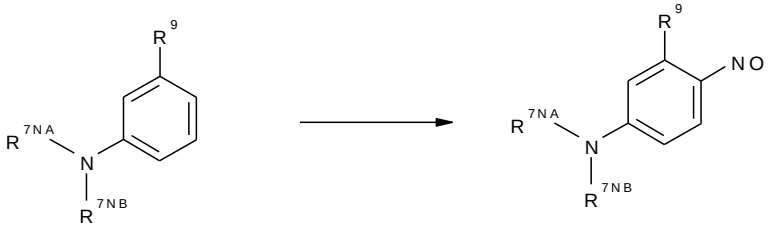
CLAIMS

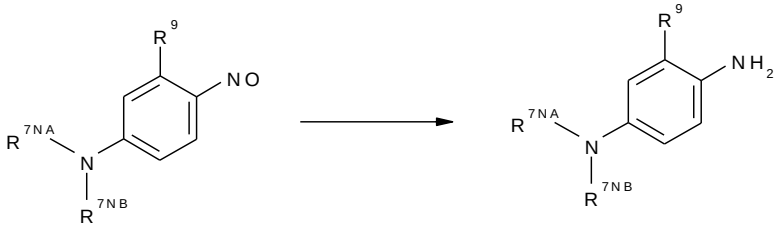
1. A method of synthesis comprising one or more of the steps of, in order:

nitrosylation (NOS), in which an *N,N*-disubstituted-3-optionally substituted aniline, **1**, is 4-nitrosylated to give said *N,N*-disubstituted-3-optionally substituted-4-nitrosyl aniline, **2**:



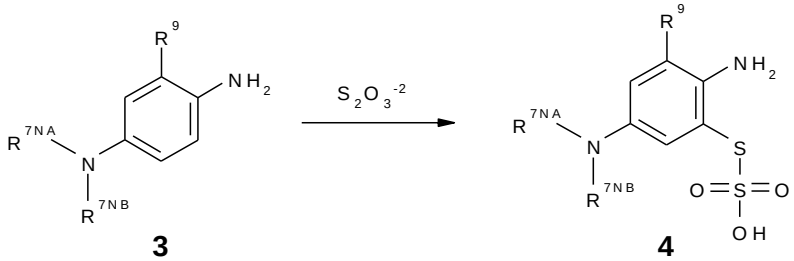
1 **2**

nitrosyl reduction (NR), in which an *N,N*-disubstituted-3-optionally substituted-4-nitrosyl aniline, **2**, is reduced to form said *N,N*-disubstituted-1,4-diamino-5-optionally substituted benzene, **3**:



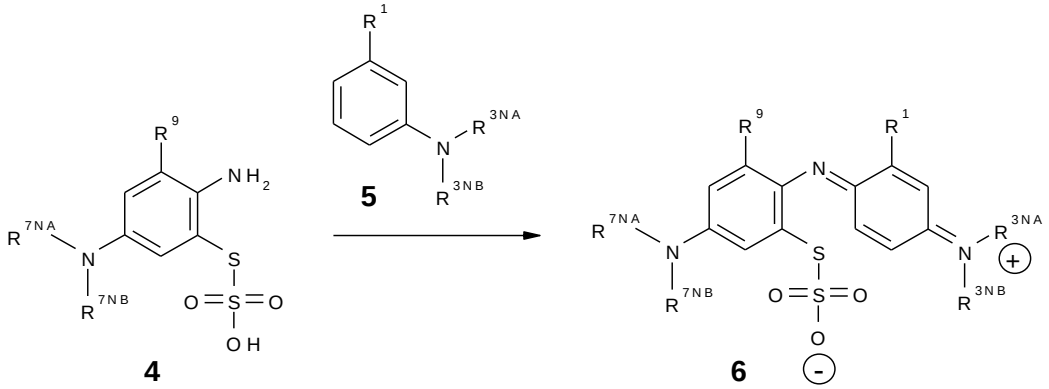
2 **3**

thiosulfonic acid formation (TSAF), in which an *N,N*-disubstituted-1,4-diamino-5-optionally substituted benzene, **3**, is oxidized in the presence of a thiosulfate to give said thiosulfuric acid S-{2-(amino)-3-(optionally substituted)-5-(disubstituted-amino)-phenyl} ester, **4**:



3 **4**

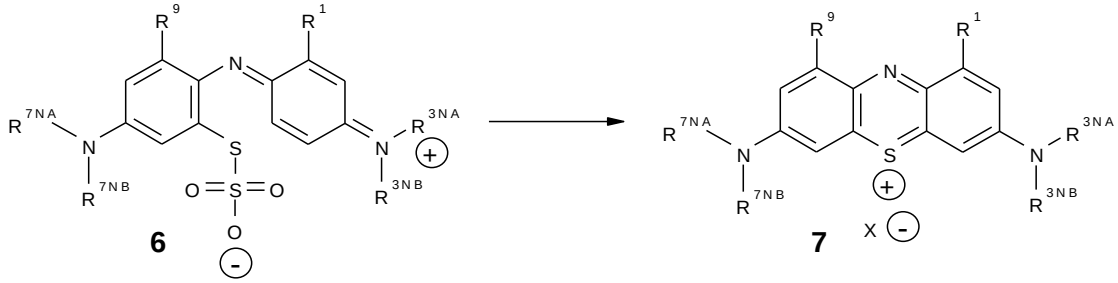
oxidative coupling (OC), in which a thiosulfuric acid S-{2-(amino)-3-(optionally substituted)-5-(disubstituted amino)-phenyl} ester, **4**, is oxidatively coupled to an *N,N*-disubstituted-3-optionally substituted-aniline, **5**, using an oxidizing agent that is or comprises Cr(VI), to give a [4-{2-(thiosulfate)-4-(disubstituted amino)-6-(optionally substituted)-phenyl-imino}-3-(optionally substituted)-cyclohexa-2,5-dienylidene]-*N,N*-disubstituted ammonium, **6**:



4 **5** **6**

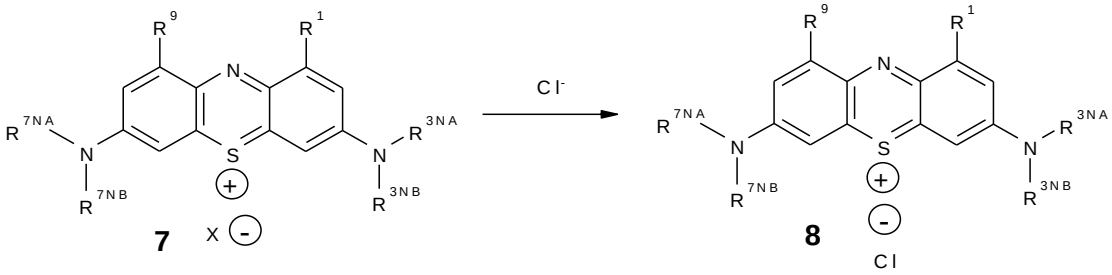
Cr(VI) Reduction (CR), in which the product of the oxidative coupling (OC) step is treated to convert residual Cr(VI) to Cr(III),

ring closure (RC), in which said isolated and purified [4-{2-(thiosulfate)-4-(disubstituted amino)-6-(optionally substituted)-phenyl-imino}-3-(optionally substituted)-cyclohexa-2,5-dienylidene]-*N,N*-disubstituted ammonium, **6**, is subjected to ring closure to give a 3,7-bis(disubstituted-amino)-1,9-(optionally substituted)-phenothiazin-5-ium salt, **7:**



6 **7**

chloride salt formation (CSF), in which said 3,7-bis(disubstituted-amino)-1,9-(optionally substituted)-phenothiazin-5-ium salt, **7**, is reacted with chloride, to give a 3,7-bis(disubstituted-amino)-1,9-(optionally substituted)-phenothiazin-5-ium chloride salt, **8**:



7 **8**

wherein the method comprises at least one filtration, and wherein a filtration agent is added to the reaction pot prior to that filtration and

wherein each of R^1 and R^9 is independently selected from: -H; C_{1-4}alkyl; C_{2-4}alkenyl; and halogenated C_{1-4}alkyl;

each of R^{3NA} and R^{3NB} is independently selected from: C_{1-4}alkyl; C_{2-4}alkenyl; and halogenated C_{1-4}alkyl;

each of R^{7NA} and R^{7NB} is independently selected from: C_{1-4}alkyl; C_{2-4}alkenyl; and halogenated C_{1-4}alkyl;

and X is one or more anionic counter ions to achieve electrical neutrality.

2. A method according to claim 1, wherein the filtration agent is or comprises cellulose.

3. A method according to claim 1 or 2, wherein at least the nitrosyl reduction (NR) step, the thiosulfonic acid formation (TSAF) step and the oxidative coupling (OC) step are performed and are all completed in the same pot.

4. A method according to claim 3, wherein the filtration agent is added to the reaction vessel in which the nitrosyl reduction (NR), thiosulfonic acid formation (TSAF), and oxidative coupling (OC) steps are completed.

5. A method according to any one of the preceding claims, wherein at least the thiosulfonic acid formation (TSAF) step is performed further comprising addition of an activating agent prior to or during the thiosulfonic acid formation (TSAF) step, wherein the activating agent preferably comprises aluminium sulphate.

6. A method according to claim 5, wherein the activating agent is or comprises aluminium sulphate hexadecahydrate.

7. A method of synthesis according to any one of the preceding claims, wherein at least the thiosulfonic acid formation (TSAF) step is performed and the oxidation in said thiosulfonic acid formation (TSAF) step is by reaction with an oxidizing agent that is or comprises Cr(VI).

8. A method of synthesis according to any one of the preceding claims, wherein at least the thiosulfonic acid formation (TSAF) step is performed and the thiosulfate is or comprises $Na_2S_2O_3$.

9. A method of synthesis according to any one of the preceding claims, wherein at least the nitrosyl reduction (NR) is performed and the reduction in said nitrosyl reduction (NR) step is by reaction with a reducing agent that is or comprises Fe(0).

10. A method according to claim 9, wherein said reduction in said nitrosyl reduction (NR) step is by reaction with a reducing agent that is or comprises metallic iron.

11. A method according to claim 10, wherein metallic iron is used in excess, and wherein the excess metallic iron is not removed from the reaction mixture after reaction completion.

12. A method according to claim 3 wherein the nitrosylation step (NOS) is completed in the same reaction vessel as the nitrosyl reduction (NR), thiosulfonic acid formation (TSAF), and oxidative coupling (OC) steps.

13. A method according to claim 3 or claim 12, wherein the ring closure (RC) step is completed in the same reaction vessel as the nitrosyl reduction (NR), thiosulfonic acid formation (TSAF), and oxidative coupling (OC) steps.