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 having between 10 and 50 monomer units, further 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.

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

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

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

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

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

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

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

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

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

11. The method according to any one of claims 1 to 10, 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.

12. The method according to one of claims 1 to 11, characterized in that another amino acid unit AA(n+1) is added to said second end during said elongation.

13. The method according to one of claims 1 to 12 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.

14. The method according to claim 13, characterized in that the solubility of said peptide chain attached to said anchoring molecule in water is less than 30

mg/mL.

15. The method according to one of claims 4 to 14, characterized in that said anchoring molecule has a biobased carbon content greater than 90%.

16. The method according to claim 15, wherein said anchoring molecule has the biobased carbon content greater than 93% or greater than 95%.