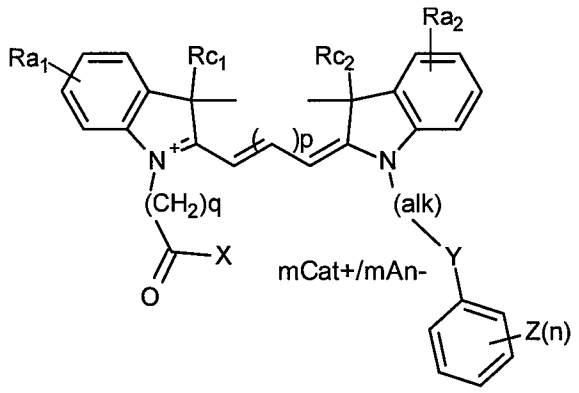
Claims:

1. A compound of the formula (I) or mesomeric forms thereof:



(I)

wherein mCat+ or mAn- is an organic or inorganic positively/negatively charged counterion and

m is an integer 0-3;

p is an integer 1-2;

q is an integer 1-5;

alk is a chain of 1-5 carbon atoms optionally containing one or more double or triple bonds;

Y is S, O or CH_2;

Z is OH;

n is an integer 0-3;

X is OH or O^- or an amide or ester conjugated with a variety of substrate moieties selected from the group consisting of nucleosides, nucleotides, polynucleotides, polypeptides, carbohydrates, ligands, particles cells, semi-solid surfaces and solid surfaces;

each of Ra_1 and Ra_2 is independently H, SO_3^-, sulfonamide, halogen, or a further ring fused to an adjacent carbon atom; and

each of Rc_1 and Rc_2 is independently alkyl or substituted alkyl, wherein at least one of Ra_1 or Ra_2 is SO_3^-, or Ra_1 or Ra_2 is a further ring fused to an adjacent carbon atom, the further ring having an SO_3^-, or Rc_1 or Rc_2 is an alkyl sulfonic acid group.

2. A compound according to claim 1 wherein where n is 0, Y is S or O.

3. A compound according to claim 1 or claim 2 wherein (alk) is $(CH_2)_3$.

4. A compound according to any one of claims 1 to 3 wherein p is 1.

5. A compound according to any one of claims 1 to 3 wherein p is 2.

6. A compound according to any one of claims 1 to 5 wherein Ra_1 is H or SO_3^-.

7. A compound according to any one of claims 1 to 5 wherein Ra_2 is H or SO_3^-.

8. A compound according to any one of claims 1 to 5 wherein Ra_1 is a further ring fused to an adjacent carbon atom.

9. A compound according to any one of claims 1 to 5 wherein Ra_2 is a further ring fused to an adjacent carbon atom.

10. A compound according to any one preceding claim wherein Rc_1 or Rc_2 is methyl, ethyl, propyl or $-(CH_2)_tSO_3^-$ where t is 1-6.

11. A compound according to claim 10 wherein either Rc_1 or Rc_2 is $(CH_2)_4$-SO_3^-.

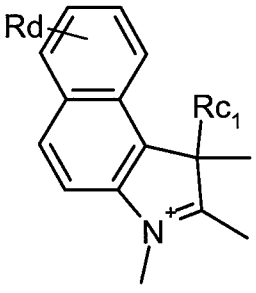
12. A compound according to any one preceding claim wherein Y is O.

13. A compound according to any one preceding claim wherein n is 0.

14. A compound according to any one preceding claim wherein n is 1.

15. A compound according to claim 14 wherein the OH group is in the 4-position.

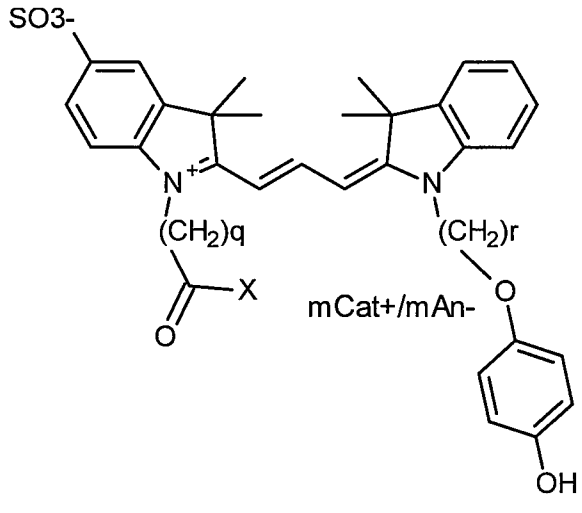
16. A compound according to any preceding claim wherein either indole is part of a structure:



when Ra_1 is a fused six membered aromatic ring in the form of Rd,Rd can be H, alkyl, substituted alkyl, aryl, substituted aryl, halogen, carboxy, sulphonamide, or sulfonic acid.

wherein Rc_1 is alkyl or substituted alkyl.

17. A compound according to claim 1 which is represented by formula (VIIIa):



(VIIIa)

wherein mCat+ or mAn- is an organic or inorganic positively/negatively charged counterion and

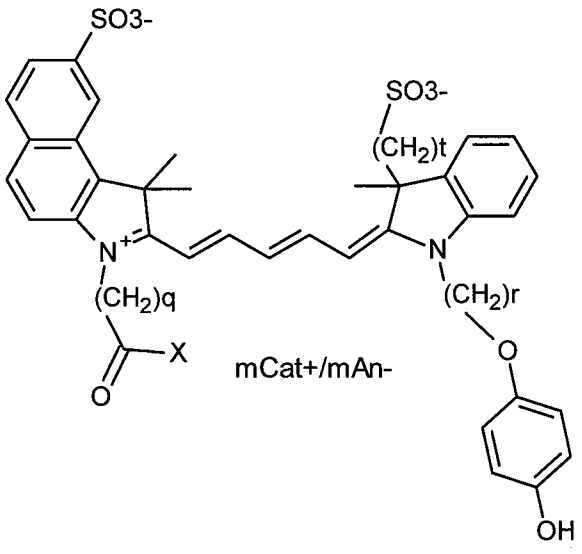
m is an integer 0-3;

q is an integer 1-5;

r is an integer 1-5; and

X is OH or O^- or an amide or ester conjugated with a variety of substrate moieties selected from the group consisting of nucleosides, nucleotides, polynucleotides, polypeptides, carbohydrates, ligands, particles cells, semi-solid surfaces and solid surfaces.

18. A compound according to claim 1 which is represented by formula (VIId):



(VIId)

wherein mCat+ or mAn- is an organic or inorganic positively/negatively charged counterion and

m is an integer 0-3;

q is an integer 1-5;

r is an integer 1-5;

t is an integer 1-6; and

X is OH or O^- or an amide or ester conjugated with a variety of substrate moieties selected from the group consisting of nucleosides, nucleotides, polynucleotides, polypeptides, carbohydrates, ligands, particles cells, semi-solid surfaces and solid surfaces.

19. A compound according to any preceding claim wherein the compound is attached to a nucleotide or oligonucleotide.

20. A nucleotide or oligonucleotide labelled with a compound according to claims 1-18.

21. A labelled nucleotide or oligonucleotide according to claim 18 wherein the label is attached via an amide linkage formed from the C(=O)-X moiety.

22. A labelled nucleotide or oligonucleotide according to claims 20 or 21 wherein the label is attached to the C5 position of a pyrimidine base or the C7 position of a 7-deaza purine base through a linker moiety.

23. A labelled nucleotide or oligonucleotide according to any one of claims 20-22, further comprising a 3' OH blocking group covalently attached to the ribose or deoxyribose sugar of the nucleotide.

24. A kit comprising two or more nucleotides wherein at least one nucleotide is a labelled nucleotide according to claims 20-23.

25. A kit according to claim 24 wherein two of the labelled nucleotides are excited using a single laser.

26. A kit according to claim 25 wherein a first of four nucleotides is a labelled nucleotide according to claims 20-23 and the second, third, and fourth nucleotides are each labelled with a different compound, wherein each compound has a distinct absorbance maximum and each of the compounds is distinguishable from the other three compounds.

27. A kit according to claim 24 comprising four nucleotides wherein a first of the

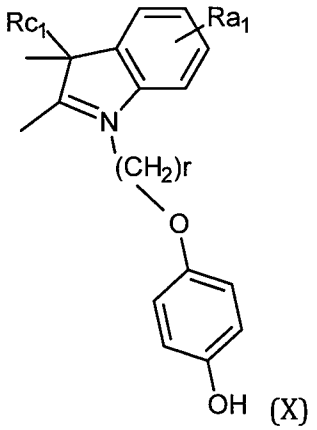
four nucleotides is a labelled nucleotide according to claims 20-23, a second of the four nucleotides is a labelled nucleotide according to claims 20-23, a third nucleotide carries a third label and a fourth nucleotide is unlabelled.

28. A kit according to claim 24 comprising four nucleotides wherein a first of the four nucleotides is a labelled nucleotide according to claims 20-23, a second of the four nucleotides is a labelled nucleotide according to claims 20-23, a third nucleotide carries a mixture of two labels and a fourth nucleotide is unlabelled.

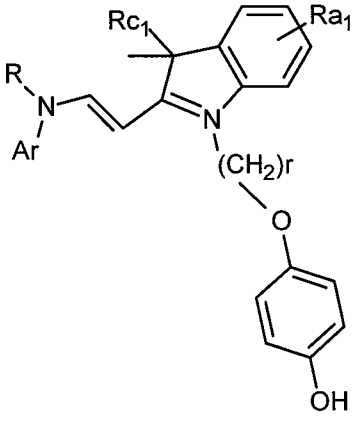
29. Use of a nucleotide according to any one of claims 20-23, an oligonucleotide according to claims 20-23 or a kit according to any one of claims 24-28 in sequencing, expression analysis, hybridisation analysis, genetic analysis, RNA analysis or protein binding assays.

30. Use according to claim 29 on an automated sequencing instrument wherein said automated sequencing instrument comprises two lasers operating at different wavelengths.

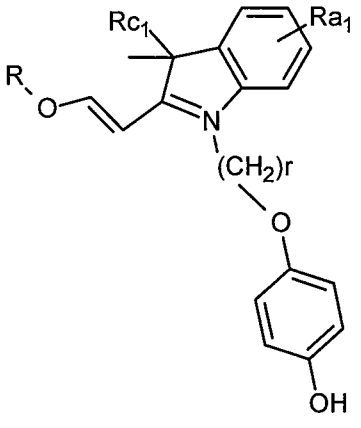
31. A method of synthesising a compound according to claims 1-18 utilising one of the following starting materials:



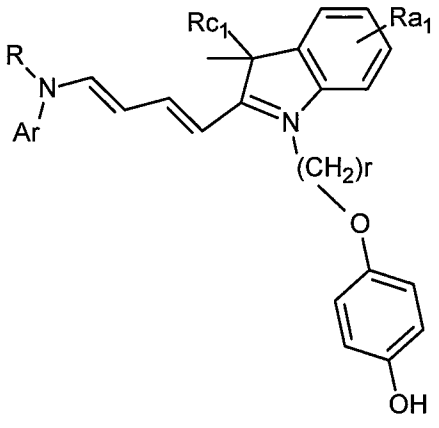
(X)



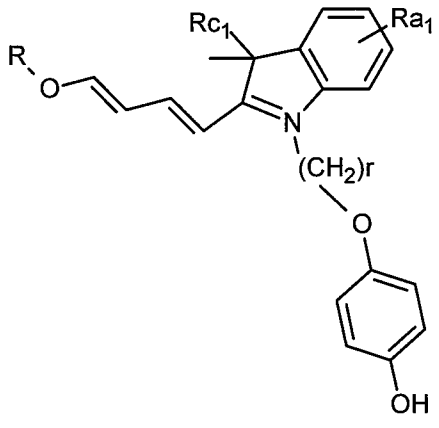
(X1)



(X2)



(X3)



(X4)

or a salt thereof wherein Ra_1 is H, SO_3^-, sulfonamide, halogen, or a further ring fused to an adjacent carbon atom; Rc_1 is alkyl or substituted alkyl; Ar is an aromatic group and R is an alkyl group.

32. A method of synthesising a compound according to claims 1-18 utilising the following starting material:

