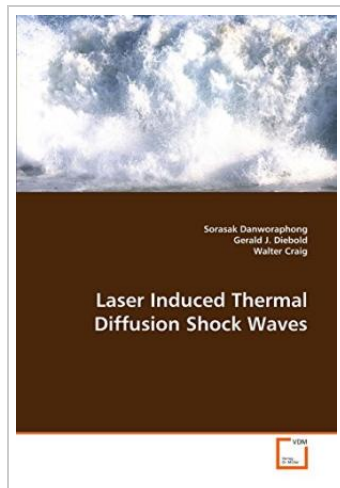




Laser Induced Thermal Diffusion Shock Waves

By Danworaphong, Sorasak

Condition: New. Publisher/Verlag: VDM Verlag Dr. Müller | Theory and Proofs of Their Existence | When two phase coherent laser beams are crossed at an angle, the electric fields of the beams produce a sinusoidal interference pattern. Partial absorption of the electric fields in a colloidal sample creates a sinusoidal temperature field. The temperature gradient then causes production of concentration gradient in the sample, known as the Ludwig-Soret effect or thermal diffusion. Solutions to nonlinear partial differential equations that describe the effect show that shock waves analogous to fluid shock waves are produced. A mathematical relation between the shock speed and the density fraction of one component, analogous to the well-known Rankine-Hugoniot equations, is derived. Self-diffraction and imaging experiments show shock-like behavior in colloidal systems governed by the thermal diffusion. | Format: Paperback | Language/Sprache: english | 100 pp.

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Reviews

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