PLASMA PROCESSING APPARATUS AND METHOD OF CONTROLLING SOURCE FREQUENCY OF SOURCE RADIO FREQUENCY POWER

ABSTRACT

A plasma processing apparatus includes a chamber, a substrate support, a radio frequency power supply and a bias power supply. The substrate support includes a bias electrode and provided inside the chamber. The radio frequency power supply is configured to generate source radio frequency power for plasma generation within the chamber. The bias power supply is configured to periodically supply an electric bias having a waveform cycle to the bias electrode. The radio frequency power supply is configured to set a source frequency of the source radio frequency power in each of a plurality of phase periods within the waveform cycle to a frequency obtained by adding a shift amount for minimizing a degree of reflection of the source radio frequency power and random noise to the source frequency in a same phase period within a preceding waveform cycle.

Fig. 2