Abstract

A plasma doping method that can control a dose precisely is realized. In-plane uniformity of the dose is improved.

It has been found that, if a bias is applied by irradiating B_2H_6/He plasma onto a silicon substrate, there is a time at which a dose of boron is made substantially uniform, and the saturation time is comparatively long and ease to stably use, compared with a time at which repeatability of an apparatus control can be secured. The invention has been finalized focusing on the result. That is, if plasma irradiation starts, a dose is initially increased, but a time at which the dose is made substantially uniform without depending on a time variation is continued. In addition, if the time is further increased, the dose is decreased. The dose can be accurately controlled through a process window of the time at which the dose is made substantially uniform without depending on the time variation.