A Practical Guide to Rock Microstructure

Ron H. Vernon

The shapes and arrangements of crystals at a microscopic level constitute a rock's 'microstructure'. This book looks at common rocks (igneous, sedimentary, metamorphic) and discusses ore minerals (sulphides and oxides) where appropriate. Essential reading for undergraduate and graduate students of petrology and structural geology, also for students of materials science.

2004 246 x 189 mm 352pp 61 line diagrams 254 colour figures 0 521 89133 7 Paperback £35.00
Stereographic Projection Techniques for Geologists and Civil Engineers

Second edition
Richard J. Lisle, Cardiff University
and Peter R. Leyshon

The stereographic projection is an essential tool in the fields of structural geology and geotechnics, which allows three-dimensional orientation data to be represented and manipulated. This book has been designed to make the subject as accessible as possible. It gives a straightforward and simple introduction to the subject and, by means of examples, illustrations and exercises, encourages the student to visualise the problems in three dimensions. Students of all levels will be able to work through the book and come away with a clear understanding of how to apply these vital techniques. This new edition contains additional material on geotechnical applications, improved illustrations and links to useful web resources and software programs. It will provide students of geology, rock mechanics, geotechnical and civil engineering with an indispensable guide to the analysis and interpretation of field orientation data.

Contents
Preface; Geological structures of planar type; Measuring and recording the orientation of planar structures; Geological structures of linear type; Measuring and recording the orientation of lines; Why do we need projections?; Idea of stereographic projections; Approximate method of plotting lines and planes; Exercises 1; The stereographic net; Precise method of plotting planes; Precise methods for plotting lines 1; Precise methods for plotting lines 2; Intersection of two planes; Plane containing two lines; Apparent dip; The angle between two lines; The angle between two planes; The plane which bisects the angle between two planes; Projecting a line onto a plane; Stereographic and equal-area projections; The polar net; Analysing folds 1; Analysing folds 2; Analysing folds 3; Analysing folds 4; Folds and cleavage; Analysing folds with cleavage; Faults 1; Faults 2; Cones/small circles; Plotting a cone; Rotations about a horizontal axis; Example of rotation about a horizontal axis; Example of rotation; Rotation about an inclined axis; Example of rotation about an inclined axis; Density contouring on stereograms; Superposed folding 1; Superposed folding 2; Example of analysis of folding; Geometrical analysis of folds; Example of analysis of jointing; Geotechnical applications; Assessing plane failure 1; Assessing plane failure 2; Assessing wedge failure; Exercises 2; Solutions to exercises; Computer software for plotting stereograms; Further reading; Stereographic (Wulff) equatorial net; Equal-area (Lambert/Schmidt) equatorial net; Equal-area polar net; Classification chart for fold orientations; Some useful formulae; Alternative method for plotting planes and lines; Index.

From the reviews of the previous edition:
‘This is the book that all teachers of stereographic projections have been waiting for! It contains 115 pages of well-presented, clearly explained, generally well-illustrated text – in short it is user-friendly.’

Episodes