CLAIMS

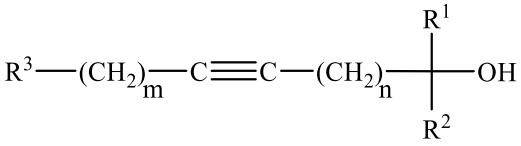
What is claimed is:

1. A surface passivating formulation comprising:

(i) one or more alkynes; and

(ii) one or more tertiary alcohols, wherein the tertiary alcohol comprises one or more one acetylenic compound comprising a tertiary alcohol.

2. The formulation of claim 1, wherein the tertiary alcohol comprises one or more one acetylenic compound comprising a tertiary alcohol of Formula1:



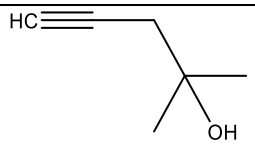
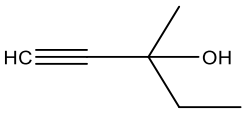
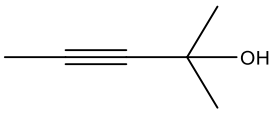
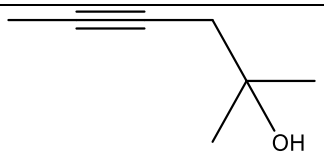
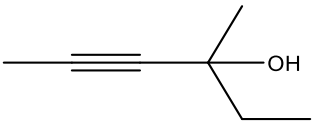
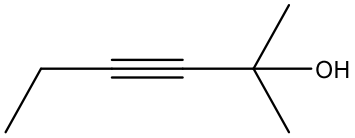
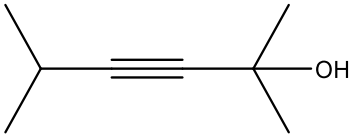
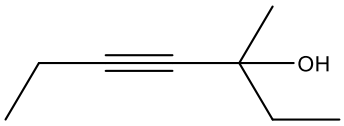
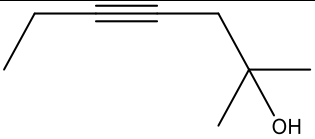
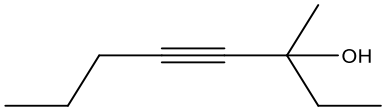
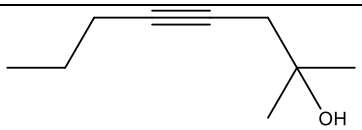
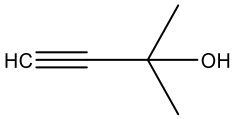
Formula 1

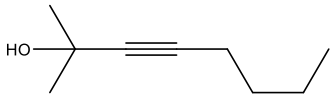
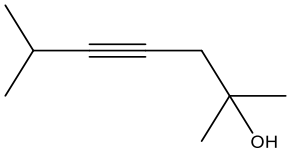
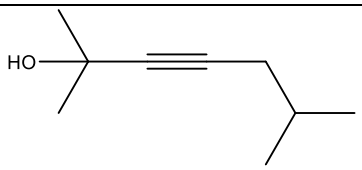
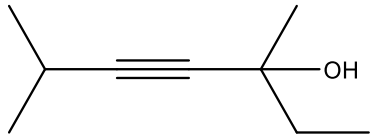
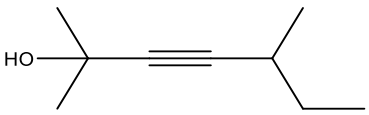
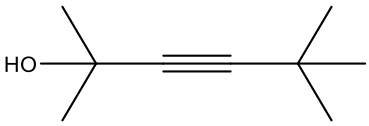
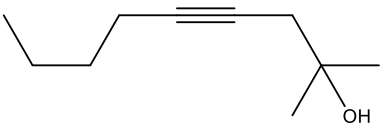
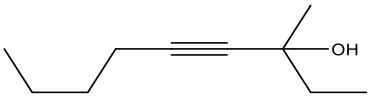
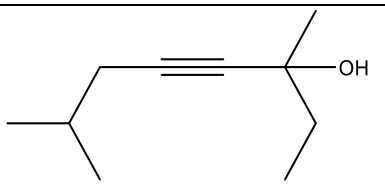
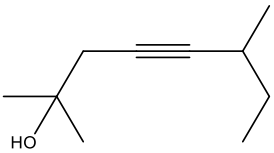
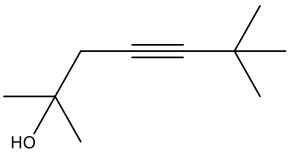
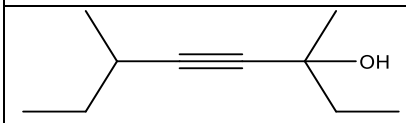
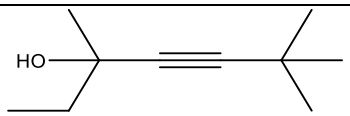
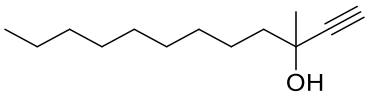
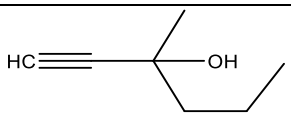
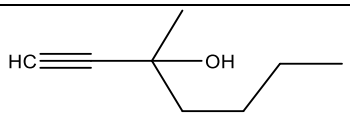
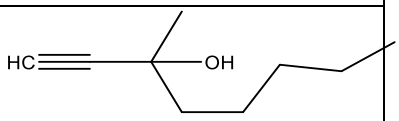
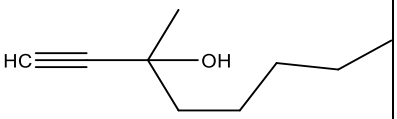
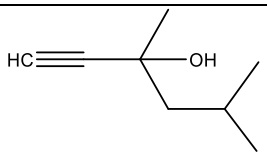
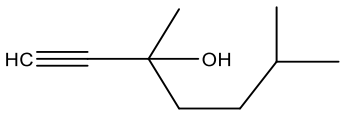
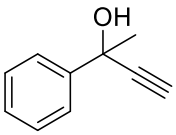
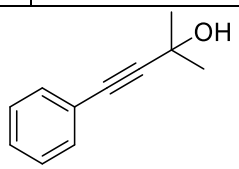
wherein (i) m = 0-3, (ii) n = 0-3, (iii) R^3 is a hydrogen, a linear C_1-C_8 alkyl group, a branched C_3-C_8 alkyl group, a cyclic C_3-C_8 alkyl group, a five-member aromatic ring or a six-member aromatic ring and (iv) each of R^1 and R^2 is independently a linear C_1-C_8 alkyl group or a branched C_3-C_8 alkyl group.

3. The formulation of claim 2, wherein R^3 is selected from the group of a hydrogen, a methyl group and a phenyl group.

4. The formulation of claim 2, wherein one or both of R^1 and R^2 is a methyl group.

5. The formulation of claim 1, wherein the tertiary alcohol comprises one or more of:

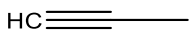
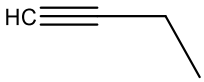
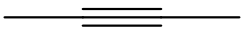
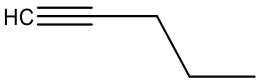
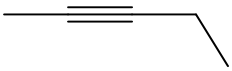
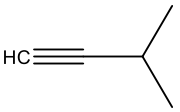
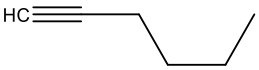
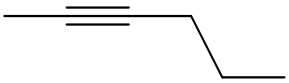
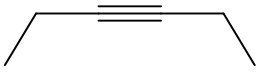
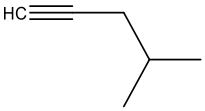
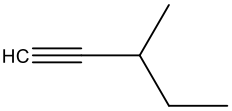
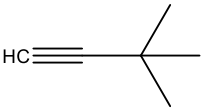
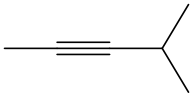
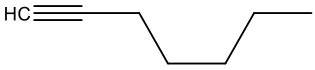
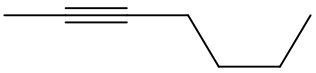
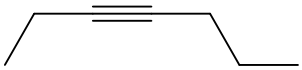
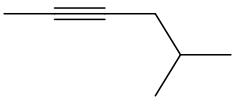
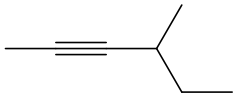
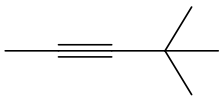
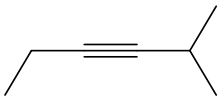
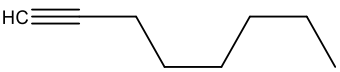
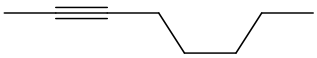
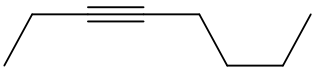
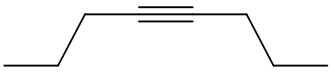
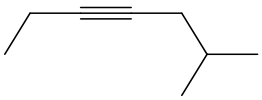
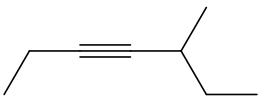
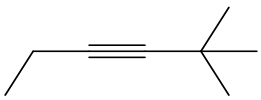
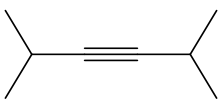
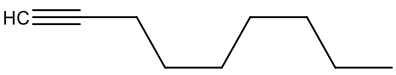
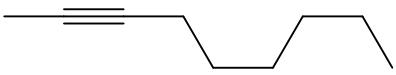
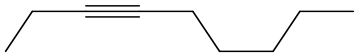
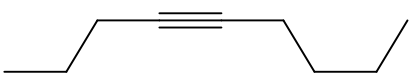
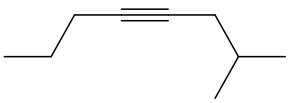
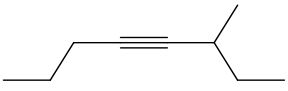
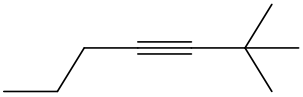
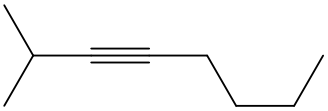
Alcohol Structure	Alcohol Structure	Alcohol Structure
 **10C**	 **10G**	 **10K**
 **11H**	 **11M**	 **12A**
 **14D**	 **13N**	 **13H**
 **16E**	 **15P**	 **9L**

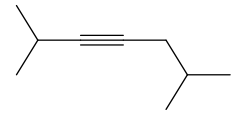
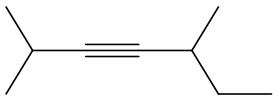
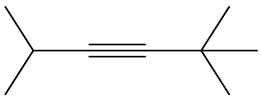
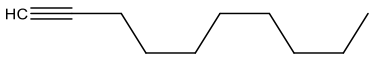
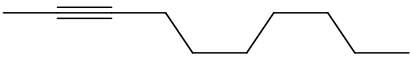
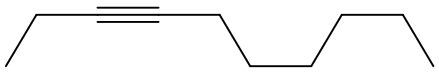
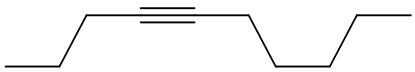
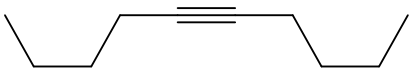
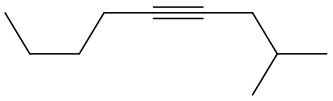
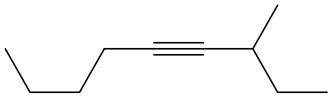
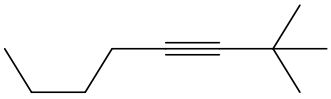
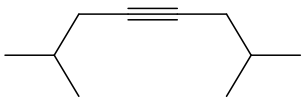
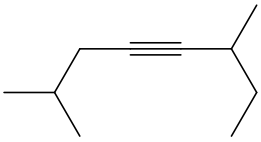
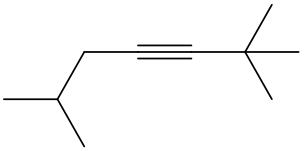
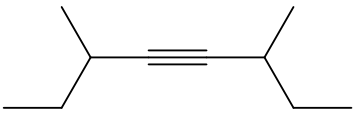
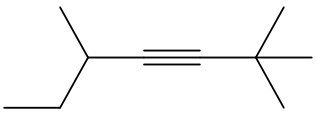
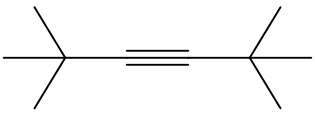
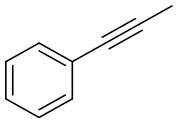
 **16R**	 **17C**	 **17E**
 **17I**	 **17K**	 **17N**
 **19Q**	 **20G**	 **21A**
 **21D**	 **21H**	 **21L**
 **21O**	 **22B**	 **22G**
 **23A**	 **23B**	 **23D**
 **23C**	 **23E**	 **23F**
 **24C**	 **24D**	

6. The formulation of claim 1, wherein the (ii) one or more tertiary alcohol comprises one or more of 2-methyl-3-octyn-2-ol (16R), 3,5-dimethyl-1-hexyn-3-ol (23E) and 3-methyl-1-octyn-3-ol (23C).

7. The formulation of claim 1, wherein the formulation comprises about 0.01 wt% to about 2 wt% of the (ii) one or more tertiary alcohols.

8. The formulation of claim 1, wherein the (i) one or more alkynes comprises one or more of:

Alkyne Structure	Alkyne Structure	Alkyne Structure
 **1A**	 **1B**	 **1C**
 **1D**	 **1E**	 **1F**
 **1G**	 **1H**	 **1I**
 **1J**	 **1K**	 **1L**
 **1M**	 **1N**	 **1O**
 **1P**	 **1Q**	 **1R**
 **1S**	 **1T**	 **1U**
 **1V**	 **1W**	 **1X**
 **2A**	 **2B**	 **2C**
 **2D**	 **2E**	 **2F**
 **2G**	 **2H**	 **2I**
 **2J**	 **2K**	 **2L**

 2M	 2N	 2O
 3A	 3B	 3C
 3D	 3E	 3F
 3G	 3H	 3I
 3J	 3K	 3L
 3M	 3N	 3M

9. The formulation of claim 1 comprising:

(i) one or more alkynes comprising one or more of 5-decyne (3E), 1-decyne (3A) and 3-hexyne (1I); and

(ii) one or more tertiary alcohol selected from the group of 2-methyl-3-octyn-2-ol (16R), 3,5-dimethyl-1-hexyn-3-ol (23E) and 3-methyl-1-octyn-3-ol (23C).

10. The formulation of claim 9, wherein the formulation comprises about 0.01 wt% to about 2 wt% of the (ii) one or more tertiary alcohols selected from the group of 2-methyloct-3-yn-2-ol (16R), 3,5-dimethyl-1-hexyn-3-ol (23E) and 3-methyl-1-octyn-3-ol (23C).

11. The formulation of any of claims 1-10, wherein the (i) one or more alkynes comprises one or more high-purity alkyne having one or more of the following:

a concentration of water of less than about 50 ppm;

a concentration of carboxylic acids of less than about 500 ppm;

a concentration of halogen-containing impurities of less than about 50 ppm; and

a concentration of halogen-containing impurities of less than about 10 ppm.

12. A method for forming a film on at least one surface of a substrate comprising:

a. providing the at least one surface of the substrate in a reaction vessel;

b. forming at least one passivated surface by exposing the at least one surface to one or more of the formulations of any of claims 1-11.

13. The method of claim 12, wherein the method comprises a part of one or more of an atomic layer deposition process (ALD), a plasma enhanced ALD process (PEALD) and a chemical vapor deposition process (CVD).

14. The method of claim 12, further comprising depositing a nitride film or an oxide film on the at least one passivated surface.