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Titolo	Image Analysis in Earth Sciences [[electronic resource]] : Microstructures and Textures of Earth Materials / / by Renée Heilbronner, Steve Barrett
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ISBN	3-642-10343-X
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Descrizione fisica	1 online resource (520 p.)
Collana	Lecture Notes in Earth System Sciences
Disciplina	550.28 550/.28 550/.28/5
Soggetti	Mineralogy Earth sciences Earth Sciences, general
Lingua di pubblicazione	Inglese
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Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Part I Looking at Images -- 1 Images and Microstructures -- 2 Acquiring Images -- 3 Digital Image Processing -- 4 Pre-processing -- Part II Segmentation: Finding and Defining the Object -- 5 Segmentation by Point Operations -- 6 Post-processing -- 7 Segmentation by Neighborhood Operations -- 8 Image Analysis -- 9 Test Images -- Part III Measuring Size and Volume -- 10 Volume Determinations -- 11 2-D Grain Size Distributions -- 12 3-D Grain Size -- 13 Fractal Grain Size Distributions -- Part IV Quantifying Shape and Orientation -- 14 Particle Fabrics -- 15 Surface Fabrics -- 16 Strain Fabrics -- 17 Shape Descriptors -- Part V Spatial Relationships -- 18 Spatial Distributions -- 19 Spatial Frequencies -- 20 Autocorrelation Function -- Part VI Orientation Imaging -- 21 Crystal Orientation and Interference Color -- 22 Computer-Integrated Polarization Microscopy -- 23 Orientation and Misorientation Imaging -- Index.
Sommario/riassunto	Image Analysis in Earth Sciences is a graduate level textbook for researchers and students interested in the quantitative microstructure

and texture analysis of earth materials. Methods of analysis and applications are introduced using carefully worked examples. The input images are typically derived from earth materials, acquired at a wide range of scales, through digital photography, light and electron microscopy. The book focuses on image acquisition, pre- and post-processing, on the extraction of objects (segmentation), the analysis of volumes and grain size distributions, on shape fabric analysis (particle and surface fabrics) and the analysis of the frequency domain (FFT and ACF). The last chapters are dedicated to the analysis of crystallographic fabrics and orientation imaging. Throughout the book the free software Image SXM is used.