength on the Continents / Jackson, James -- 3. Mechanics of Low-Angle Normal Faults / Axen, Gary J. -- 4. Depth-Dependent Lithospheric Stretching at Rifted Continental Margins / Davis, Mark / Kusznir, Nick -- 5. Limits of the Seismogenic Zone / Ruff, Larry J. -- 6. Controls on Subduction Thrust Earthquakes: Downdip Changes in Composition and State / Hyndman, R. D. -- 7. Thermo-Mechanical Models of Convergent Orogenesis: Thermal and Rheologic Dependence of Crustal Deformation / Willett, Sean D. / Pope, Daniel C. -- 8. Structure of Large-Displacement, Strike-Slip Fault Zones in the Brittle Continental Crust / Chester, F. M. / Chester, J. S. / Kirschner, D. L. / Schulz, S. E. / Evans, J.P. -- 9. The Strength of the San Andreas Fault: A Discussion / Scholz, Christopher H. / Hanks, Thomas C. -- 10. Deformation Behavior of Partially Molten Mantle Rocks / Xu, Yaqin / Zimmerman, M. E. / Kohlstedt, D. L. -- 11. Relations Among Porosity, Permeability, and Deformation in Rocks at High Temperatures / Evans, Brian / Bernabé,

Yves / Hirth, Greg -- Index

Sommario/riassunto

Traditionally, investigations of the rheology and deformation of the lithosphere (the rigid or mechanically strong outer layer of the Earth, which contains the crust and the uppermost part of the mantle) have taken place at one scale in the laboratory and at an entirely different scale in the field. Laboratory experiments are generally restricted to centimeter-sized samples and day- or year-length times, while geological processes occur over tens to hundreds of kilometers and millions of years. The application of laboratory results to geological systems necessitates extensive extrapolation in both temporal and spatial scales, as well as a detailed understanding of the dominant physical mechanisms. The development of an understanding of large-scale processes requires an integrated approach. This book explores the current cutting-edge interdisciplinary research in lithospheric rheology and provides a broad summary of the rheology and deformation of the continental lithosphere in both extensional and compressional settings. Individual chapters explore contemporary research resulting from laboratory, observational, and theoretical experiments.