

THEORY OF PHOTOINDUCED
PHASE TRANSITIONS IN CRYSTALS
WITH CHARGE TRANSFER COMPLEXES

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S u m m a r y

A theoretical research of photoinduced phase transitions for crystals with charge transfer (CT) complexes is fulfilled in the mean field approximation. In the presented model, it is suggested that a unit cell can be in three states: neutral state, CT state, and highly excited electronic state. An external electromagnetic field transfers the system from some initial state to the excited state and afterwards the system may return into another low-energy state. In such a way the system may be transformed from neutral state to CT state and conversely. The steady-state and the time-dependent solutions of the kinetic equations are analyzed, and the uniform and space-dependent processes are investigated. The phase transition occurs at a certain threshold pumping, whose value decreases if the temperature of a sample approaches the critical temperature. The dynamics of the phase transition has a retardation interval which decreases with increase in a pumping. Such peculiarities of photoinduced phase transitions are observed in experiments.