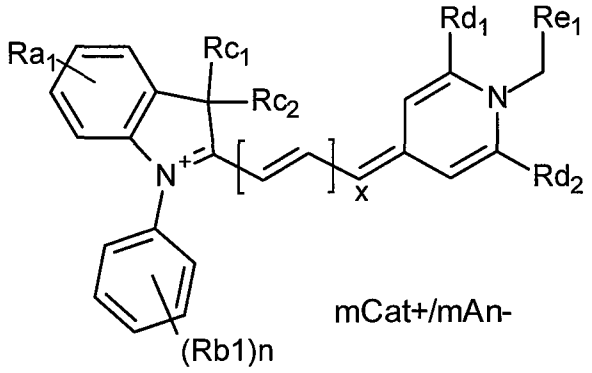
Claims:

1. A compound of 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;

x is an integer 0-2;

Ra_1 is H, SO_3^-, sulfonamide, halogen, hydroxy, alkoxy, amino or a further ring fused to an adjacent carbon atom where the ring may contain SO_3^-, sulfonamide, halogen substituents;

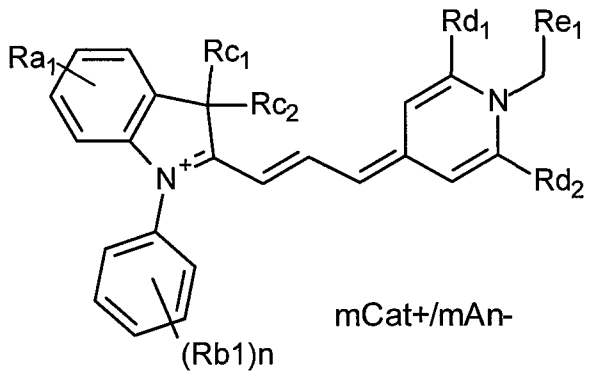
Rb_1 is SO_3^-, sulphonamide, halogen, hydroxy, alkoxy, amino, COOH or an amide or ester thereof and n is 0-3;

each of Rc_1 and Rc_2 is independently alkyl or substituted alkyl;

each of Rd_1 and Rd_2 is independently H, alkyl, aryl, substituted alkyl, or substituted aryl; and

Re_1 is alkyl, substituted alkyl, aryl or substituted aryl; wherein either Rc_1, Rb_1 or Re_1 contains a COOH or COO^- or an amide or ester thereof.

2. A compound according to claim 1 of 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;

Ra_1 is H, SO_3^-, sulfonamide, halogen, hydroxy, alkoxy, amino or a further ring fused to an adjacent carbon atom where the ring may contain SO_3^-, sulfonamide, halogen substituents;

Rb_1 is SO_3^-, sulphonamide, halogen, hydroxy, alkoxy, amino, COOH or an amide or ester thereof and n is 0-3;

each of Rc_1 and Rc_2 is independently alkyl or substituted alkyl;

each of Rd_1 and Rd_2 is independently H, alkyl, aryl, substituted alkyl, or substituted aryl; and

Re_1 is alkyl, substituted alkyl, aryl or substituted aryl; wherein either Rc_1, Rb_1 or Re_1 contains a COOH or COO^- or an amide or ester thereof.

3. A compound according to claim 1 or claim 2 wherein

(a) Re_1 is alkyl and Rb_1 is COOH or COO^- or an amide or ester thereof, or;

(b) Re_1 is an alkyl group substituted with COOH or COO^- or an amide or ester thereof, or;

(c) Re_1 is an aryl group substituted with COOH or COO^- or an amide or ester thereof, or;

(d) Re_1 is an aryl group substituted with COOH or COO^- or an amide or ester thereof wherein there is an alkyl group between the aryl ring and the COOH or COO^- or an amide or ester thereof, or;

(e) Re_1 is an aryl group substituted with CH_2COOH or CH_2COO^- or an amide or ester thereof.

4. A compound according to claim 3 wherein n is 0.

5. A compound according to claim 3 wherein n is 1 and Rb_1 is SO_3^- or sulphonamide.

6. A compound according to any one of claims 1 to 5 wherein each of Rc_1 and Rc_2 is methyl.

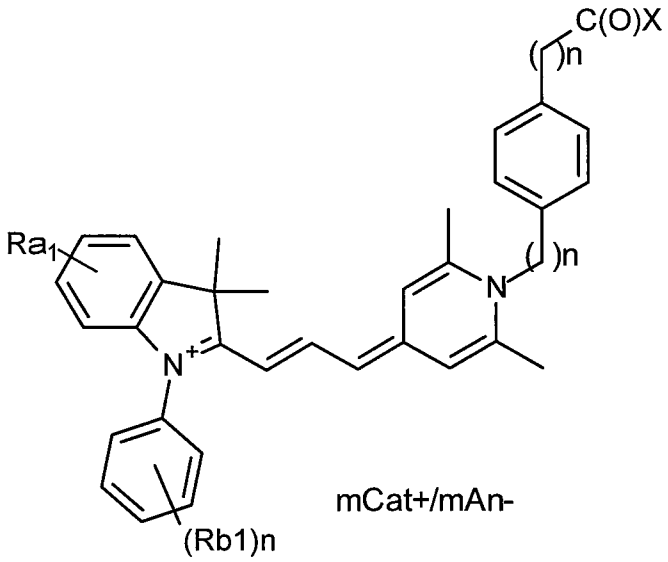
7. A compound according to any one of claims 1 to 5 wherein Rc_1 or Rc_2 is methyl, ethyl, propyl or $-(CH_2)_qSO_3^-$ where q is 1-6, optionally wherein either Rc_1 or Rc_2 is $(CH_2)_4$-SO_3^-.

8. A compound according to any one preceding claim wherein Ra_1 is H, SO_2NH_2 or SO_3^-.

9. A compound according to any one of claims 1 to 7 wherein Ra_1 is a ring fused to an adjacent carbon atom, optionally wherein the ring contains one or more SO_3^- or sulphonamide substituents.

10. A compound according to any one preceding claim wherein each of Rd_1 and Rd_2 is independently H or methyl.

11. A compound according to claim 1 which is represented by formula (II):



(II)

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

m is an integer 0-3;

each n is independently 0-6;

Ra_1 is H, SO_3^-, sulfonamide, halogen, or a further ring fused to an adjacent carbon atom where the ring may contain SO_3^-, sulfonamide, halogen substituents;

Rb_1 is SO_3^-, sulphonamide, halogen, COOH or an amide or ester thereof and n is 0-3; and

X is OH, O^- or an ester or amide.

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

13. A nucleotide or oligonucleotide labelled with a compound according to claims 1 to 11.

14. A labelled nucleotide or oligonucleotide according to claim 12 wherein the label is attached via an amide linkage formed from the COOH moiety.

15. A labelled nucleotide or oligonucleotide according to claims 12 or 13 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.

16. A labelled nucleotide or oligonucleotide according to claims 13 to 15, further comprising a 3' OH blocking group covalently attached to the ribose or deoxyribose sugar of the nucleotide.

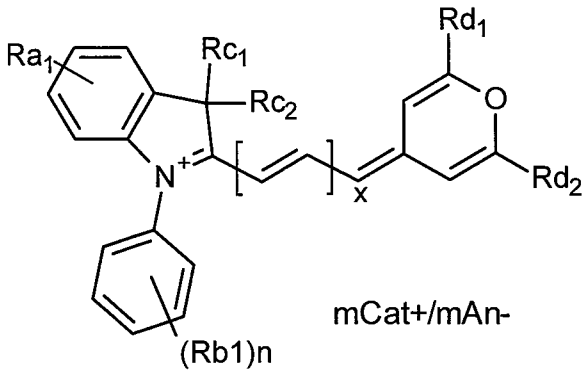
17. A kit comprising two or more nucleotides wherein at least one nucleotide is a labelled nucleotide according to claims 13 to 16.

18. A kit according to claim 17 comprising four nucleotides wherein a first nucleotide is a labelled nucleotide according to claims 12 to 15, a second nucleotide is labelled with a label that emits at the same wavelength as the first labelled nucleotide, a third nucleotide is labelled with a mixture of labels and the fourth is unlabelled such that each of the four labelled nucleotides are distinguishable from each other, and wherein two of the labelled nucleotides are measured by detection at the same wavelength.

19. A kit according to claim 16 to 18 wherein the first labelled nucleotide has a Stokes shift of greater than 100 nm and the second labelled nucleotide has a Stokes shift of less than 50 nm.

20. Use of a nucleotide according to any one of claims 13 to 16, an oligonucleotide according to claims 13 to 16 or a kit according to any one of claims 17 to 19 in sequencing, expression analysis, hybridisation analysis, genetic analysis, RNA analysis or protein binding assays, optionally wherein the use is on an automated sequencing instrument wherein said automated sequencing instrument comprises two lasers operating at different wavelengths and a detection system having a single detection channel set to a fixed emission wavelength.

21. A method of synthesising a compound according to claims 1 to 11 utilising the following starting material:



(X')

or a salt thereof wherein x is 0-2; Ra_1 is H, SO_3^-, sulfonamide, halogen, or a further ring fused to an adjacent carbon atom where the ring may contain SO_3^-, sulfonamide, halogen substituents;

Rb_1 is SO_3^-, sulphonamide, halogen or COOH and n is 0-3;

each of Rc_1 and Rc_2 is independently alkyl or substituted alkyl; and

each of Rd_1 and Rd_2 is independently H, alkyl, aryl, substituted alkyl, or substituted aryl.