

SUBSTRATE PROCESSING METHOD, METHOD FOR PRODUCING SEMICONDUCTOR DEVICE, SUBSTRATE PROCESSING APPARATUS, AND PROGRAM

ABSTRACT

The present invention provides a technology which enables the improvement of the film quality of a film that is formed on a substrate. A substrate processing method according to the present invention comprises a step in which a multilayer film that has a predetermined thickness is formed on a substrate by performing a cycle a predetermined number of times, the cycle comprising (a) a step in which a first film is deposited by exposing the substrate to a starting material gas, and (b) a step in which the substrate is exposed to a crystal growth inhibitor gas or a specific gas that forms a film having a film quality which is different from the film quality of the first film. With respect to this substrate processing method, the predetermined number of times is set so that the absolute value or gradient of the residual stress of the multilayer film after annealing of the multilayer film is lower than an acceptable value.

FIGS. 4A and 4B