CLAIMS

1. A method for synthesizing peptides or proteins by successively elongating the second end (Nα) of a peptide chain of which the first end is attached to an anchoring molecule that is soluble in an apolar solvent by means of the carboxylic acid function (C-terminus) thereof or the amine function (Nα) thereof, characterized in that said anchoring molecule includes a polyolefin chain ~~with at least 10 monomer units and preferably~~having between ~~15~~ 10 and 50 monomer units.

2. The method according to claim 1, wherein said polyolefin chain having between 15 and 50 monomer units.

~~2~~3. The method according to claim 1 or 2, characterized in that said anchoring molecule only includes one polyolefin chain.

~~3~~4. The method according to any one of claims 1 ~~or 2~~to 3, characterized in that said polyolefin chain is a polyisobutene chain.

~~4~~5. The method according to any one of claims 1 to ~~3~~4, characterized in that said anchoring molecule is a polyolefin.

~~5~~6. The method according to any one of claims 1 to ~~4~~5, characterized in that said polyolefin chain is functionalized at one of the ends thereof.

~~6~~7. The method according to any one of claims 1 to ~~5~~6, characterized in that said polyolefin chain comprises a number of unsaturated carbon-carbon bonds not exceeding 5% ~~and preferably not exceeding 3%~~.

8. The method according to claim 7, wherein said polyolefin chain comprises the number of unsaturated carbon-carbon bonds not exceeding 3%.

~~7~~9. The method according to any one of claims 1 to ~~6~~8, characterized in that said polyolefin chain has an average molecular weight by mass of between 600 and 20,000~~, and preferably between 700 and 15,000~~.

10. The method according to claim 9, wherein said polyolefin chain has the average molecular weight by mass of between 700 and 15,000.

~~8~~11. The method according to any one of claims 1 to ~~7~~10, characterized in that said anchoring molecule includes a polyolefin chain (or is a polyolefin chain) terminated by a group selected from the group consisting of:

- a -X function, where X is selected from the group consisting of: -OH, $-NH_2$, -SH;
- a $-Z-C_6H_4X^1$ function, where
  - Z is O or is absent,
  - X^1 is selected from the group consisting of: -OH, $-NH_2$, -SH, $-NH-NH_2$, $-CXRR^1$, $-C_6H_3R'(CRX)$
    (where X is selected from the group consisting of -OH, $-NH_2$, -SH, and R is selected from the group consisting of -H, Aryl, Heteroaryl, and R' is selected from the group consisting of -H, -Alkyl, -O-Alkyl, -Aryl, -O-Aryl, Heteroaryl, -O-Heteroaryl),
- a -CR"=CH-CHX function or a -CR"H-CH=CH-CHX function where X is selected from the group consisting of -OH, $-NH_2$, -SH, and R" is methyl or ethyl.

~~9~~12. The method according to any one of claims 1 to ~~8~~11, characterized in that:

- said first end of said peptide chain is a first amino acid unit AA1, and
- said peptide chain is formed of n amino acid units, and
- the second end of said peptide chain is another amino acid unit AAn.

~~10~~13. The method according to one of claims 1 to ~~9~~12, characterized in that another amino acid unit AA(n+1) is added to said second end during said elongation.

~~11~~14. The method according to one of claims 1 to ~~10~~ 13 comprising at least

one step wherein said peptide chain attached to said anchoring molecule is separated from the reaction medium by extraction in an apolar liquid.

~~12~~15. The method according to claim ~~11~~14, characterized in that the solubility of said peptide chain attached to said anchoring molecule in water is less than 30 mg/mL.

~~13~~16. The method according to one of claims ~~3~~ 4 to ~~12~~15, characterized in that said anchoring molecule has a biobased carbon content greater than 90%~~, preferably greater than 93%, and even more preferably greater than 95%~~.

17. The method according to claim 16, wherein said anchoring molecule has the biobased carbon content greater than 93% or greater than 95%.