ABSTRACT

In a manufacturing method of a wafer, the method including: an operation of preparing a wafer including a semiconductor chip region and a test region, measuring a measurement region included in the test region with an atomic force microscope (AFM), the measurement region including a plurality of metal lines having a constant line width and a constant pitch; determining a surface roughness value of the test region based on a result of the measuring of the measurement region; determining a step difference value of the metal lines of the test region based on the surface roughness value; and determining a step difference value of bonding pads in the semiconductor chip region based on the step difference value of the metal lines.

FIG. 7