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| Autore | Nautiyal Pranjai |
| Titolo | In-situ Mechanics of Materials : Principles,Tools, Techniques and Applications / / by Pranjai Nautiyal, Benjamin Boesl, Arvind Agarwal |
| Pubbl/distr/stampa | Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020 |
| ISBN | 3-030-43320-X |
| Edizione | [1st ed. 2020.] |
| Descrizione fisica | 1 online resource (XIII, 259 p. 179 illus., 152 illus. in color.) |
| Disciplina | 620.11 620.11292 |
| Soggetti | Structural materials Statics Nanoscale science Nanoscience Nanostructures Mechanics Mechanics, Applied Structural Materials Mechanical Statics and Structures Nanoscale Science and Technology Solid Mechanics |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Mechanics of Materials: Multi-scale properties and mechanisms -- Tools and Techniques -- Test Methods -- In-Situ Mechanics as a function of temperature -- Materials science perspective: case studies -- Mechanical analysis and interpretation -- Challenges: Some practical considerations and limitations -- Future outlook -- Supplementary information. |
| Sommario/riassunto | This is the first comprehensive book to address in-situ mechanics approach, which relies on real-time imaging during mechanical measurements of materials. The book presents tools, techniques and methods to interrogate the deformation characteristics of a wide array |

of material classes, and how the mechanics and the material microstructures are correlated. In-situ approach provides unprecedented ability to decipher the mechanical behavior of materials from atomic length scales all the way up to bulk-scale, which is not possible using conventional means. The book also addresses how to capture the deformation behavior of materials under different stress-states and extreme environments. The book will be useful to the new generation of students, scientists and researchers working on the frontiers of material design and innovation as they aim to develop new materials with predictable mechanical properties and technological applications. This book can also serve as a textbook aimed at upper-level undergraduates and graduate-level students who are beginning to delve into the mechanics of materials. Catering to a generation of students that appreciates videos as a didactic tool, this book contains numerous videos to supplement problems, solutions, and case studies. Presents for the first time in-situ tools, techniques, and methods to probe the mechanical properties of new and emerging materials; Covers all aspects of in-situ mechanics: concepts, theories, analysis methods, case studies, advanced research topics, and practical concerns; Provides supplementary videos and materials for educational purposes.
