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Nota di contenuto	New critical phenomena observed under weightlessness -- Numerical solutions of thermoacoustic and buoyancy-driven transport in a near critical fluid -- Adsorption kinetics and exchange of matter at liquid interfaces and microgravity -- Critical depletion of pure fluids in colloidal solids: Results of experiments on EURECA and grand canonical Monte Carlo simulations -- Dendritic growth measurements in microgravity -- A study of morphological stability during directional solidification of a Sn?Bi alloy in microgravity -- Response of crystal growth experiments to time-dependent residual accelerations -- Growth of 20 mm diameter GaAs crystals by the floating zone technique during the D-2 Spacelab Mission -- Microstructure evolution in immiscible AlSiBi alloys under reduced gravity conditions -- Crystallization in solutions: Effects of micogravity conditions -- An investigation of the perfection of lysozyme protein crystals grown in microgravity and on earth -- Fluid-dynamic modelling of protein crystallyzers -- Plasma crystals -- Are liquids molten solids or condensed gases? -- Containerless processing in space: Recent results -- The effect of natural convection on the measurement of mass transport coefficients in the liquid state -- Proboscis container shapes for the USML-2 interface configuration experiment -- Response of a

liquid bridge to an acceleration varying sinusoidally with time -- Nonuniform interfacial tension-driven fluid flows -- Pure thermocapillary convection in a multilayer system: First results from the IML-2 mission -- On vibrational convective instability of a horizontal binary mixture layer with Soret effect -- Thermocapillary convection in liquid bridges with a deformed free surface -- Onset of oscillatory Marangoni convection in a liquid bridge -- Convection visualization and temperature fluctuation measurement in a molten silicon column -- The micro wedge model: A physical description of nucleate boiling without external forces -- Theoretical models for boiling at microgravity -- Chemically driven convection in the Belousov-Zhabotinsky reaction -- Combustion processes under microgravity conditions -- Flat plate diffusion flames: Numerical simulation and experimental validation for different gravity levels -- High pressure droplet burning experiments in reduced gravity.

Sommario/riassunto

This careful selection of papers gives the reader an overview of the main research topics investigated at the conference and recent progress in understanding the physical phenomena involved. These lectures should therefore be a prime source of information for the expert as well as for graduate students. They cover critical point phenomena and adsorption, solidification, crystallization, static fluids and thermophysical properties, fluid dynamics and combustion. The importance of gravity as an experimental parameter and a variable in a large diversity of physical phenomena and processes has been recognized for some 25 years. The growth of this field of physics can be gleamed from the great number of satellites, sounding rockets, terrestrial trop towers, etc., that exist.