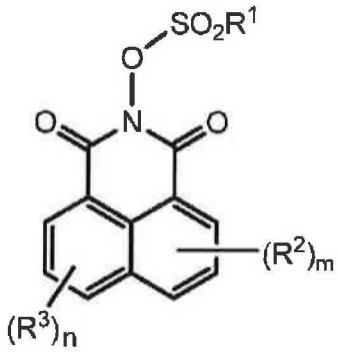
CLAIMS

1. An aromatic imide compound represented by the formula (1):

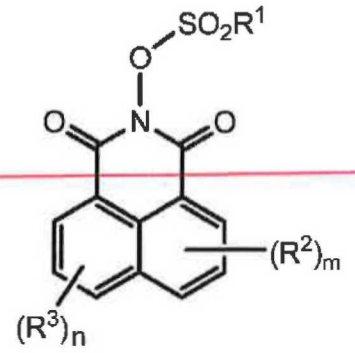


(1)

wherein R^1 represents a haloalkyl group having 1 to 7 carbon atoms or a haloaryl group, R^2 represents as a group R^4-R^5-, R^4 represents a substituted or unsubstituted aromatic group, R^5 represents a direct bond or an alkylene group, an alkenylene group, an alkynylene group, a thioester group, a sulfonic ester group, a boronic ester group, a disulfide group, an amino group, an amido group, a thioamido group, an azo group, and a triazole group, which may be substituted or unsubstituted, R^3 represents a halogen atom or a hydrocarbon group, m is an integer of 1 or more, n is zero or an integer of 1 or more, and a sum of n and m is 1 to 6.

2. The aromatic imide compound according to claim 1, which can absorb light of g-line (436 nm) and/or h-line (405 nm).

3. A method for preparing an aromatic imide compound represented by the formula (1):

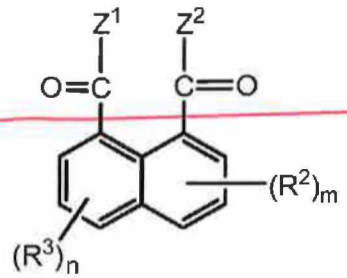


(1)

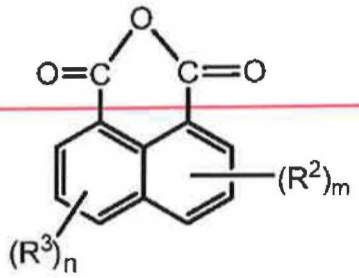
in which R^1 represents a haloalkyl group having 1 to 7 carbon atoms or a haloaryl group, R^2 represents as a group R^4-R^5-, R^4 represents a substituted or unsubstituted aromatic group, R^5 represents a direct bond or an alkylene group, an alkenylene group, an alkynylene group, a thioester group, a sulfonic ester group, a boronic ester group, a disulfide group, an amino group, an amido group, a thioamido group, an azo group, and a triazole group, which may be substituted or unsubstituted, R^3 represents a halogen atom or a hydrocarbon group, m is an integer of 1 or more, n is zero or an integer of 1 or more, and a sum of n and m is 1 to 6,

wherein the method for preparing an aromatic imide compound comprises,

(A) a first step preparing compounds represented by the formula (4-1) and/or the formula (4-2):



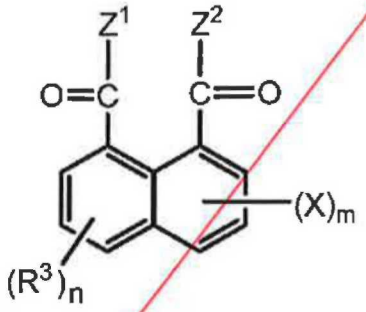
(4-1)



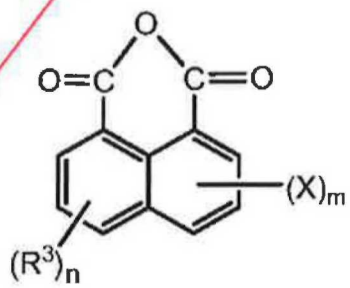
(4-2)

in which Z^1 and Z^2 each independently represent a hydroxyl group or an alkoxy group and R^2, R^3, m, and n each represent the same meanings as those identified above,

by reacting compounds represented by the formula (3-1) and/or the formula (3-2):



(3-1)

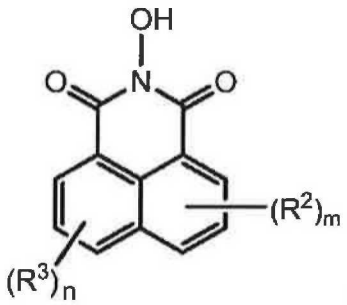


(3-2)

in which X represents a halogen atom and R^3, Z^1, Z^2, m, and n each represent the same meanings as those identified above,

with a substituted or unsubstituted aromatic group which may form a group R^4-R^5-, in which R^4 and R^5 represent the same meanings as those identified above,

(B) a second step preparing a compound represented by the formula (5):



(5)

in which R^2, R^3, m, and n each represent the same meanings as those identified above,

by reacting the compounds represented by the formula (4-1) and/or the formula (4-2) with a hydroxylammonium compound, and

(C) a third step preparing the aromatic imide compounds represented by the formula (1) by reacting the compound represented by the formula (5) with a compound represented by the formula (6):

$$R^1SO_2Y \qquad (6)$$

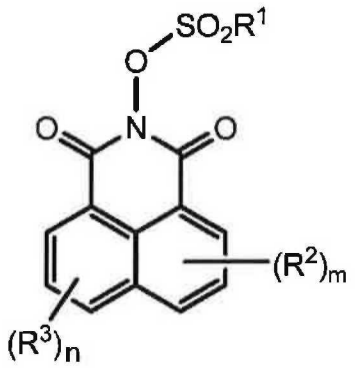
in which Y represents a halogen atom or a tosyl group and R^1 represent the same meanings as those identified above.

4. The method for preparing aromatic imide compounds according to claim 3, wherein the aromatic imide compounds represented by

the formula (1) are compounds which can absorb light of g-line (436 nm) and/or h-line (405 nm).

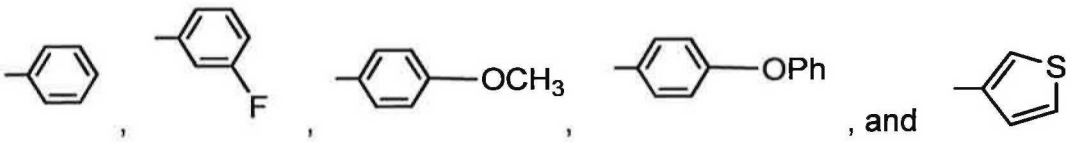
CLAIMS

1. An aromatic imide compound represented by the formula (1):



(1)

wherein in R^1 represents a haloalkyl group having 1 to 7 carbon atoms or a haloaryl group, R^3 represents a halogen atom or a hydrocarbon group,
n is zero or an integer of 1 or more, m is at least 1 and a sum of n and m is 1 to 6, and R^2 is the group R^4-R^5- wherein
R^4 is selected from the group consisting of



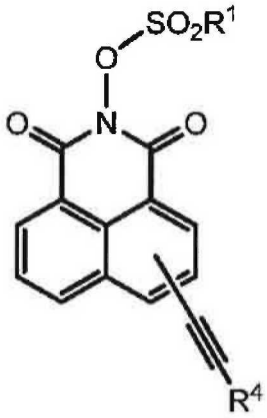
and where R^5 is an alkenylene group or an alkynylene group.

2. The aromatic imide compound according to claim 1, which can absorb light of g-line (436 nm) and/or h-line (405 nm) as measured using ultraviolet absorption spectroscopy of a solution of this aromatic imide compound in solution in methylene chloride, and where the addition of bromocresolgreen imparts a dark blue color to this solution, and further where upon irradiation with this light, the solution shows both a discoloration of the dark blue color indicating of a decreasing pH, and an attenuation of an absorption maximum measured by ultraviolet spectroscopy at the g-line (436 nm) and/or h-line (405 nm).

3. The aromatic imide compound represented by the formula (1) of claim 1 wherein R^1 represents a haloalkyl group having 1 to 7 carbon atoms.

4. The aromatic imide compound represented by the formula (1) of claim 3, where R^5 is an alkynylene group.

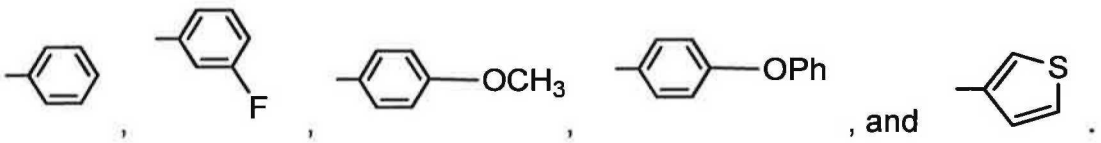
5. An aromatic imide compound represented by formula (2):



(2)

wherein, R^1 represents a haloalkyl group having 1 to 7 carbon atoms or a haloaryl group,

R^4 is selected from the group consisting of



, and .

6. The aromatic imide compound of claim 5 wherein, R^1 represents a haloalkyl group having 1 to 7 carbon atoms.

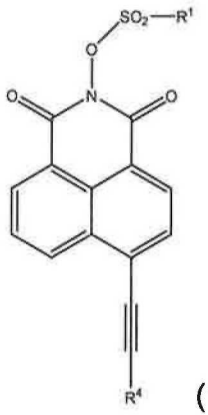
7. The aromatic imide compound of claim 5 wherein, R^1 represents a haloalkyl group having 1 to 7 carbon atoms.

8. The aromatic imide compound of claim 5 wherein the haloalkyl group having 1 to 7 carbon atoms or the haloaryl in one where the halo moiety is a fluorine atom and further where, respectively, a part or all of hydrogen atoms in the alkyl group of the haloalkyl or the aryl of the haloaryl group are substituted by a fluorine atoms, and further where the alkyl group of the haloalkyl is selected from the group consisting of a linear alkyl, a branched alkyl and a cyclic alkyl groups.

9. The aromatic imide compound of claim 5 wherein the haloalkyl group having 1 to 7 carbon atoms or the haloaryl in one where the halo moiety is a fluorine atom and further where, respectively, a part or all of hydrogen atoms in the alkyl group of the haloalkyl or the aryl of the haloaryl group are substituted by a fluorine atoms, and further where the alkyl group of the haloalkyl is selected from the groups consisting of a methyl group, an ethyl group, a propyl group, a butyl group, a pentyl group, a hexyl group, and a heptyl group and further where the aryl group of the haloaryl is selected from phenyl or tolyl.

10. The aromatic imide compound of claim 5 wherein R^1 is a haloalkyl group having 1 to 7 carbon atoms, and this haloalkyl is in one where the halo moiety is a fluorine atom and further where a part or all of hydrogen atoms in the alkyl group of the haloalkyl are substituted by a fluorine atoms, and further where the alkyl group of the haloalkyl is selected from the groups consisting of a methyl group, an ethyl group, a propyl group, a butyl group, a pentyl group, a hexyl group, and a heptyl group.

11. The aromatic imide compound of claim 5 wherein the aromatic imide compound is selected from the compounds having structure (1_{ra}),



(1_{ra})

and further wherein R^1 represents a haloalkyl group having 1 to 7 carbon atoms or a haloaryl group, and where the haloalkyl or the haloaryl in one where the halo moiety is a fluorine atom and further where, respectively, a part or all of hydrogen atoms in the alkyl group of the haloalkyl or the aryl of the haloaryl group are substituted by a fluorine atoms.

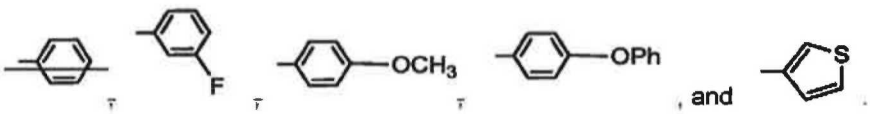
12. The aromatic imide compound of claim 11 wherein the haloalkyl group having 1 to 7 carbon atoms, where the halo moiety is a fluorine atom and further where, respectively, a part or all of hydrogen atoms in the alkyl group of the haloalkyl or the aryl of the haloaryl group are substituted by a fluorine atoms and further where the alkyl group in the haloalkyl is selected from the groups consisting of a linear alkyl, a branched alkyl and a cyclic alkyl groups.

13. The aromatic imide compound of claim 11 wherein the haloalkyl group having 1 to 7 carbon atoms, where the halo moiety is a fluorine atom and further wherein, respectively, a part or all of hydrogen atoms in the alkyl group of the haloalkyl ,or the aryl of the haloaryl group are substituted by a fluorine atoms and further where the alkyl group of the haloalkyl is selected from the groups

consisting of a methyl group, an ethyl group, a propyl group, a butyl group, a pentyl group, a hexyl group, and a heptyl group and further where the aryl group of the haloaryl is selected from phenyl or tolyl.

14. The aromatic imide compound of claim 11 wherein R^1 is a haloalkyl group having 1 to 7 carbon atoms, where the halo moiety is a fluorine atom and further where, respectively, a part or all of hydrogen atoms in the alkyl group of the haloalkyl are substituted by a fluorine atom and further where the alkyl group of the haloalkyl is selected from the groups consisting of a methyl group, an ethyl group, a propyl group, a butyl group, a pentyl group, a hexyl group, and a heptyl group.

15. The aromatic imide compound of claim 11 wherein R^4 is selected from the group consisting of



, and .