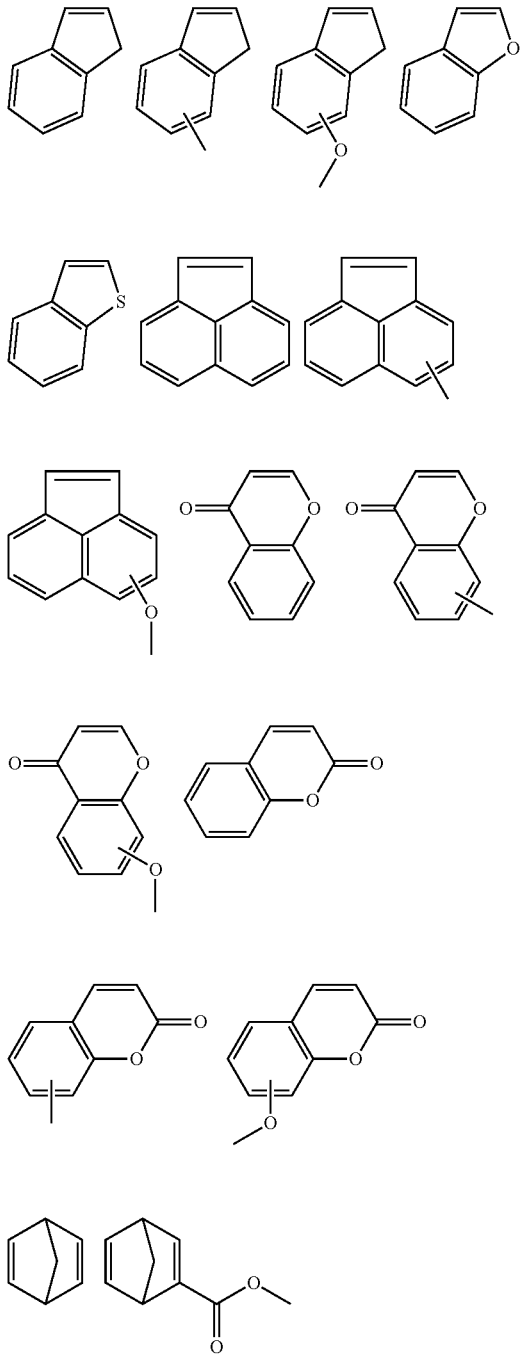
chromone, coumarin, and norbornadiene, or derivatives thereof. Suitable monomers are exemplified below.

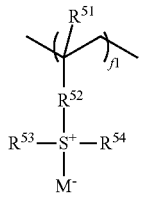


Besides the recurring units described above, further recurring units (e) may be incorporated in the base polymer, examples of which include styrene, vinylnaphthalene, vinylanthracene, vinylpyrene, methyleneindene, vinylpyridine, and vinylcarbazole.

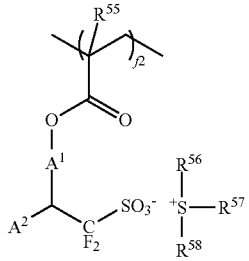
In a further embodiment, recurring units (f) derived from an onium salt having a polymerizable carbon-carbon double bond may be incorporated in the base polymer. JP-A 2005-084365 discloses sulfonium and iodonium salts having a polymerizable carbon-carbon double bond capable of generating a sulfonic acid. JP-A 2006-178317 discloses a sulfonium salt having sulfonic acid directly attached to the main chain.

In a preferred embodiment, the base polymer may further comprise recurring units of at least one type selected from formulae (f1), (f2) and (f3). These units are simply referred to as recurring units (f1), (f2) and (f3), which may be used alone or in combination of two or more types.

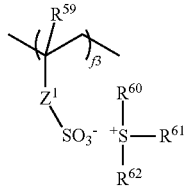
(f1)



(f2)



(f3)



Herein R^{51}, R^{55} and R^{59} each are hydrogen or methyl. R^{52} is a single bond, phenylene, —O—R^{63}—, or —C(=O)—Y^1—R^{63}—, wherein Y^1 is —O— or —NH—, and R^{63} is a C_1-C_6 straight, branched or cyclic alkylene or alkenylene group which may contain a carbonyl, ester, ether or hydroxyl moiety, or phenylene group. R^{53}, R^{54}, R^{56}, R^{57}, R^{58}, R^{60}, R^{61}, and R^{62} are each independently a C_1-C_{12} straight, branched or cyclic alkyl group which may contain a carbonyl, ester or ether moiety, or a C_6-C_{12} aryl group, C_7-C_{20} aralkyl group or mercaptophenyl group. A^1 is a single bond, -A^0-C(=O)—O—, -A^0-O— or -A^0-O—C(=O)—, wherein A^0 is a C_1-C_{12} straight, branched or cyclic alkylene group which may contain a carbonyl, ester or ether moiety. A^2 is hydrogen or trifluoromethyl. Z^1 is a single bond, methylene, ethylene, phenylene, fluorinated phenylene, —O—R^{64}—, or —C(=O)—Z^2—R^{64}—, wherein Z^2 is —O— or —NH—, and R^{64} is a C_1-C_6 straight, branched or cyclic alkylene or alkenylene group which may contain a carbonyl, ester, ether or hydroxyl moiety, or phenylene, fluorinated phenylene or trifluoromethyl-substituted phenylene group. M^- is a non-nucleophilic counter ion, and f1, f2 and f3 are numbers in the range: $0 \le f1 \le 0.5$, $0 \le f2 \le 0.5$, $0 \le f3 \le 0.5$, and $0 < f1+f2+f3 \le 0.5$.

Examples of the monomer from which recurring unit (f1) is derived are shown below, but not limited thereto. M^- is as defined above.