

ABSTRACT

The present disclosure relates to the field of semiconductor technology, and in particular, to an etching method for a Sc-containing layer, a semiconductor device and a manufacturing method therefor, and a process equipment. The etching method includes a main etching process step and an auxiliary etching process step, which are performed cyclically; the main etching process step includes introducing process gases into a process chamber, exciting the process gases to generate plasma, and etching the Sc-containing layer; and the auxiliary etching process step includes at least one of a volatilization step or a cooling step. The manufacturing method includes the etching method. The semiconductor device is manufactured with the manufacturing method and has a recessed gate structure formed therein. The process equipment adopts the etching method or the manufacturing method. The etching method can increase an etching rate of the Sc-containing layer.