ABSTRACT

There is provided a technique that includes: a reaction tube including a bottom opening through which a plurality of substrates are loaded and unloaded, the reaction tube being configured to process the plurality of substrates; a holder configured to arrange the plurality of substrates in the reaction tube and hold the plurality of substrates in a substrate arrangement region; a first nozzle arranged to correspond to a first region in which a plurality of product substrates are arranged in the substrate arrangement region, the first nozzle being configured to supply a hydrogen-containing gas into the reaction tube from a plurality of locations corresponding to the first region; a second nozzle arranged to correspond to the first region, the second nozzle being configured to supply an oxygen-containing gas into the reaction tube from a position corresponding to the first region; a third nozzle arranged closer to the bottom opening than the first region to correspond to a second region in which at least one dummy substrate or at least one heat insulator held by the holder is arranged, the third nozzle being configured to supply a dilution gas into the reaction tube from a position corresponding to the second region; an exhaust port configured to exhaust an interior of the reaction tube; and a controller configured to be capable of controlling the hydrogen-containing gas supplied from the first nozzle and the dilution gas supplied from the third nozzle such that a concentration of the hydrogen-containing gas in the second region is lower than a concentration of the hydrogen-containing gas in the first region, wherein the first nozzle includes a plurality of multi-hole nozzles including injection holes corresponding to a divided region obtained by dividing a region including the first region and not including the second region in a substrate arrangement direction.

Fig. 3