

What is claimed is:

1. A method of fabricating a plasma resistant coating film, comprising:
 - (a) forming a first rare earth metal compound layer by applying a first rare earth metal compound through thermal-spray coating on a coating object;
 - (b) forming a second rare earth metal compound layer by subjecting a second rare earth metal compound to aerosol deposition on the formed first rare earth metal compound layer; and
 - (c) forming a hydrated first rare earth metal compound layer and a hydrated second rare earth metal compound layer by hydrating the formed first and second rare earth metal compound layers at 60°C to 120°C for 1 hr to 48 hr under atmospheric pressure.
2. The fabricating method of a plasma resistant coating film of Claim 1, wherein the first rare earth metal compound is one or more species selected from a group of Y_2O_3 , Dy_2O_3 , Er_2O_3 , Sm_2O_3 , YAG, YOF and YF.
3. The fabricating method of a plasma resistant coating film of Claim 1, wherein the first rare earth metal compound layer has a thickness of 100 to 300 μm .
4. The fabricating method of a plasma resistant coating film of Claim 1, wherein the step of (c) hydrating comprises:
 - (i) a step of washing the formed first and second rare earth metal compound layers;
 - (ii) a step of drying the washed first and second rare earth metal compound layers;
 - (iii) a step of wetting the dried first and second rare earth metal compound layers; and
 - (iv) a step of vacuum-baking the wet first and second rare earth metal compound layers.
5. The fabricating method of a plasma resistant coating film of Claim 4, wherein the hydrating repeats the steps (iii) and (iv) twice or more.
6. The fabricating method of a plasma resistant coating film of Claim 1, wherein the second rare earth metal compound is one or more species selected from a group of Y_2O_3 , Dy_2O_3 , Er_2O_3 , Sm_2O_3 , YAG, YOF and YF.
7. The fabricating method of a plasma resistant coating film of Claim 1, wherein the second rare earth metal compound layer has a thickness of 5 to 30 μm .
8. The fabricating method of a plasma resistant coating film of Claim 1, wherein the first rare earth metal compound layer has a porosity of 10vol% or less after the step (c).
9. The fabricating method of a plasma resistant coating film of Claim 1, wherein the second rare earth metal compound layer has a porosity of 5vol% or less after the step (c).

10. A plasma resistant coating film, fabricated by the method of any one of claim 1 to claim 9, and comprising:
a first rare earth metal compound layer, which is formed through thermal-spray coating of a first rare earth metal compound on a coating object and is hydrated; and
a second rare earth metal compound layer, which is formed through aerosol deposition of a second rare earth metal compound on the first rare earth metal compound layer and is hydrated.
11. The plasma resistant coating film of Claim 10, wherein the first rare earth metal compound is one or more species selected from a group of Y_2O_3 , Dy_2O_3 , Er_2O_3 , Sm_2O_3 , YAG, YOF and YF.
12. The plasma resistant coating film of Claim 10, wherein the second rare earth metal compound is one or more species selected from a group of Y_2O_3 , Dy_2O_3 , Er_2O_3 , Sm_2O_3 , YAG, YOF and YF.
13. The plasma resistant coating film of Claim 10, wherein the first rare earth metal compound layer has a thickness of 100 to 300 μm .
14. The plasma resistant coating film of Claim 10, wherein the second rare earth metal compound layer has a thickness of 5 to 30 μm .
15. The plasma resistant coating film of Claim 10, wherein the first rare earth metal compound layer has a porosity of 10vol% or less.
16. The plasma resistant coating film of Claim 10, wherein the second rare earth metal compound layer has a porosity of 5vol% or less.