

ABSTRACT

An object is to accurately measure, during polishing of a substrate, thickness of a film which is an object of polishing.

A substrate polishing apparatus comprises: a polishing table which is provided with an eddy current sensor and constructed to be able to rotate; a polishing head which is arranged to be opposite to the polishing table and constructed to be able to rotate, wherein a substrate can be attached to a surface opposite to the polishing table; and a controller. The controller is constructed for: creating mapping data representing arrangement of one or multiple metal structures locally existing on a surface of or in the inside of a reference substrate, by using output signals that relate to the reference substrate and are from the eddy current sensor; obtaining, during polishing of an object-of-polishing substrate which has metal structure arrangement identical with that of the reference substrate, a profile of output signals of the eddy current sensor when the eddy current sensor passes along a path on a to-be-polished surface of the object-of-polishing substrate; identifying, based on the profile, a path that corresponds to the profile and is defined when the eddy current sensor has passed over the to-be-polished surface of the object-of-polishing substrate; making, based on the mapping data, a judgment as to whether a metal structure exists on the identified path on the object-of-polishing substrate; correcting the profile of the output signals, that relate to the object-of-polishing substrate and are from the eddy current sensor, to reduce a signal value of a position judged as that where the metal structure exists; and calculating film thickness of the object-of-polishing substrate, based on the corrected profile of the output signals of the eddy current sensor.

Figure 10