

Abstract Submitted
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Phase separation patterns in irradiated thin liquid films due to optical interference effects FUMIHIRO SAEKI, SHIGEHISA FUKUI, HIROSHIGE MATSUOKA, Tottori University — The pattern formation in irradiated thin liquid films on solid substrates is investigated within the framework of the long-wave approximation. The focus is placed on a transparent film/absorbable substrate system irradiated by a monochromatic wave with laterally uniform intensity distribution. The evolution of the film surface profile is described by an equation of Cahn-Hilliard type, and the free energy density that is a function of the film thickness has local minima due to optical interference between waves reflected from the gas-liquid and liquid-solid interfaces. Therefore, a small perturbation develops into a phase separation pattern if the unperturbed uniform state is unstable.

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