Claims

What is claimed is:

1. An article comprising:

a substrate; and

a thermal chemical vapor deposition coating on the substrate;

wherein the thermal chemical vapor deposition coating includes properties from being produced by diffusion-rate-limited thermal chemical vapor deposition of a silane-containing species at a temperature of between 300°C and 500°C, wherein the properties include a predominantly amorphous structure or a substantially completely amorphous structure.

2. The article of claim 1, wherein the properties include a film density.

3. The article of claim 1, wherein the properties include a thickness range of 1,000 Angstroms or less.

4. The article of claim 1, wherein the thermal chemical vapor deposition coating has a thickness of greater than 8,000 Angstroms and does not flake.

5. The article of claim 1, wherein the thermal chemical vapor deposition coating has a thickness of greater than 12,000 Angstroms and does not flake.

6. The article of claim 1, wherein the thermal chemical vapor deposition coating has a thickness of greater than 16,000 Angstroms and does not flake.

7. The article of claim 1, wherein the thermal chemical vapor deposition coating has a thickness of greater than 19,000 Angstroms and does not flake.

8. The article of claim 1, wherein the properties include a wavelength range of 100 nm or less.

9. The article of claim 1, wherein the properties include impedance measurable by electronic impedance spectroscopy.

10. The article of claim 1, wherein the properties include growth that is not monolayer growth.

11. The article of claim 1, wherein the properties include being devoid of bead spots.

12. The article of claim 1, wherein the substrate includes metal.

13. The article of claim 1, wherein the substrate includes a metallic alloy.

14. The article of claim 1, wherein the substrate has been treated by a temperature of at least 380ºC.

15. The article of claim 1, wherein the substrate has been treated by a temperature of at least 430ºC.

16. The article of claim 1, wherein the substrate has been treated by a temperature of at least 440ºC.

17. The article of claim 1, wherein the thermal chemical vapor deposition coating has a thickness of greater than 8,000 Angstroms with a thickness tolerance of from 150 Angstroms to 250 Angstroms.

18. A thermal chemical vapor deposition process, comprising:

introducing a gaseous species to a vessel, wherein the gaseous species comprises a silane-containing species; and

producing a surface coating having a predominantly amorphous structure or a substantially completely amorphous structure on an article within the vessel by a diffusion-rate-limited reaction of the gaseous species at a temperature of between 300°C and 500°C in a thermal chemical vapor deposition process.

19. The process of claim 18, wherein the gaseous species is a silane-containing species including silane at a concentration, by volume, of between 10% and 20% and an inert gas.

20. The process of claim 18, wherein the surface coating has a thickness of greater than 8,000 Angstroms with a thickness tolerance of from 150 Angstroms to 250 Angstroms.