The resist composition may further include an additive selected from the group consisting of an alkali soluble quencher, an acid diffusion quencher, a surfactant, and any mixture thereof.

In accordance with another aspect of the present invention, there is provided a method of forming a resist pattern including forming a resist film by coating the resist composition on a substrate, heating the resist film, and exposing the resist film to light to form a predetermined pattern, and developing the exposed pattern.

The exposing may be performed using a light source selected from the group consisting of a KrF excimer laser, an ArF excimer laser, an extreme ultraviolet laser, an X-ray, and an electron beam.

Other aspects, features, and advantages of the present invention will be more clearly understood from the following detailed description.

DETAILED DESCRIPTION OF THE INVENTION

Hereinafter, the present invention will be described in detail. ~~However, descriptions of these example embodiments are only provided for illustrative purposes, and should not be construed as limiting the scope and spirit of the present invention.~~ The following detailed description

micro resist pattern with excellent sensitivity and high resolution may be obtained.

Hereinafter, the present invention will be described more fully with reference to the following examples. ~~However, the following examples are capable of being embodied through modifications and alternative forms, and there is no intent to limit the embodiments to the particular forms disclosed herein.~~

Preparation Example: Synthesis of Polymer

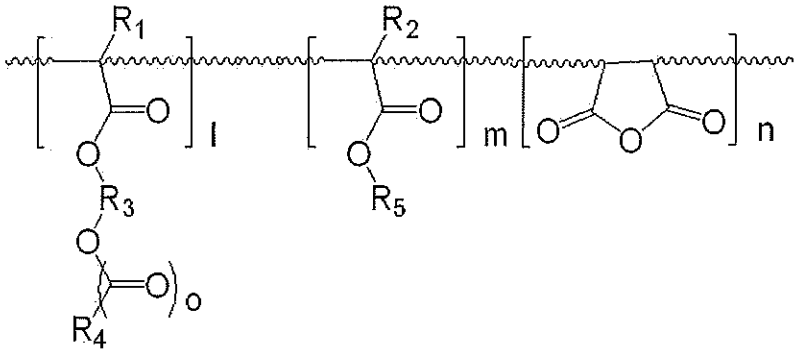
Polymer Synthesis Example 1

A solution prepared by dissolving 10 g of 2-methyl-acrylic acid 3-(2,2,2-trifluoro-acetoxy)-adamantan-1-yl ester, 1 g of maleic anhydride 1g, and 15 g of 2-methyl-acrylic acid 1-isopropyl-cyclohexyl ester in 255 g of 1,4-dioxane and 1 g of dimethyl azobis butyronitrile (DMAB), as an initiator, were added to a jacket reactor and stirred. The temperature of the reactor was gradually increased by setting the temperature of a circulator to 65℃, and the reactor was stirred at 65℃ for 8 hours. After reaction was terminated, the reaction solution was precipitated by adding 3.4 L of n-hexane thereto. The precipitates were filtered and dried in vacuum to obtain Polymer I represented by the following formula. A polystyrene equivalent weight average molecular weight (Mw) of Polymer I was 7,500 g/mol.

WHAT IS CLAIMED IS:

1. A resist additive represented by Formula 1 below:

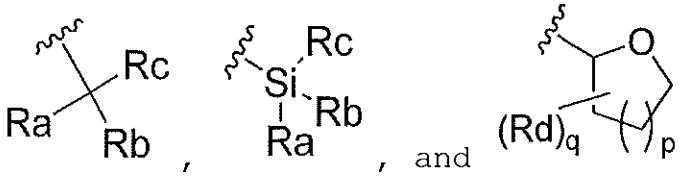
Formula 1



wherein R_1 and R_2 are each independently a hydrogen atom or a C1-C8 alkyl group,

R_3 is selected from the group consisting of a C1-C20 alkanediyl group, a C2-C20 alkenediyl group, a C1-C20 heteroalkanediyl group, a C2-C20 heteroalkenediyl group, a C3-C30 cycloalkanediyl group, a C3-C30 cycloalkenediyl group, a C2-C30 heterocycloalkanediyl group, and a C3-C30 heterocycloalkanediyl group in which at least one hydrogen atom is substituted with one group selected from the group consisting of a C1-C10 alkyl group, a C1-C20 haloalkyl group, and a C3-C30 cycloalkyl group or unsubstituted,

R_4 is a hydrophobic group selected from the group consisting of a C1-C20 haloalkyl group, ~~an organic silicon group, and a C3-C20 hydrocarbon group,~~

R_5 is an acid labile group selected from the group consisting of , wherein R_a, R_b, R_c and R_d are each independently selected from the group consisting of a C1-C20 alkyl group, a C3-C30 cycloalkyl group, a (C1-C10 alkyl)cycloalkyl group, a hydroxyalkyl group, a C1-C20 alkoxy group, a (C1-C10 alkoxy)alkyl group, an acetyl group, an acetylalkyl group, a carboxyl group, a (C1-C10 alkyl)carboxyl group, a (C3-C18 cycloalkyl)carboxyl group, and a C3-C30 heterocycloalkyl group, or fused together between adjacent groups to form a C3-C30 saturated or unsaturated hydrocarbon ring or a C2-C30 heterocyclic group, p is an integer of 0 to 3, and q is an integer of 0 to 10,

l, m, and n are respectively numbers of the repeat units in a backbone, wherein $l+m+n=1$, $0<l/(l+m+n)<0.99$, $0\leq m/(l+m+n)<0.99$, and $0<n/(l+m+n)\leq 0.20$, and

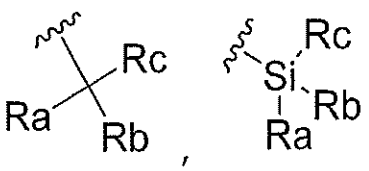
o is an integer of ~~0 or 1, wherein if o is 0, R_4 is an organic silicon group, and if o is 1, R_4 is a C1-C20 haloalkyl group or a C3-C20 hydrocarbon group~~.

2. The resist additive of claim 1, wherein R_3 is selected from the group consisting of a C1-C10 alkanediyl group, a C2-C10 alkenediyl group, a C1-C10

heteroalkanediyl group, a C2-C10 heteroalkenediyl group, a C3-C18 cycloalkanediyl group, a C3-C18 cycloalkenediyl group, a C2-C18 heterocycloalkanediyl group, and a C3-C18 heterocycloalkanediyl group in which at least one hydrogen atom is substituted with a C1-C10 alkyl group or a C1-C10 haloalkyl group or unsubstituted.

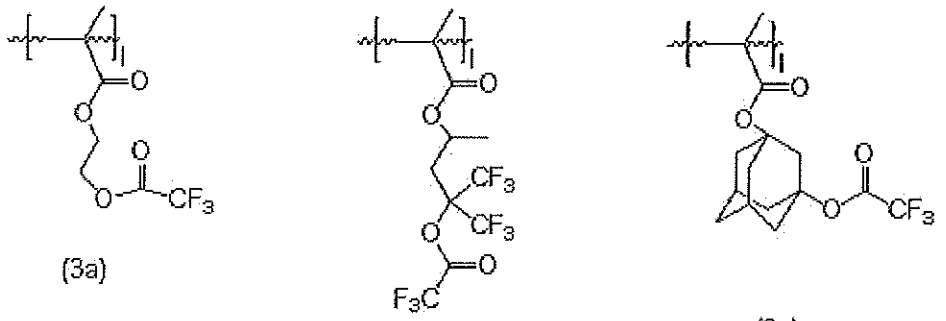
3. The resist additive of claim 1, wherein R_4 is ~~selected from the group consisting of~~ a C1-C10 fluoroalkyl group~~, a silyl group, a C1-C10 alkylsilyl group, a C3-C10 linear or branched alkyl group, a C3-C14 monocyclic cycloalkyl group, a C8-C18 dicyclic cycloalkyl group, a C10-C30 tricyclic cycloalkyl group, and a C10-C30 tetracyclic cycloalkyl group~~.

4. The resist additive of claim 1, wherein R_4 is selected from the group consisting of ~~a t-butyl group,~~ a trifluoromethyl group, ~~a trimethylsilyl group,~~ a di(trifluoromethyl)isopropyl group, a pentafluoroethyl group, and a heptafluoropropyl group.

5. The resist additive of claim 1, wherein R_5 is selected from the group consisting of 

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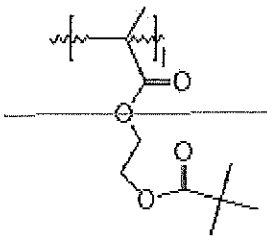
repeat units represented by Formulae 3a to ~~3i~~ 3c below:



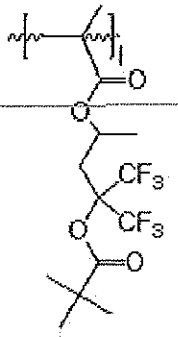
(3a)

(3b)

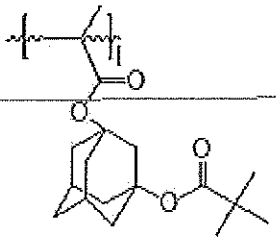
(3c)



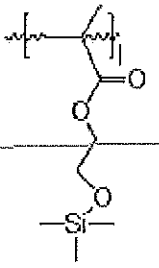
(3d)



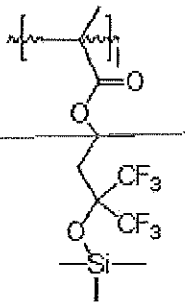
(3e)



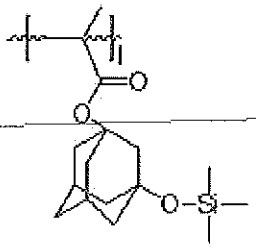
(3f)



(3g)



(3h)



(3i)

8. The resist additive of claim 1, wherein a repeat unit m is selected from the group consisting of repeat units represented by Formulae 4a to 4d below: