Claims

What is claimed is

1. A compound of Formula (I): $(XR)M(NR^1R^2)_3$, wherein

(i) M = Sn;

(ii) R is a branched C_5 to C_{10} alkylene linker group wherein (i) three to eight main chain carbon moieties connect M and X and (ii) at least one of the first three main chain carbon moieties that connect M and X is a quaternary carbon moiety that is free of hydrogen;

(iii) R^1 and R^2 are each independently selected from a linear C_1 to C_6 alkyl group, a branched C_4 to C_6 alkyl group or a cyclic C_3 to C_6 alkyl group; and

(iv) X is one of $-OR^3$ or $-NR^4R^5$ where R^3, R^4 and R^5 are each independently selected from a linear C_1 to C_6 alkyl group, a branched C_4 to C_6 alkyl group or a cyclic C_3 to C_6 alkyl group.

2. The compound of claim 1, wherein R the α-carbon moiety is a hydrogen-free quaternary carbon moiety.

3. The compound of claim 1, wherein R the β-carbon moiety is a hydrogen-free quaternary carbon moiety.

4. The compound of claim 1, wherein in R the γ-carbon moiety is a hydrogen-free quaternary carbon moiety.

5. The compound of claim 1, wherein R two or more of the α-carbon moiety, β-carbon moiety and γ-carbon moiety are hydrogen-free quaternary carbon moieties.

6. The compound of claim 1 having formula$(NR^1R^2)_3Sn\text{-}C(Me_2)CH_2CH_2\text{-}X$.

7. The compound of claim 1 having formula $(NR^1R^2)_3Sn\text{-}CH_2C(Me_2)CH_2\text{-}X)$.

8. The compound of claim 1 having formula $(NR^1R^2)_3Sn\text{-}CH_2CH_2C(Me_2)\text{-}X)$.

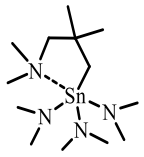
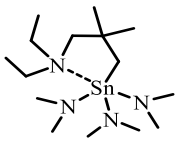
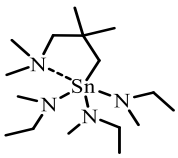
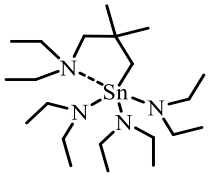
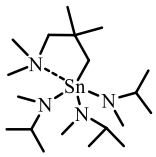
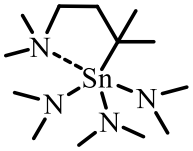
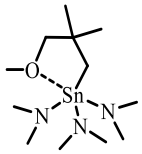
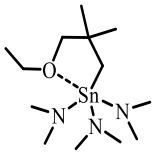
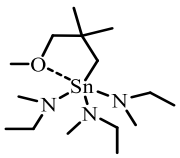
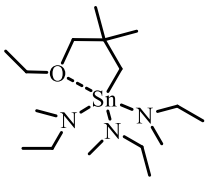
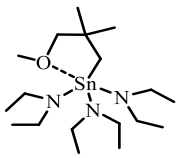
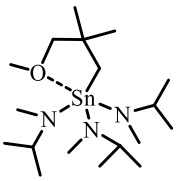
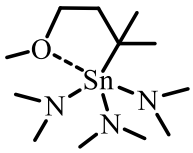
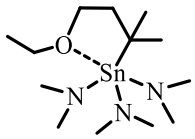
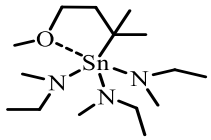
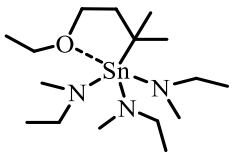
9. The compound of claim 1, wherein the compound of Formula (I) comprises$(NMe_2CH_2CMe_2CH_2)Sn(NMe_2)_3$.

10. The compound of claim 1, wherein the compound of Formula (I) comprises $(OMeCH_2CMe_2CH_2)Sn(NMe_2)_3$.

11. The compound of claim 1, wherein the compound of Formula (I) comprises $(OMeCH_2CH_2CMe_2)Sn(NMe_2)_3$.

12. The compound of claim 1, wherein the compound of Formula (I) comprises $(NMe_2CH_2CH_2CMe_2)Sn(NMe_2)_3$.

13. The compound of claim 1, wherein the compound of Formula (I) comprises one or more of:

 **(i)**	 **(ii)**	 **(iii)**	 **(iv)**
 **(v)**	 **(vi)**	 **(vii)**	 **(viii)**
 **(ix)**	 **(x)**	 **(xi)**	 **(xii)**
 **(xiii)**	 **(xiv)**	 **(xv)**	 **(xvi)**

14. A composition comprising (i) one or more compounds of any of claims 1-13 and (ii) one or more solvents.

15. A method for depositing organotin oxide or tin oxide films comprising the steps of:

a. providing one or more substrates in a reactor, where the reactor is heated to temperature of from about 25 °C to about 600 °C and optionally maintained at a pressure of about 100 torr or less;

b. introducing into the reactor a vapor comprising one or more compounds or compositions of any of claims 1-14;

c. purging the reactor with an inert gas;

d. introducing one or more oxygen source to convert the metal-containing layer to an organometal oxide or metal oxide layer; and

e. purging the reactor with an inert gas.

16. The method of claim 15, further comprising the steps of:

f. introducing one or more carboxylic acid vapor having the formula R^3COOH where R^3 is selected from hydrogen, a linear C_1 to C_6 alkyl group, a branched C_3 to C_6 alkyl group, a C_3 to C_6 cyclic alkyl group, a C_2 to C_6 alkenyl group, a C_3 to C_6 alkynyl group, and a C_4 to

C_{10} aryl group to react with the organometal oxide or metal oxide layer; and

g. purging the reactor with an inert gas.

17. The method of claim 15, wherein the step (d) one or more oxygen source comprises one or more of oxygen (O_2), ozone (O_3), nitric oxide (NO), water (H_2O) vapor, hydrogen peroxide (H_2O_2), oxygen plasma (O*), N_xO_y (wherein x = 1 or 2 and y = 1, 2, 3 or 4) and combinations thereof.

18. The method of claim 16, wherein step (f) one or more carboxylic acid vapor comprises one or more of formic acid, acetic acid, propionic acid, butyric acid, iso-butyric acid, valeric acid, 2-methylbutyric acid, 3-methylbutyric acid, caproic acid, enanthic acid, caprylic acid, pelargonic acid, capric acid, fluoroacetic acid, chloroacetic acid, iodoacetic acid, dichloroacetic acid, 4,4,4-trifluorobutanoic acid, 3,3,3-trifluoropropanoic acid, cyclobutanecarboxylic acid, cyclopentanecarboxylic acid, cyclohexanecarboxylic acid, 4,4-difluorocyclohexanecarboxylic acid and tetrahydro-3-furancarboxylic acid.

19. The method of claim 16, wherein step (f) one or more carboxylic acid vapor consists of a carboxylic acid has a boiling point of about 250 °C or lower.

20. The method of claim 16, wherein step (f) one or more carboxylic acid vapor comprises acetic acid.