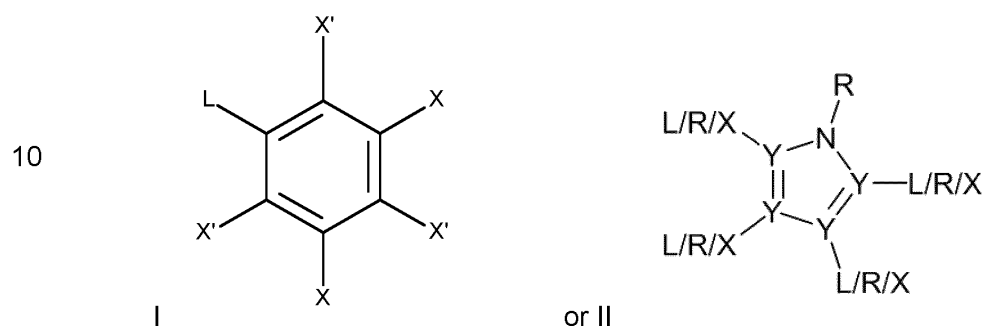
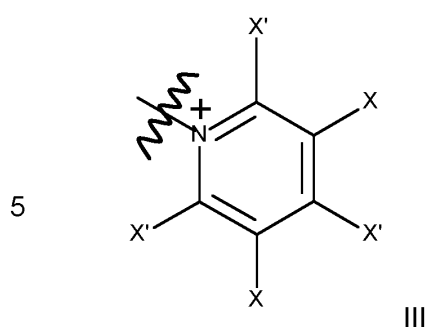


Claims

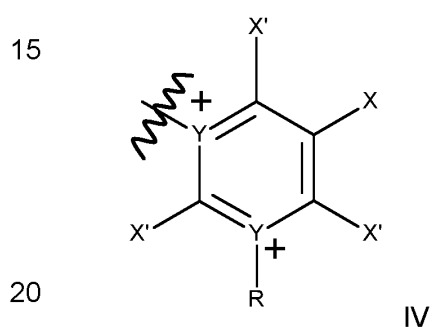
1. A stationary phase comprising a base material and at least one type of functional groups whereby the functional groups are selected from
 ---N(R'₂)⁺-ArX with R' being H or C1-C6 alkyl, C1-C6 alkenyl, C1-C6
 5 alkynyl, C6 aryl and ArX being



- 15 with
 L being the bond to the --N(R'₂)⁺
 X and X' being independently of each other H, I, Br or Cl, or another
 electron withdrawing group like F or NO₂ or C1-C10 alkyl, C1-C10
 alkenyl, C1-C10 alkynyl, C6-C12 aryl or an electron donating group,
 20 R being H or C1-C6 alkyl, C1-C6 alkenyl, C1-C6 alkynyl, C6 aryl
 Y being independently of each other C or N
 whereby in Formula I at least one X or X' is Cl, Br or I,
 whereby in Formula II at least one L is present and
 whereby at least one Y is C and whereby for each Y that is N there is no
 25 L/R/X at this N;
 or the functional group is a positively charged heterocyclic aromatic
 group carrying at least one Cl, Br or I residue.
2. Stationary phase according to claim 1, characterized in that the
 30 positively charged heterocyclic aromatic group carrying at least one Cl,
 Br or I residue has one of the following structures



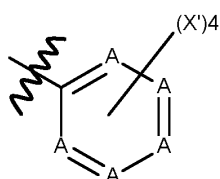
10 with X being independently of each other H, I, Br or Cl, and X' being independently of each other H, I, Br, Cl, F, NO₂, or another electron withdrawing group or C1-C10 alkyl, C1-C10 alkenyl, C1-C10 alkynyl, C6-C12 aryl or an electron donating group, whereby at least one X or X' is Cl, Br or I;



with R being H, C1-C10 alkyl, aryl, C1-C10 alkenyl, C1-C10 alkynyl or an electron withdrawing group or an electron donating group, Y being independently of each other N or P, X being independently of each other H, I, Br or Cl, and X' being

25 independently of each other H, I, Br, Cl, F, NO₂, or another electron withdrawing group or C1-C10 alkyl, C1-C10 alkenyl, C1-C10 alkynyl, C6-C12 aryl or an electron donating group, whereby at least one X or X' is Cl, Br or I;

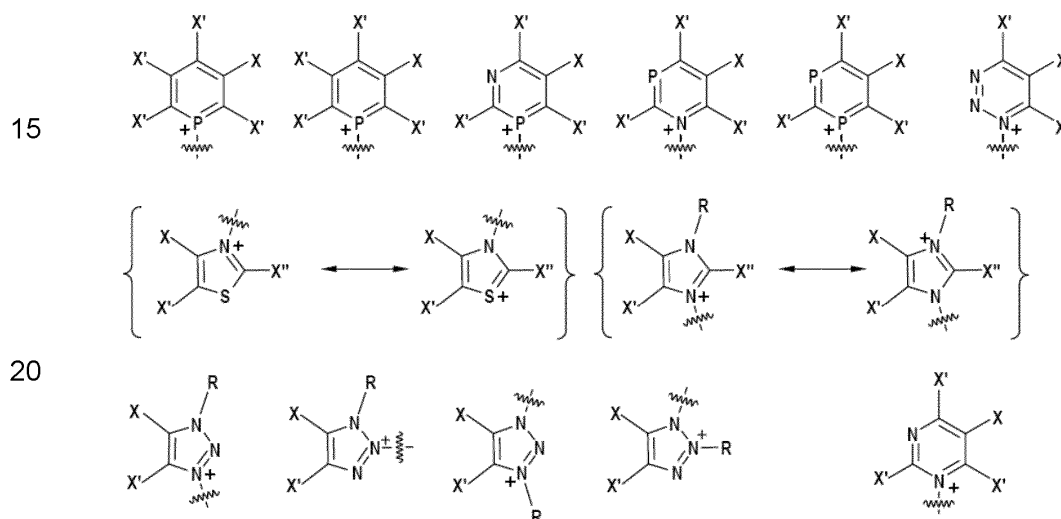
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5 V

whereby one atom A of the aromatic ring, which is not the one providing for connection to the base material, is O⁺ or S⁺ and the other ring atoms A are C-X' with X' being independently of each other H, I, Br, Cl, or another electron withdrawing or C1-C10 alkyl, C1-C10 alkenyl, C1-C10 alkynyl, C6-C12 aryl or an electron donating group, whereby at least one X' is Cl, Br or I;

or one of the following structures



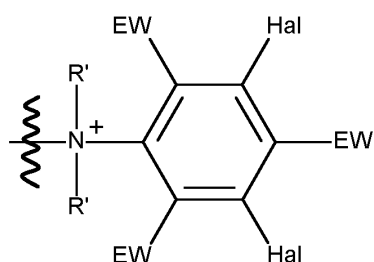
with X being independently of each other H, a C1 to C6 alkyl group, I, Br or Cl, and X' and X'' being independently of each other H, a C1 to C6 alkyl group, I, Br, Cl, or another electron withdrawing or donating group, R being H, C1-C6 alkyl, C6 aryl, C1-C6 alkenyl, C1-C6 alkynyl or an electron withdrawing or donating group and whereby at least one X or X' is Cl, Br or I.

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3. Stationary phase according to claim 1 or claim 2, characterized in that the functional group has one heterocyclic ring.

4. Stationary phase according to one or more of claims 1 to 3,
characterized in that functional group is selected from one or more of
the following

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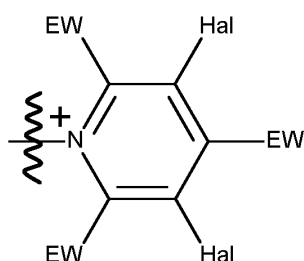
VI

with R' being H or C1-C6 alkyl, preferably methyl, ethyl, propyl, isopropyl,
EW being independent of each other H, CH₃ or an electron withdrawing
group

15

and Hal being independent of each other H, CH₃, Cl, Br or I, whereby at
least one Hal is Cl, Br or I;

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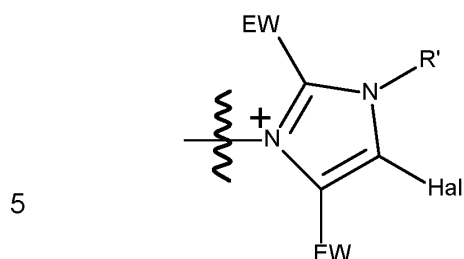
VII

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with EW being independently of each other H, CH₃, an electron withdrawing
group

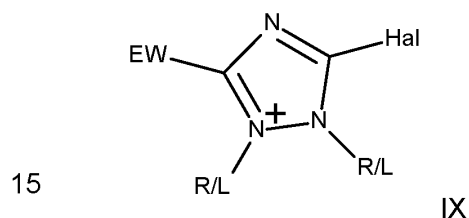
and Hal being independent of each other H, CH₃, Cl, Br or I, whereby at
least one Hal is Cl, Br or I;

30



VIII

with R' being H or C1-C6 alkyl, preferably methyl, ethyl, propyl, isopropyl,
EW being independent of each other H, CH₃ or an electron withdrawing
group
10 and Hal being Cl, Br or I.



IX

with one R/L being H or C1-C6 alkyl and the other R/L being the connection
to the base material,
EW being H, CH₃ or an electron withdrawing group
20 and Hal being Cl, Br or I.

- 25
5. Stationary phase according to one or more of claims 1 to 4,
characterized in that the functional group is covalently bonded to the
base material.
 6. Stationary phase according to one or more of claims 1 to 5,
characterized in that the base material is a bead or a membrane.
 - 30 7. Stationary phase according to one or more of claims 1 to 6,
characterized in that the functional groups are bonded to the base
material via a linker.

8. Stationary phase according to one or more of claims 1 to 6,
characterized in that the functional groups are endgroups of polymer
chains grafted onto the base material.
- 5 9. Stationary phase according to one or more of claims 1 to 8,
characterized in that the base material is an organic polymer.
10. A chromatography column comprising a stationary phase according to
one or more of claims 1 to 9.
- 10 11. A process for the separation of a target molecule from at least one other
compound whereby a stationary phase according to one or more of
claims 1 to 9 is contacted with a liquid comprising the target molecule
and the at least one other compound and whereby the target molecule
15 shows an interaction with the stationary phase that is different from the
interaction of the other compound.
12. A process according to claim 11 characterized in that the more able a
compound is to donate electrons the stronger it is bound to the
20 stationary phase.
13. A process according to claims 11 or 12 characterized in that the process
is a process for chromatographic separation of a target molecule from at
least one other compound whereby a stationary phase according to one
25 or more of claims 1 to 9 is present in a chromatography column and the
liquid comprising the target molecule and the at least one other
compound is run through the column whereby the target molecule and
the other compounds present in the liquid are eluted from the column
depending on their interaction with the stationary phase.
- 30 14. A process according to one or more of claims 11 to 13 characterized in
that the target molecule is a protein.

15. A process according to one or more of claims 11 to 14 characterized in
that the process is performed by loading the stationary phase according
to the present invention with an aqueous loading buffer of a certain pH
and a certain ionic strength and eluting the target molecule with an
5 aqueous elution buffer of the same pH but another ionic strength.

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