

A B S T R A C T

Water soluble resin composition, method of pattern formation and method of inspecting resist pattern

A water-soluble resin composition of the present invention comprises at least a water-soluble resin, an acid generator capable of generating an acid by heating and a solvent containing water. The water-soluble resin composition is applied on a highly water-repellant resist pattern 3 formed by a resist such as an ArF-responsive radiation sensitive resin composition on a substrate 1 to form a coated layer 4 thereon. The resist pattern 3 and the coated layer 4 are heat-treated to form a developer-insoluble modified coated layer 5 in the vicinity of a surface of the resist pattern 3. The coated layer is developed and the resist pattern thickened by the modified layer 5 is formed. The modified layer is a layer with sufficient thickness and is able to be formed with a high dimensional controllability in a highly water-repellant resist pattern such as ArF-responsive radiation sensitive resin composition. As a result, a separation size and a hole aperture size of the resist pattern are reduced effectively to less than a limit resolution. As the modified layer 5 has a function of a protecting film for the resist pattern upon electron beam irradiation, a size measurement fluctuation of a resist pattern upon electron beam irradiation by a size measuring SEM can be prevented.

Drawing: Fig. 1