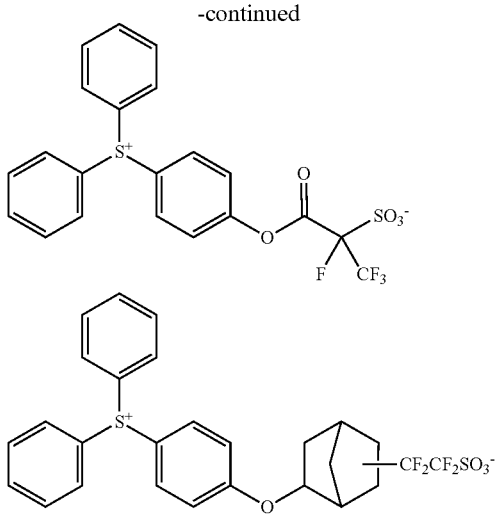
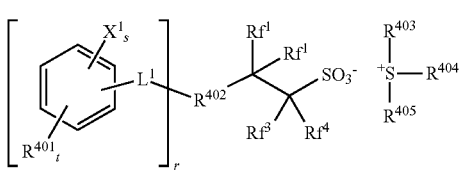
-continued

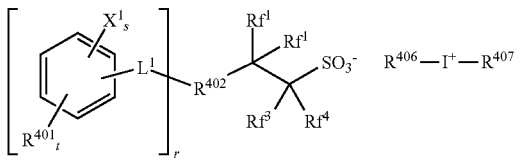


**[0123]** Of the foregoing PAGs, those having an anion of formula (1A') or (1D) are especially preferred because of reduced acid diffusion and high solubility in the resist solvent. Also those having an anion of formula (2') are especially preferred because of extremely reduced acid diffusion.

**[0124]** Also a sulfonium or iodonium salt having an iodized or brominated aromatic ring-containing anion may be used as the PAG. Suitable are sulfonium and iodonium salts having the formulae (3-1) and (3-2).



(3-1)



(3-2)

**[0125]** In formulae (3-1) and (3-2), $X^1$ is iodine or bromine, and may be the same or different when s is 2 or more.

**[0126]** $L^1$ is a single bond, ether bond, ester bond, or a $C_1$-$C_6$ alkanediyl group which may contain an ether bond or ester bond. The alkanediyl group may be straight, branched or cyclic.

**[0127]** $R^{401}$ is a hydroxyl group, carboxyl group, fluorine, chlorine, bromine, amino group, or a $C_1$-$C_{20}$ alkyl, $C_1$-$C_{20}$ alkoxy, $C_2$-$C_{20}$ alkoxycarbonyl, $C_2$-$C_{20}$ acyloxy or $C_1$-$C_{20}$ alkylsulfonyloxy group, which may contain fluorine, chlorine, bromine, hydroxyl, amino or $C_1$-$C_{10}$ alkoxy moiety, or —$NR^{401A}$—C(═O)—R—$NR^{401A}$—C(O)—O—$R^{401B}$, wherein $R^{401A}$ is hydrogen, or a $C_1$-$C_6$ alkyl group which may contain halogen, hydroxy, $C_1$-$C_6$ alkoxy, $C_2$-$C_6$ acyl or $C_2$-$C_6$ acyloxy moiety, $R^{401B}$ is a $C_1$-$C_{16}$ alkyl, $C_2$-$C_{16}$ alkenyl or $C_6$-$C_{12}$ aryl group, which may contain halogen, hydroxy, $C_1$-$C_6$ alkoxy, $C_2$-$C_6$ acyl or $C_2$-$C_6$ acyloxy moiety.

**[0128]** The foregoing alkyl, alkoxy, alkoxycarbonyl, acyloxy, acyl and alkenyl groups may be straight, branched or cyclic. When t is 2 or more, groups $R^{401}$ may be the same or different. Of these, $R^{401}$ is preferably hydroxyl, —$NR^{401A}$—C(═O)—$R^{401B}$, —$NR^{401A}$—C(═O)—O—$R^{401B}$, fluorine, chlorine, bromine, methyl or methoxy.

**[0129]** $R^{402}$ is a single bond or a $C_1$-$C_{20}$ divalent linking group when r=1, or a $C_1$-$C_{20}$ tri- or tetravalent linking group when r=2 or 3, the linking group optionally containing an oxygen, sulfur or nitrogen atom.

**[0130]** $Rf^1$ to $Rf^4$ are each independently hydrogen, fluorine or trifluoromethyl, at least one of $Rf^1$ to $Rf^4$ is fluorine or trifluoromethyl, or $Rf^1$ and $Rf^2$, taken together, may form a carbonyl group. Preferably, both $Rf^3$ and $Rf^4$ are fluorine.

**[0131]** $R^{403}$, $R^{404}$, $R^{405}$, $R^{406}$ and $R^{407}$ are each independently a $C_1$-$C_{20}$ monovalent hydrocarbon group which may contain a heteroatom. Any two of $R^{403}$, $R^{404}$ and $R^{405}$ may bond together to form a ring with the sulfur atom to which they are attached. The monovalent hydrocarbon group may be straight, branched or cyclic, and examples thereof include $C_1$-$C_{12}$ alkyl, $C_2$-$C_{12}$ alkenyl, $C_2$-$C_{12}$ alkynyl, $C_6$-$C_{20}$ aryl, and $C_7$-$C_{12}$ aralkyl groups. In these groups, some or all of the hydrogen atoms may be substituted by hydroxyl, carboxyl, halogen, cyano, amide, nitro, mercapto, sultone, sulfone, or sulfonium salt-containing moieties, and some carbon may be replaced by an ether bond, ester bond, carbonyl moiety, carbonate moiety or sulfonic acid ester bond.

**[0132]** In formulae (3-1) and (3-2), r is an integer of 1 to 3, s is an integer of 1 to 5, and t is an integer of 0 to 3, and $1 \le s+t \le 5$. Preferably, s is an integer of 1 to 3, more preferably 2 or 3, and t is an integer of 0 to 2.

**[0133]** Examples of the cation in the sulfonium salt having formula (3-1) include those exemplified above as the cation in the sulfonium salt having formula (1-1). Examples of the cation in the iodonium salt having formula (3-2) include those exemplified above as the cation in the iodonium salt having formula (1-2).

**[0134]** Examples of the anion in the onium salts having formulae (3-1) and (3-2) are shown below, but not limited thereto. Herein $X^1$ is as defined above.