CLAIMS

1. A method for synthesizing peptides or proteins or peptidomimetics by successive elongation of the second end, which has a primary or secondary amine function, a hydroxyl function or a thiol function, of a peptide or protein or peptidomimetic chain by units, characterized in that:

- said units are selected from the group made up of Q^a - E - Q^b type molecules, where Q^a and Q^b may be the same or different, and are selected from the electrophilic groups and the nucleophilic groups, and E represents a spacer;
- the first end of said peptide or protein or peptidomimetic is attached by a covalent bond to an anchoring molecule soluble in organic solvents such as halogenated solvents (preferably methylene chloride or chloroform), ethyl acetate, tetrahydrofuran, 2-methyletetrahydrofuran, isooctane, cyclohexane, hexane(s), methylcyclohexane, methyl tert-butyl ether or aromatic solvents such as benzene or toluene;
- said method does not involve protection groups for the primary amine or secondary amine or hydroxyl or thiol function;
- said units Q^a - E - Q^b are selected from the group made up of: natural or unnatural or synthetic α, β or γ-amino acids, natural or unnatural or synthetic α, β or γ-hydroxy acids, natural or unnatural or synthetic α, β or γ-mercapto acids;
- said units of α, β or γ-amino acids or α, β or γ-hydroxy acids or α, β or γ-mercapto acids are implemented respectively in the form of 2,2-bis(trifluoromethyl)-1,3-oxazolidin-5-one or (2,2-bis(trifluoromethyl)-1,3-oxazinan-6-one or 2,2-bis(trifluoromethyl)-1,3-oxazepan-7-one or 2,2-bis(trifluoromethyl)-1,3-dioxolan-4-one or 2,2-bis(trifluoromethyl)-1,3-dioxan-4-one or 2,2-bis(trifluoromethyl)-1,3-dioxepan-4-one or 2,2-

bis(trifluoromethyl)-1,3-oxathiolan-5-one or 2,2-bis(trifluoromethyl)-1,3-oxathian-6-one or 2,2-bis(trifluoromethyl)-1,3-oxathiepan-7-one.

2. The method according to claim 1, characterized in that the groups Q^a and Q^b are selected from the group made up of: alcohols, aldehydes, primary amines, secondary amines, azides, ethynils, halogens, thiols, vinyls, and/or in that the spacer E is selected from the group made up of aromatics, heteroaromatics, saturated alkyl chains (branched or not), unsaturated alkyl chains (branched or not), glycols (and preferably polyethylene glycol).

3. The method according to claim 1 or 2, characterized in that said units of α, β or γ-amino acids or α, β or γ-hydroxy acids or α, β or γ-mercapto acids are used in an activated form.

4. The method according to any one of claims 1 to 3, characterized in that said anchoring molecule includes a polyolefin chain or is a polyolefin chain or includes a polyolefin oligomer or includes a polyalkene oligomer, with at least 10 monomer units, and preferably between 15 and 350 monomer units and is preferably a polyisobutene chain.

5. The method according to claim 4, characterized in that said polyolefin or polyolefin or polyalkene oligomer is functionalized at least at one of its ends.

6. The method according to any one of claims 4 or 5, characterized in that said polyolefin or polyolefin or polyalkene oligomer comprises a number of unsaturated carbon-carbon bonds not exceeding 5%, and preferably not exceeding 3%.

7. The method according to any one of claims 4 to 6, characterized in that said anchoring molecule has a weight average molecular weight comprised between 600 and 20000, and preferably between 700 and 15000.

8. The method according to any one of claims 1 to 7, characterized in that said anchoring molecule includes a polyolefin chain or a polyolefin oligomer or a polyalkene oligomer or is a polyolefin chain, terminated by at least one group selected from the group made up of:

- a function $-X^a$, where X^a is selected from the group made up of: -OH, $-NH_2$, $-NHR^a$ wherein R^a = alkyl or aryl, -SH;
- a function $-Y-C_6H_4X^b$, where
  - Y is O, S, CH_2 or absent,
  - X^b is selected from the group made up of: -OH, $-NH_2$, $-NHR^a$, -SH, $-CX^aR^aR^b$, $-C_6H_3R^c(CR^aX^a)$,

  where R^b is selected from the group made up of -H, -Aryl, -Heteroaryl, -Alkyl, and R^c is selected from the group made up of -H, -Alkyl, -O-Alkyl, -Aryl, -O-Aryl, -Heteroaryl, -O-Heteroaryl;
- a function $-CR^d=CH-CHX^a$ or a function $-CR^dH-CH=CH-CHX^a$, where X^a has the meaning defined above, and R^d is methyl or ethyl.

9. The method according to any one of claims 1 to 8, characterized in that:

- said first end of said peptide or protein or peptidomimetic chain is a first unit of α, β or γ-amino acid or α, β or γ-hydroxy acid or α, β or γ-mercapto acid,
- said peptide or protein or peptidomimetic chain is formed of n units of α, β or γ-amino acid and/or α, β or γ-hydroxy acid and/or α, β or γ-mercapto acid, and
- the second end of said peptide chain is another unit of α, β or γ-amino acid or α, β or γ-hydroxy acid or α, β or γ-mercapto acid.

10. The method according to any one of claims 1 to 9, characterized in that during said elongation another unit of α, β or γ-amino acid or α, β or γ-hydroxy acid or α, β or γ-mercapto acid is added to said second end from their respective activated forms.

11. The method according to any one of claims 1 to 10, characterized in that said peptide or said protein or said peptidomimetic is obtained by condensation of a peptide or protein or peptidomimetic anchored on an anchoring molecule and of a fragment of peptide or protein or peptidomimetic suitably protected on its side chains.

12. The method according to any one of claims 1 to 11, comprising at least one step wherein said peptide or protein or peptidomimetic chain attached to said anchoring molecule is separated from the reaction medium by extraction in an organic solvent (such as: cyclohexane, heptane, hexane(s)) by extraction or washing with water or a water/ethanol or water/acetonitrile mixture or by simple filtration.

13. The method according to any one of claims 1 to 12, comprising a step wherein said peptide or said protein or said peptidomimetic is detached from said anchoring molecule.

14. A molecule that can be obtained by the method according to any one of claims 1 to 12.