radiation damage effects in solids special topic volume with invited peer reviewed papers only defect and diffusion forum

#radiation damage #defects in solids #diffusion mechanisms #materials science #peer reviewed papers

This special topic volume, published within the Defect and Diffusion Forum, presents a curated collection of invited, peer-reviewed papers. It offers in-depth insights into the complex effects of radiation damage on solid materials, exploring critical areas like defect formation and diffusion processes under various radiation exposures.

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29. Nuclear Materials Science Continued - 29. Nuclear Materials Science Continued by MIT OpenCourseWare 51,919 views 4 years ago 57 minutes - The lecture on nuclear materials and reactor materials is continued, linking the material properties we learned by watching the ...
Intro
Radiation Damage Mechanism
Damage Cascade & Unit
22.74 in One Figure
DPA vs. Damage
Point Defects (OD) - Vacancies
Dislocations (1D)
Grain Boundaries (2D)
Inclusions (3D)
What Does the DPA Tell Us?
What Does the DPA NOT Tell Us?
Experimental Evidence for DPA Inadequacy
What Do We Need To Know?
What Happens to Defects?
Void Swelling Origins
Dislocation Buildup
Reviewing Material Properties
Edge Dislocation Glide
Loss of Ductility
Resolved Shear Stress
Examples of Shear & Slip

Evidence of Slip Systems
Movement, Pileup
Embrittlement
Ductile-Brittle Transition Temperature (DBTT)
Measuring Toughness: Charpy Impact
Mechanical Effects - Stiffening
But First: What Is a Snipe Hunt?
tivation: How to Measure Radiation Dama
Dillerential Scanning Calorimetry (DSC)
Pure Aluminum
Mod-01 Lec-15 Diffusion in Solids - Mod-01 Lec-15 Diffusion in Solids by nptelhrd 16,550 views 10 years ago 56 minutes - Principles of Physical Metallurgy by Prof. R.N. Ghosh,Department of Metallurgy and Material Science,IIT Kharagpur.For more ...
Diffusion?
Fick's second law
Diffusion couple: 2 semi infinite solids
Effect of temperature
Mod-01 Lec-30 Diffusion in Solids - Mod-01 Lec-30 Diffusion in Solids by nptelhrd 22,375 views 9 years ago 49 minutes - Structure of Materials by Prof. Sandeep Sangal & Dr. Anandh Subramaniam,Department of Metallurgy and Material Science,IIT ...
Introduction
Diffusion
Steady State Diffusion
Ficks Second Law
Error Function Solution
Summary
Diffusivity
Temperature
What are the Different Diffusion Mechanisms in Solids? | Diffusion Rate Dependency | Dr Loay Al-Zube - What are the Different Diffusion Mechanisms in Solids? | Diffusion Rate Dependency | Dr Loay Al-Zube by Al-Zube's Biomedical Engineering Academy 5,335 views 3 years ago 4 minutes, 49 seconds - Understanding **diffusion**, mechanisms in **solids**,: **Solid**,-state **diffusion**, explained! Unlock the secrets of **solid**,-state **diffusion**, (**diffusion**, ...
Mod-01 Lec-16 Diffusion in Solids (Contd.) - Mod-01 Lec-16 Diffusion in Solids (Contd.) by nptelhrd 9,899 views 10 years ago 58 minutes - Principles of Physical Metallurgy by Prof. R.N. Ghosh,Department of Metallurgy and Material Science,IIT Kharagpur.For more ...
Intro
Diffusion as random walk
Diffusion in crystalline solids: mechanisms
Interstitial diffusion
Diffusion of atoms in normal lattice site
Self diffusion
Effect of composition on D: diffusivity
Estimation of D(c) from concentration profile
Kirkendall effect
Darken equation
Lecture 5 Repair of Radiation Damage and the Dose Rate Effect 2020 2021 - Lecture 5 Repair of Radiation Damage and the Dose Rate Effect 2020 2021 by Gavin Jones 541 views 3 years ago 31 minutes
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The Atomic Models of Diffusion
Atomic Models of Diffusion
Activation Barrier
Vacancy Mechanism
Non Equilibrium Concentration of Vacancies
Interstitial Diffusion
Enthalpy of Migration

Lattice Diffusion
Carburizing of Steel
Solution to Fixed Second Law
Approximate Form Law for Depth of Penetration
Diffusion in Solids (Interactive Simulation) - Diffusion in Solids (Interactive Simulation) by LearnChemE 2,057 views 8 years ago 2 minutes, 26 seconds - Organized by textbook: https://learncheme.com/ Describes how to use an interactive simulation that models **diffusion**, in **solids**, as a ...
MSE 201 S21 Lecture 16 - Module 5 - Introduction to Diffusion - MSE 201 S21 Lecture 16 - Module 5 - Introduction to Diffusion by Thom Cochell 5,164 views 3 years ago 8 minutes, 43 seconds - Mechanisms Gases & Liquids - random (Brownian) motion **Solids**, - vacancy **diffusion**, or interstitial **diffusion**, ...
Defect Assessment with Volume Graphics - Defect Assessment with Volume Graphics by Volume Graphics Videos 4,215 views 4 years ago 2 minutes, 1 second - How does the porosity in a cast metal part influence its mechanical integrity? With **just**, one click, you can now take the results of a ...
Science Basis for Design of High Performance Radiation Resistant Materials - Science Basis for Design of High Performance Radiation Resistant Materials by BerkeleyNUC 139 views 8 years ago 1 hour, 11 minutes - Speaker Steven J. Zinkle - March 30, 2015 High performance structural materials are important for the satisfactory operation of ...
Intro
Reliable and Stable Energy is of High
Annualized Generating Levels and Capacity Factors of US Electricity Options
Comparison of Gen IV and Fusion Structural Materials
Advanced nuclear energy systems impose harsh radiation
A brief overview of defect production models
Defect production depends on the material specific
Norgett-Robinson-Torens displacement model contains
Displacement cascade disordering in
A proposed new approach for quantification of cascade
Displacement damage involves numerous types of defects
The defect production efficiency decreases with increasing knock-on energy in all investigated materials
A proposed new approach for quantification of displacement damage
Overview of Defect Microstructures in
What are the consequences of radiation hardening?
Irradiated Materials Suffer Plastic Instability (due to Dislocation Channeling?)
Options for designing radiation resistance • Three general strategies for radiation resistance can be
Immobile defects
Utilize matrix phases
Radiation Induced Solute Segregation in Irradiated Fe-Cr-Ni (Mn) Face Centered Cubic Alloys
High sink strength
Effect of initial Sink Strength on the Radiation Hardening
Mechanisms of excellent irradiation resistances oxide dispersion strengthening (ODS) particles
Conventional wisdom is that progress will be slow in developing new high performance structural alloys, and that variability is inherent
Lecture - 20 Diffusion in Solids - Lecture - 20 Diffusion in Solids by nptelhrd 4,676 views 9 years ago 57 minutes - Lecture Series on Materials Science by Prof.SK. Gupta, Department of Applied Mechanics ,IIT Delhi. For more details on NPTEL ...
Mathematical Models
Flow per unit time per unit cross-sectional area
In steady-state diffusion there is neither accumulation nor depletion of the diffusing species anywhere in the medium at any time.
Solution
AMIE Exam Lectures- Material Science and Engineering | Diffusion in Solids| Types | Mechanism| 5.1 - AMIE Exam Lectures- Material Science and Engineering | Diffusion in Solids| Types | Mechanism| 5.1 by Edupedia World by Exambyte 49,706 views 6 years ago 14 minutes, 52 seconds - Engineering **Subjects**,: Introduction to Material Science and Engineering: Material Science and Engineering| **Diffusion**, in **Solids**,| ...

Introduction
Diffusion
Diffusion Mechanism
Vacancy Diffusion
Interstitial Diffusion
The Journal of Chemical Physics Porous solids - Call For Papers - The Journal of Chemical Physics Porous solids - Call For Papers by AIP Publishing 5 views 7 months ago 6 seconds - Call for **Papers**,! Submit to this **Special**, by November 30, 2023. Learn more: https://aippub.org/44FWWhC.
Predicting fusion radiation damage using protons | Steven Japeal - Predicting fusion radiation damage using protons | Steven Japeal by FusionEPtalks 333 views 3 years ago 48 minutes - Presenter: Steve Japeal, PhD candidate at MIT, United States. Contact us directly on fusionep-talks@egyplasma.com or use ...
Introduction and webinar instructions
Presentation
ARC reactor concept
MIT timeline and material research
plasma-facing components
Neutron damage
Effect of radiation-induced defects
Ion experiments
Proton irradiation experiments
Next step: tungsten irradiation
System for irradiation testing
Q&A session
Radiation damage in biomolecular systems - Radiation damage in biomolecular systems by International Union of Crystallography 50 views 4 years ago 21 seconds - Resolution and dose dependence of **radiation damage**, in biomolecular systems The local Fourier-space relation between ...
Diffusion in Solids-II - Diffusion in Solids-II by Heat Treatment and Surface Hardening-I 3,688 views 7 years ago 29 minutes - So, continuing our discussion and **diffusion**, in the **solid**, state. Let us first look at the mechanism of **diffusion**, in the soiled state ...
Diffusion in Solids-I - Diffusion in Solids-I by Heat Treatment and Surface Hardening-I 7,531 views 7 years ago 30 minutes - So, **diffusion**, takes place or movement of atoms takes place in gases, liquids as well as **solids**,, regarding gases and liquid we ...
Volume Graphics Defect Assessment - Volume Graphics Defect Assessment by Productivity Quality 243 views 3 years ago 1 minute, 30 seconds - The range of EasyTom 3D X-ray CT system The range of EasyTom CT systems from RX Solutions can scan a part, and then use ...
TTNM-2021-05 Partial Volume Effect - TTNM-2021-05 Partial Volume Effect by Johan Nuyts, PhD 773 views 1 year ago 6 minutes, 54 seconds - An intuitive description of the partial **volume effect**, in imaging. The complete manuscript of the KU Leuven course "Technologies ...
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