Liquid Vapor Phase Change Phenomena An Introduction To The Thermophysics Of Vaporization And Condensation Processes In Heat Transfer Equipment Second Edition

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~~Liquid Vapor Phase Change Phenomena An Introduction to the Thermophysics of Vaporization and Condens~~ ~~Lec 8: Liquid-vapor phase-change process~~

Why does ice float in water? - George Zaidan and Charles MortonPhase Change 1: Liquid-Vapor Equilibrium ~~Phase Diagrams of Water \u0026 CO2 Explained - Chemistry - Melting, Boiling \u0026 Critical Point~~

Thermodynamics - 3-3 Phase changes of a pure substancePhase Changes, Heats of Fusion and Vaporization, and Phase Diagrams Phase Change Demonstrations | Chemistry Matters ~~Liquid-Vapor Phase Diagrams 1~~ The Fourth Phase of Water: Dr. Gerald Pollack at TEDxGuelphU ~~Introduction to the Liquid Vapor Dome (Thermodynamics 8)~~

3.3. Liquid-Vapor EquilibriumSCIENCE 3 - QUARTER 1 - CHANGING IN MATTER (LIQUID TO SOLID)- FREEZING Thermodynamics - Explaining the Triple Point

Coriant and Engineered Fluids at OFC18 - Dielectric Coolant Solution Vapor Pressure **Muddiest Point- Phase Diagrams I: Eutectic Calculations and Lever Rule**

Melting, Freezing, Evaporation, Condensation, Sublimation*Vapor Pressure of liquids demo A Brief Introduction to Fractional Distillation* Property diagram for phase change animation (thermodynamic property)

Heat and phase changes

Temperature - Volume (T-v) diagram for Phase Change Process Chemistry - Liquids and Solids (46 of 59) Phase Change: Liquid Vapor Equilibrium: Basics *Phase change of a pure substance* Mod-14 Lec-29 Two Phase Flow with Phase Change - An Introduction to Boiling Heat Transfer *How does a liquid become a gas? How Ancient Ice Proves Climate Change Is Real Liquid-vapor phase-change process Latent Heat and Phase Change - Thermal Physics Liquid Vapor Phase Change Phenomena*

DOI: 10.1201/9780203748756 Corpus ID: 93195474. Liquid-Vapor Phase-Change Phenomena: An Introduction to the Thermophysics of Vaporization and Condensation Processes in Heat Transfer Equipment, Third Edition

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Carey, V.P. (1992) Liquid-Vapor Phase-Change Phenomena. Taylor & Francis, London, 112. has been cited by the following article: TITLE: Numerical Study of Thermal Performance of a Capillary Evaporator in a Loop Heat Pipe with Liquid-Saturated Wick. AUTHORS: Masahito Nishikawara, Hosei Nagano, Laetitia Mottet, Marc Prat

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Van P. Carey is the author of Liquid Vapor Phase Change Phenomena (4.09 avg rating, 11 ratings, 0 reviews, published 2007), Liquid-Vapor Phase-Change .... Available in: Hardcover. The book focuses on basic elements of condensation and vaporization processes. The basic physical mechanisms ....

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Carey, V P. Liquid-vapor phase-change phenomena. United States. Carey, V P. Wed . "Liquid-vapor phase-change phenomena". United States. abstractNote = {This book presents non-equilibrium thermodynamics and interfacial phenomena associated with vaporization and condensation processes, in addition to fundamentals of heat transfer and fluid flow mechanisms in heat transfer equipment.

Liquid-vapor phase-change phenomena (Book) | OSTI.GOV
Liquid-vapor phase-change processes, such as boiling, evaporation, and condensation, are ubiquitous phenomena in nature and have been widely exploited in numerous applications ranging from power plants to thermal management of electronics.

Liquid-Vapor Phase-Change Phenomena presents the basic thermophysics and transport principles that underlie the mechanisms of condensation and vaporization processes. The text has been thoroughly updated to reflect recent innovations in research and to strengthen the fundamental focus of the first edition. Starting with an integrated presentation of the nonequilibrium thermodynamics and interfacial phenomena associated with vaporization and condensation, coverage follows of the heat transfer and fluid flow mechanisms in such processes. The second edition includes significant new material on the nanoscale and microscale thermophysics of boiling and condensation phenomena and the use of advanced computational tools to create new models of

phase-change events. The importance of basic phenomena to a wide variety of applications is emphasized and illustrated throughout using examples and problems. Suitable for senior undergraduate and first-year graduate students in mechanical or chemical engineering, the book can also be a helpful reference for practicing engineers or scientists studying the fundamental physics of nucleation, boiling and condensation.

Since the second edition of Liquid-Vapor Phase-Change Phenomena was written, research has substantially enhanced the understanding of the effects of nanostructured surfaces, effects of microchannel and nanochannel geometries, and effects of extreme wetting on liquid-vapor phase-change processes. To cover advances in these areas, the new third edition includes significant new coverage of microchannels and nanostructures, and numerous other updates. More worked examples and numerous new problems have been added, and a complete solution manual and electronic figures for classroom projection will be available for qualified adopting professors.

Microchannel Heat transfer is the cooling application of high power density microchips in the CPU system, micropower systems and many other large scale thermal systems requiring effective cooling capacity. This book offers the latest research and recommended models on the microsize cooling system which not only significantly reduces the weight load, but also enhances the capability to remove much greater amount of heat than any of large scale cooling systems. A detailed reference in microchannel phase change (boiling and condensation) including recommended models and correlations for various requirements such as pressure loss, and heat transfer coefficient. Researchers, engineers, designers and students will benefit from the collated, state-of-the-art of the research put together in this book and its systematic, addressing all the relevant issues and providing a good reference for solving problems of critical analysis. Up-to-date information will help delineate further research direction in the microchannel heat transfer The latest modeling information and recommendations will help in design method and purpose

Predictive theories of phenomena involving phase change with applications in engineering are investigated in this volume, e.g. solid-liquid phase change, volume and surface damage, and phase change involving temperature discontinuities. Many other phase change phenomena such as solid-solid phase change in shape memory alloys and vapor-liquid phase change are also explored. Modeling is based on continuum thermo-mechanics. This involves a renewed principle of virtual power introducing the power of the microscopic motions responsible for phase change. This improvement yields a new equation of motion related to microscopic motions, beyond the classical equation of motion for macroscopic motions. The new theory sensibly improves the phase change modeling. For example, when warm rain falls on frozen soil, the dangerous black ice phenomenon can be comprehensively predicted. In addition, novel equations predict the evolution of clouds, which are themselves a mixture of air, liquid water and vapor.

Provides a comprehensive coverage of the basic phenomena. It contains twenty-five chapters which cover different aspects of boiling and condensation. First the specific topic or phenomenon is described, followed by a brief survey of previous work, a phenomenological model based on current understanding, and finally a set of recommended design equa

Transport phenomena are the physical forces and processes by which energy and mass are moved into, out of, and throughout a system. Systems that are changing from one state (phase) to another, such as liquid to gas, are said to be "multiphase." This advanced text, for the first time, teaches the fundamentals of transport phenomena, including the relevant thermodynamics and kinetics, in the context of multiphase systems. Students will find this an accessible guide to the understanding of an often dauntingly complex subject, with ample worked-out examples taken from real-life engineering problems and helpful end-of-chapter problems to help reinforce abstract concepts. *Develops and understanding of the thermal and physical behavior of multiphase systems *Reviews underlying thermodynamics, including thermal equilibria and stability, thermodynamics of surfaces *Covers all types of phase changes, including melting and solidification, sublimation and vapor deposition, boiling, condensation, and evaporation *Ample end-of-chapter problems *Solutions Manual

This is a long-needed general introduction to the physics and chemistry of the liquid-vapor phase transition of metals. Physicists and physical chemists have made great strides understanding the basic principles involved, and engineers have discovered a wide variety of new uses for fluid metals. Yet there has been no book that brings together the latest ideas and findings in the field or that bridges the conceptual gap between the condensed-matter physics relevant to a dense metallic liquid and the molecular chemistry relevant to a dilute atomic vapor. Friedrich Hensel and William Warren seek to change that here. They draw on cutting-edge research and data from carefully selected fluid-metal systems as they strive to develop a rigorous theoretical approach to predict the thermodynamic behavior of fluid metals over the entire liquid-vapor range. This book will appeal to theoreticians interested in metal-nonmetal transitions or continuous phase transitions in general. It will also be of great value to those who need to understand the practical applications of fluid metals, for example, as a high-temperature working fluid or as a key component of semiconductor manufacturing.

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This advanced textbook for courses covering heat transfer with phase change, was developed based on the author's wide experience of teaching courses on the subject. In his comprehensive treatment, Carey offers, through illustrative examples and problems, a presentation of non-equilibrium thermodynamics and interfacial phenomena associated with vaporization and condensation processes, in addition to fundamentals of heat tranfer and fluid flow mechanisms. The sequence in which the material is presented is designed to facilitate instruction at the advanced undergraduate level in mechanical and chemical engineering. Tables of thermophysical properties are included in an appendix to aid in the solution to many of the homework problems.