CLAIMS

[1] A method for forming a silicon dioxide film, comprising

(A) a coating step, in which a substrate is coated with a polysilazane composition to form a coat; and

(B) an oxidation step, in which the coat is oxidized in a hydrogen peroxide atmosphere at a temperature of 50 to 200°C, wherein further comprising

A step of oxidation with water vapor, in which the coat is heated in a water vapor atmosphere at a temperature of 300 to 1000°C after the oxidations step.

[2] The method according to claim 1 for forming a silicon dioxide film, wherein the oxidation step is carried out at a temperature of 100 to 200°C.

[3] The method according to claim 1 or 2 for forming a silicon dioxide film, wherein the hydrogen peroxide atmosphere contains 5 to 50 mol% of hydrogen peroxide in the oxidation step.

[4] The method according to any of claims 1 to 3 for forming a silicon dioxide film, wherein the hydrogen peroxide atmosphere contains 5 to 50 mol% of water vapor in the oxidation step.

[5] The method according to any of claims 1 to 4 for forming a silicon dioxide film, wherein the heating time ranges from 0.5 to 60 minutes in the oxidation step.

[6] The method according to any of claims 1 to 5 for forming a silicon dioxide film, further comprising

a step of removing the solvent after the coating step and before the oxidation step.

~~[7] The method according to any of claims 1 to 6 for forming~~

~~a silicon dioxide film, furthermore comprising~~

~~a step of oxidation with water vapor, in which the coat is heated in a water vapor atmosphere at a temperature of 300 to 1000°C after the oxidation step.~~

~~[8]~~[7] The method according to any of claims 1 to ~~7~~6 for forming a silicon dioxide film, wherein the polysilazane composition contains solid content in an amount of 1 to 40 wt% based on the total weight of the composition.

~~[9]~~[8] The method according to any of claims 1 to ~~8~~7 for forming a silicon dioxide film, wherein the coat formed in the coating step has a thickness of 5 to 10000 nm.

~~[10]~~[9]The method according to any of claims 1 to ~~9~~8 for forming a silicon dioxide film, wherein the substrate is made of plastics.

~~[11]~~[10]A method for forming an isolation structure; wherein the method according to any of claims 1 to ~~10~~9 is applied to form a silicon dioxide film on a substrate having grooves or holes on the surface, so as to fill the grooves or holes in.

~~[12]~~[11]The method according to claim 1~~1~~0 for forming an isolation structure, wherein the silicon dioxide film serves as an inter-metal dielectric film or as a pre-metal dielectric film.

~~[13]~~[12]The method according to claim 1~~1~~0 for forming an isolation structure, wherein the silicon dioxide film constitutes a shallow trench isolation structure.

~~[14]~~[13]The method according to claim 1~~3~~2 for forming an isolation structure, wherein the grooves have widths of 5 to 50 nm and aspect ratios of 10 to 100.