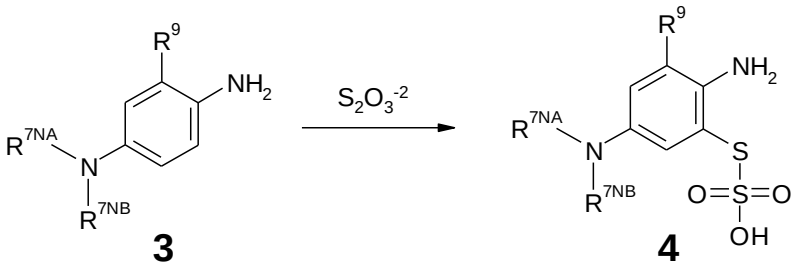
CLAIMS

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

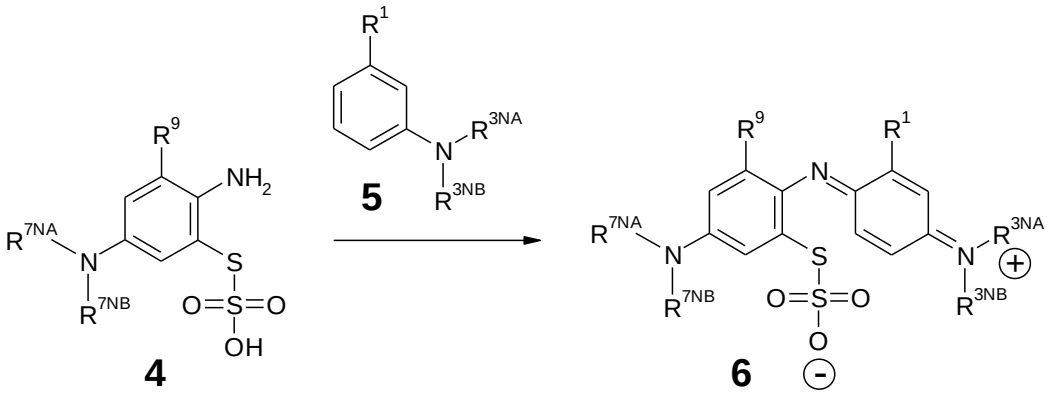
thiosulfonic acid formation (TSAF), in which an *N,N*-disubstituted-1,4-diamino-5-optionally substituted benzene, **3**, is oxidized in the presence of a thiosulfate to give said thiosulfuric acid S-{2-(amino)-3-(optionally substituted)-5-(disubstituted-amino)-phenyl} ester, **4**:



3 **4**

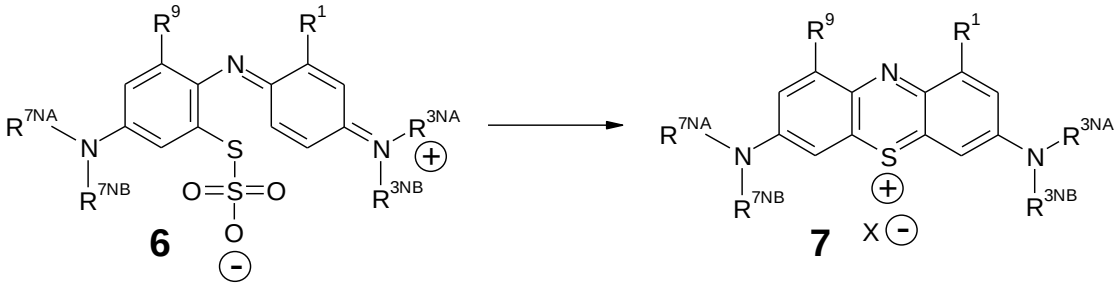
wherein during or prior to the thiosulfonic acid formation an activating agent is added,

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**

ring closure (RC), in which said [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**

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 a halide counter ion

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

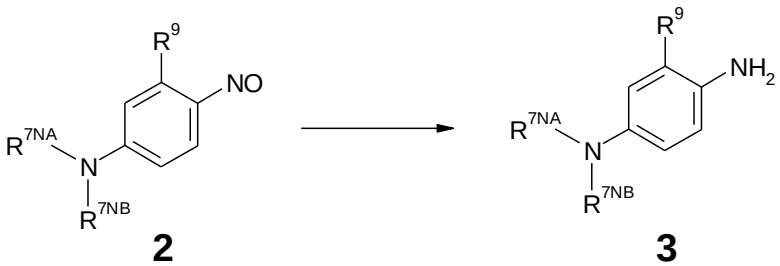
with the proviso that the compound is **not** a $ZnCl_2$ mixed salt.

2. A method according to claim 1, wherein the activating agent is or comprises Al(III).

3. A method according to claim 2, wherein the activating agent is or comprises aluminium sulphate hexadecahydrate.

4. A method of synthesis according to any one of claims 1 to 3, further comprising, before said thiosulfonic acid formation (TSAF) step, the additional step of:

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**:

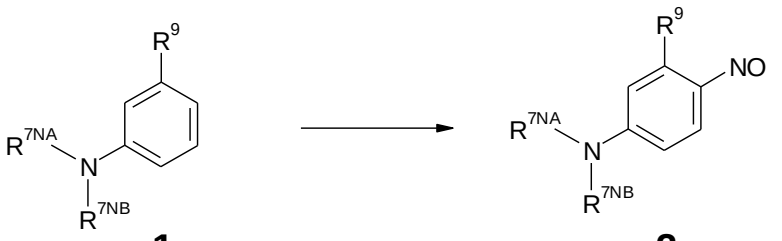


2 **3**

5. A method according to claim 4, wherein the nitrosylation (NOS) step, the thiosulfonic acid formation (TSAF) step and the oxidative coupling (OC) step are all completed in the same pot.

6. A method of synthesis according to claim 4 or claim 5, further comprising, before said nitrosyl reduction (NR) step, the additional step of:

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**:



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7. A method according to any one of the preceding claims further comprising

after said oxidative coupling (OC) step, and

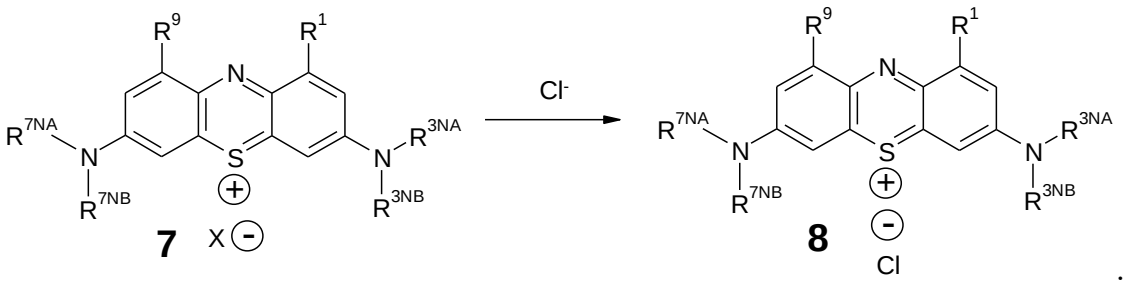
after said chromate reduction (CR) step if present, and

before said ring closure (RC) step,

isolation and purification of zwitterionic intermediate (IAPOZI), in which said [4-{2-(thiosulfate)-4-(disubstituted amino)-6-(optionally substituted)-phenyl-imino}-3-(optionally substituted)-cyclohexa-2,5-dienylidene]-*N,N*-disubstituted ammonium, **6**, is isolated and purified.

8. A method of synthesis according to any one of the preceding claims, further comprising, after said ring closure (RC) step, the additional step of:

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**:



9. A method according to any one of the preceding claims, wherein the method comprises at least one filtration, and wherein a filtration agent is added to the reaction pot prior to that filtration.

10. A method according to claim 9, wherein the filtration agent is or comprises cellulose.