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PRECURSORS FOR PLASMA ACTIVATED CONFORMAL FILM DEPOSITION

ABSTRACT

A method of depositing a film on a substrate surface includes providing a substrate in a reaction chamber; selecting a silicon-containing reactant from a precursor group consisting of di-tert-butyl diazidosilane, bis(ethylmethyamido)silane, bis(diisopropylamino)silane, bis(tert-butylhydrazido)diethylsilane, tris(dimethylamido)silylazide, tris(dimethylamido)silylamide, ethylsilicon triazide, diisopropylaminosilane, and hexakis(dimethylamido)disilazane; introducing the silicon-containing reactant in vapor phase into the reaction chamber under conditions allowing the silicon-containing reactant to adsorb onto the substrate surface; introducing a second reactant in vapor phase into the reaction chamber while the silicon-containing reactant is adsorbed on the substrate surface, and wherein the second reactant is introduced without first sweeping the silicon-containing reactant out of the reaction chamber; and exposing the substrate surface to plasma to drive a reaction between the silicon-containing reactant and the second reactant on the substrate surface to form the film.

Fig. 1