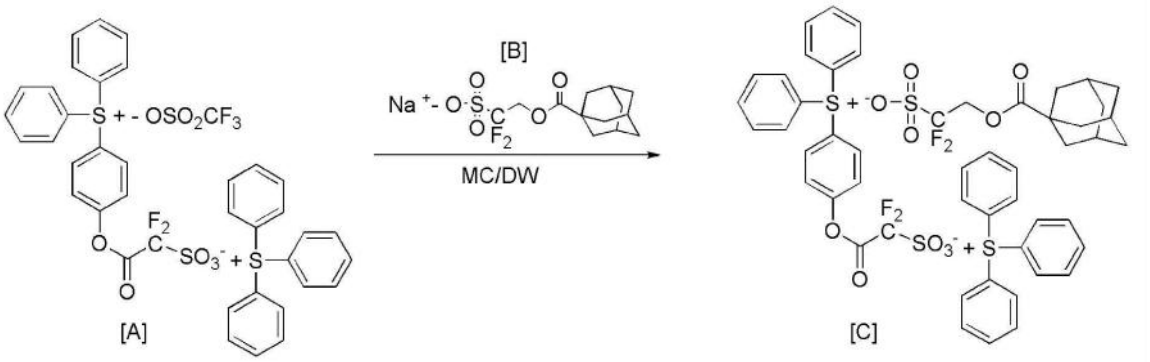
NMR, and after completion of the reaction, the reaction solution was washed with an aqueous solution of K_2CO_3 and distilled water. The organic layer was concentrated, and thus a reaction liquid was prepared. The crude reaction liquid was purified using dichloromethane and hexane, and from the purified reaction liquid, 55.4 g (yield 92%) of a compound represented by [C] in the following reaction scheme (3) was obtained.

Fig. 3 presents the NMR data of the compound [C] produced by the reaction scheme (3).

[Reaction Scheme 3]



Synthesis Example for resin

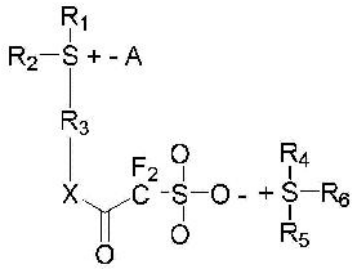
3-Bicyclo[2.2.1]hept-5-en-2-yl-3-hydroxypropionic acid t-butyl ester, 1-methyladamantane acrylate, and γ-butyrolactone methyl acrylate were introduced at a molar ratio of 1:1:1 (33 parts by mole:33 parts by mole:33 parts by mole), and 1,4-dioxane was used as a polymerization solvent in an amount three times the total mass of the reaction monomers. Azobisisobutyronitrile was incorporated as an initiator at a proportion of 4 mol% relative to the total molar amount of the monomers, and thus a mixed solution was prepared.

The mixed solution was allowed to react for 16 hours at 65°C to prepare a reaction solution, and the reaction solution was precipitated in n-hexane and was dried in a vacuum. Thus, a resin represented by the following formula (10), which is a copolymer having a

CLAIMS

1. A sulfonium compound represented by the following formula (1):

[Chemical Formula 1]



wherein in the formula (1),

X represents an electron donor group;

R_1 and R_2 each independently represent any one selected from an alkyl group, a cycloalkyl group, an aryl group, a heteroalkyl group, a heterocycloalkyl group and a heteroaryl group, or R_1 and R_2 may be joined, together with the sulfur atom to which R_1 is bonded, to form a heterocycloalkyl group having 2 to 7 carbon atoms;

R_4 to R_6 each independently represent any one selected from an alkyl group, a cycloalkyl group, an aryl group, a heteroalkyl group, a heterocycloalkyl group and a heteroaryl group, or R_4 and R_5 may be joined, together with the sulfur atom to which R_4 is bonded, to form a heterocycloalkyl group having 2 to 7 carbon atoms;

R_3 represents any one selected from the group consisting of a cyclic alkenediyl group, a heterocyclic alkenediyl group, an arylene group and a heteroarylene group; and

-A represents an anion,

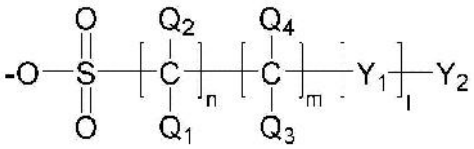
wherein, the heteroalkyl group means a heteroalkyl group having 1 to 40 carbon atoms, the heterocycloalkyl group means a heterocycloalkyl group having 2 to 40 carbon atoms, the heteroaryl group means a heteroaryl group having 2 to 30 carbon atoms, the heteroarylene group means a heteroarylene group having 2 to 40 carbon atoms, and the "hetero-" means that one to three carbon atoms have been substituted by heteroatoms selected from the group consisting of -N-, -O-, -S- and -P-.

2. The sulfonium compound according to claim 1, wherein -A represents any one

selected from a sulfonate anion, an imide anion, a methide anion, a halogenated alkyl anion, a carboxylate anion~~, an iodonium anion~~ and a sulfonylimide anion.

3. The sulfonium compound according to claim 1, wherein -A represents any one selected from the group consisting of anions represented by the following formula (1-1), (1-2) and (1-3):

[Chemical Formula 1-1]



wherein in the formula (1-1),

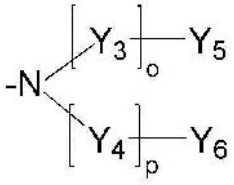
Q_1, Q_2, Q_3 and Q_4 each independently represent any one selected from the group consisting of a hydrogen atom, a halogen atom and an alkyl group;

Y_1 represents any one selected from the group consisting of an alkanediyl, an alkenediyl, NR', S, O, CO and combinations thereof, R' represents any one selected from the group consisting of a hydrogen atom and an alkyl group;

Y_2 represents any one selected from the group consisting of a hydrogen atom, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, a heteroalkyl group, an allyl group, a perfluoroalkyl group, a haloalkyl group, and an alkylsulfonyl group;

n represents an integer from 0 to 10, m represents an integer from 0 to 10, and l represents an integer from 0 to 5;

[Chemical Formula 1-2]



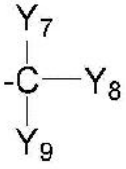
wherein in the formula (1-2),

Y_3 and Y_4 each independently represent any one selected from the group consisting of an alkanediyl, an alkenediyl, NR', S, O, CO, O_2S and combinations thereof, R' represents any one selected from the group consisting of a hydrogen atom and an alkyl group;

Y_5 and Y_6 each independently represent any one selected from the group consisting of a hydrogen atom, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, a heteroalkyl group, an allyl group, a perfluoroalkyl group, a haloalkyl group, and an alkylsulfonyl group;

o represents an integer from 0 to 5, and p represents an integer from 0 to 5; and

[Chemical Formula 1-3]



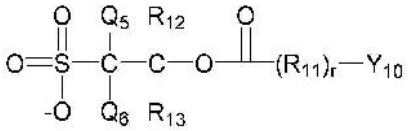
wherein in the formula (1-3),

Y_7, Y_8 and Y_9 each independently represent any one selected from the group consisting of a hydrogen atom, an alkyl group, a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, a heteroalkyl group, an allyl group, a perfluoroalkyl group, a haloalkyl group and an alkylsulfonyl group,

wherein, the heteroalkyl group means a heteroalkyl group having 1 to 40 carbon atoms, the heterocycloalkyl group means a heterocycloalkyl group having 2 to 40 carbon atoms, the heteroaryl group means a heteroaryl group having 2 to 30 carbon atoms, and the "hetero-" means that one to three carbon atoms have been substituted by heteroatoms selected from the group consisting of -N-, -O-, -S- and -P-.

4. The sulfonium compound according to claim 1, wherein -A represents any one selected from the group consisting of $-OSO_2CF_3$, $-OSO_2C_4F_9$, $-OSO_2C_8F_{17}$, $-N(CF_3)_2$, $-N(C_2F_5)_2$, $-N(C_4F_9)_2$, $-C(CF_3)_3$, $-C(C_2F_5)_3$, $-C(C_4F_9)_3$ and an anion represented by the following formula (1-4):

[Chemical Formula 1-4]



wherein in the formula (1-4),

Y_{10} represents any one selected from the group consisting of a cycloalkyl group, a heterocycloalkyl group, an aryl group, a heteroaryl group, an alkyl group, a heteroalkyl group, an allyl group, a perfluoroalkyl group, a haloalkyl group and an alkylsulfonyl group;

R_{11} represents any one selected from the group consisting of an alkanediyl, an alkenediyl, NR', S, O, CO and combinations thereof, R' represents any one selected from the group consisting of a hydrogen atom and an alkyl group;

R_{12} and R_{13} each independently represent any one selected from the group consisting of a hydrogen atom and an alkyl group having 1 to 8 carbon atoms;

r represents an integer from 0 to 5; and

Q_5 and Q_6 each independently represent a halogen atom,

wherein, the heteroalkyl group means a heteroalkyl group having 1 to 40 carbon atoms, the heterocycloalkyl group means a heterocycloalkyl group having 2 to 40 carbon atoms, the heteroaryl group means a heteroaryl group having 2 to 30 carbon atoms, and the "hetero-" means that one to three carbon atoms have been substituted by heteroatoms selected from the group consisting of -N-, -O-, -S- and -P-.

5. The sulfonium compound according to claim 1, wherein R_3 represents any one selected from the group consisting of groups represented by the following formulas (2-1) to (2-4):

[Chemical Formula 2-1]

heterocycloalkyl group, and a heteroaryl group, or R_4 and R_5 may be joined, together with the sulfur atom to which R_4 is bonded, to form a heterocycloalkyl group having 2 to 7 carbon atoms; and

-A represents an anion,

wherein, the heteroalkyl group means a heteroalkyl group having 1 to 40 carbon atoms, the heterocycloalkyl group means a heterocycloalkyl group having 2 to 40 carbon atoms, the heteroaryl group means a heteroaryl group having 2 to 30 carbon atoms, the heteroarylene group means a heteroarylene group having 2 to 40 carbon atoms, and the "hetero-" means that one to three carbon atoms have been substituted by heteroatoms selected from the group consisting of -N-, -O-, -S- and -P-.

8. An acid generator comprising the sulfonium compound according to any one of claims 1 to 7.

9. A resist composition comprising the acid generator according to claim 8.