

ABSTRACT

METHOD FOR FORMING OF SILICEOUS FILM AND SILICEOUS FILM FORMED USING THE SAME

A siliceous film having high purity and a low etching rate is formed by (a) a step for forming a siliceous film on a substrate by coating a solution composed of a polysilazane, e.g., perhydropolysilazane on a substrate and then hardening (curing) the solution in an oxidizing atmosphere, or by coating a silica solution formed by a sol-gel method on a substrate, and (b) a step for heating the siliceous film in an inert gas environment containing a nitrogen-containing compound such as an alkylamine having a base dissociation constant (pK_b) no greater than 4.5, or a halogen-containing compound in which the bond energy of a halogen atom such as F_2 , Br_2 , or NF_3 is no greater than 60 kcal/mol, in order to anneal the film.