DOF).

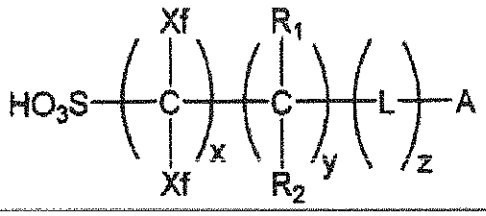
[Patent reference 1] Jpn. Pat. Appln. KOKAI Publication No. (hereinafter referred to as JP-A-) 2006-156422,

[Patent reference 2] JP-A-2000-199953, and

[Patent reference 3] US Patent Application 2008/0187860 A.

Summary

In one aspect of the invention, there is provided a method of forming a pattern, comprising the step of applying an actinic-ray- or radiation-sensitive resin composition on a substrate so as to form a film, the step of selectively exposing the film through a mask and the step of developing the exposed film with the use of a developer containing an organic solvent, wherein the actinic-ray- or radiation-sensitive resin composition contains a resin (A) whose polarity is increased by the action of an acid so that the solubility of the resin in the developer containing an organic solvent is decreased, a photoacid generator (B) that when exposed to actinic rays or radiation, generates an acid containing a fluorine atom and having a cyclic structure in its molecule, and a solvent (C), and wherein the photoacid generator (B) is contained in the composition in a ratio of 8 to 20 mass% based on the total solids of the composition, the acid generated from the photoacid generator (B) is represented by the general formula,



in which each of Xfs independently represents a fluorine atom or an alkyl group substituted with at least one fluorine atom; each of R^1 and R^2 independently represents a member selected from among a hydrogen atom, a fluorine atom, an alkyl group and an alkyl group substituted with at least one fluorine atom, provided that when two or more R^1s or R^2s are contained, the two or more may be identical to or different from each other; L, each independently in the instance of Ls, represents any one of -COO-, -OCO-, -CO- and an alkylene group; A represent a group with a cyclic structure; x is an integer of 1 to 20; y is an integer of 0 to 10 and z is an integer of 0 to 10.

Disclosure of Invention

It is an object of the present invention to provide a method of forming a pattern using an actinic-ray- or radiation-sensitive resin composition that excels in line width roughness (LWR), focus latitude (depth of focus, DOF) and pattern configuration in order to more stably produce a micropattern of high precision required for manufacturing electronic devices of high integration and high precision. It is another object of the present invention to provide a pattern formed by the above method.

Some aspects of the present invention is as follows.

(1) A method of forming a pattern, comprising the step of applying an actinic-ray- or radiation-sensitive resin composition on a substrate so as to form a film, the step of selectively exposing the film through a mask and the step of developing the exposed film with the use of a developer containing an organic solvent, wherein the actinic-ray- or radiation-sensitive resin