ABSTRACT

A compound semiconductor is placed in a reaction vessel (12) of which the inner gas is subjected to replacement with a low-vapor-pressure gas (2) whose equilibrium vapor pressure at the melting point of the compound semiconductor is 1 atm or lower. The low-vapor-pressure gas is urged to flow along the surface of the compound semiconductor while keeping the internal pressure of the reaction vessel at a value not lower than that equilibrium vapor pressure. The surface of the compound semiconductor is irradiated with a pulsed-laser light (3) whose photon energy is higher than the band gap of the compound semiconductor. Thus, only that part of the compound semiconductor which is located at the pulsed-laser light irradiation position is instantly heated and melted while keeping the atmospheric temperature of the low-vapor-pressure gas at a room temperature or a temperature equal to or lower than the decomposition temperature.