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Dislocation Dynamics During Plastic Deformation (Springer Series In Materials Science)



Synopsis

Along with numerous illustrative examples, this text provides an overview of the dynamic behavior of dislocations and its relation to plastic deformation. It introduces the general properties of dislocations and treats the dislocation dynamics in some detail.

Book Information

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Aus den Rezensionen:„... Das besondere an dem Buch ist jedoch, dass die ausführlich beschriebenen Experimente mit Videosequenzen ... Dieses Buch ist fraglos als Standardwerk anzusehen, das in keinem physikalisch-chemischen oder materialwissenschaftlichen Labour ... In Verbindung mit dem reichhaltigen Videomaterial, eignet sich dieses Buch zudem, vortrefflich, Studenten in fortgeschrittenen Studiengängen die Versetzungsdynamik bei plastischer Verformung von Festkörpern in bisher nicht gekannter Weise zur Anschauung zu bringen.“ (Dr.rer.nat.Armin Feldhoff, in: Elektronenmikroskopie, Heft 33, November 2011)

The book gives an overview of the dynamic behavior of dislocations and its relation to plastic deformation. It introduces the general properties of dislocations and treats the dislocation dynamics in some detail. Finally, examples are described of the processes in different classes of materials, i.e. semiconductors, ceramics, metals, intermetallic materials, and quasicrystals. The processes are illustrated by many electron micrographs of dislocations under stress and by video clips taken during in situ straining experiments in a high-voltage electron microscope showing moving

dislocations. Thus, the users of the book also obtain an immediate impression and understanding of dislocation dynamics.

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