

netting/mesh film is disposed between the two layers of the first netting/mesh film, or on the two layers of the first netting/mesh film, or under the two layers of the first netting/mesh film.

5 Preferably, the netting/mesh structure unit includes at least three layers of the first netting/mesh film and one layer of the second netting/mesh film, and wherein the second netting/mesh film is disposed between any two layers of the first netting/mesh film, or on the three layers of the first netting/mesh film, or under the three layers of the first netting/mesh film.

10 Preferably, a material of the first netting/mesh film includes polyethylene terephthalate (PET), and a material of the second netting/mesh film comprises polyethylene terephthalate (PET), polypropylene (PP), polyethylene (PE), polytetrafluoroethylene (PTFE) or nylon.

15 Preferably, an opening (pore dimension) of any one of the first meshes is from 30 μm to 800 μm , and an opening (pore dimension) of any one of the second meshes is from 1 mm to 5 mm.

Preferably, the first netting/mesh film is of a netting/mesh material with hydrophilic surface treatment and the second netting/mesh film is of rigid netting/mesh material.

20 Preferably, a type of the carrier is one or more columns by curling the netting/mesh structure unit, one or more columns by laying the plural netting/mesh structure units, or a stacked body by randomly disposed packing the netting/mesh structure units.

Preferably, the edge surrounds of the first netting/mesh film and the second netting/mesh film are sealed together by heat pressing, ultrasonic or adhesive treatment.

Preferably, openings (pore dimensions) of the first meshes of the first netting/mesh film are totally or partially the same.

25 Preferably, openings (pore dimensions) of the second meshes of the second netting/mesh film are totally or partially the same.

Preferably, any one of the first longitude lines, any one of the first latitude lines is of a width from 50 μm to 500 μm , any one of the second longitude lines, or any one of the second latitude lines is of a width from 100 μm to 1000 μm .

30 Preferably, any one of the first longitude lines, any one of the first latitude lines is of a width from 50 μm to 250 μm , any one of the second longitude lines, or any one of the second latitude lines is of a width from 250 μm to 500 μm .

Accordingly, a cell culture device includes the carrier for cell culture and a culturing

CLAIMS

1. A carrier for cell culture and harvest comprising a netting/mesh structure unit, the netting/mesh structure unit comprising:

at least a first netting/mesh film with openings formed in a plurality of first meshes having a plurality of yarns as first longitude lines crossed with and a plurality of yarns as first latitude lines, wherein the first netting/mesh film is biocompatible and hydrophilic, and the openings of the first meshes are from 30 μm to 800 μm ;

and

at least a second netting/mesh film with openings formed in a plurality of second meshes having a plurality of yarns as second longitude lines crossed with a plurality of yarns as second latitude lines, wherein the second netting/mesh film is parallel to the first netting/mesh film and disposed under or on the first netting/mesh film, and the openings of the second meshes are from 1 mm to 5 mm, wherein

edge surrounds of the first netting/mesh film and the second netting/mesh film are sealed together;

any one of the yarns as first longitude lines, or any one of the yarns as first latitude lines is of a width from 50 μm to 500 μm ; and

any one of the yarns as second longitude lines, or any one of the yarns as second latitude lines is of a width from 100 μm to 1000 μm .

2. A carrier for cell culture and harvest according to claim 1, wherein the netting/mesh structure unit comprises two layers of the first netting/mesh film and one layer of the second netting/mesh film, and wherein the second netting/mesh film is disposed between the two layers of the first netting/mesh film, or on the two layers of the first netting/mesh film, or under the two layers of the first netting/mesh film.

3. A carrier for cell culture and harvest according to claim 1, wherein the netting/mesh structure unit comprises at least three layers of the first netting/mesh film and one layer of the second netting/mesh film, and wherein the second netting/mesh film is disposed between any two layers of the first netting/mesh film, or on the three layers of the first netting/mesh film, or under the three layers of the first netting/mesh film.

4. A carrier for cell culture and harvest according to claim 1, wherein a material of the first netting/mesh film comprises polyethylene terephthalate (PET), and a material of the second netting/mesh film comprises polyethylene terephthalate (PET),

polypropylene (PP), polyethylene (PE), polytetrafluoroethylene (PTFE) or nylon.

5. A carrier for cell culture and harvest according to claim 1, wherein the first netting/mesh film is of a netting/mesh material with hydrophilic surface treatment and the second netting/mesh film is of rigid netting/mesh material.

- 5 6. A carrier for cell culture and harvest according to claim 1, wherein a matrix bed comprises one or more the carrier for cell culture and harvest in which:
the at least one carrier is in the form of a column of a curled netting/mesh structure unit, or a plurality of carriers is in the form of columns of curled netting/mesh structure units, or the at least one carrier is in the form of a stacked body of netting/mesh structure units
10 disposed one above the another.

7. A carrier for cell culture and harvest according to claim 1, wherein the openings of the first meshes of the first netting/mesh film are totally or partially the same.

8. A carrier for cell culture and harvest according to claim 1, wherein the openings of the second meshes of the second netting/mesh film are totally or partially the same.

- 15 9. A carrier for cell culture and harvest according to claim 1, wherein any one of the yarns as first longitude lines, any one of the yarns as first latitude lines is of a width from 50 μm to 250 μm , wherein any one of the yarns as second longitude lines, or any one of the yarns as second latitude lines is of a width from 250 μm to 500 μm .

10. A cell culture device comprising the carrier for cell culture and harvesting according to
20 claim 1 and a culturing chamber disposing the carrier for cell culture.

11. A cell culture device according to claim 10, wherein the netting/mesh structure unit is curled to form a column to be put into the culturing chamber; or multitude of the netting/mesh structure units are curled to form columns or disposed one above the another to be put into the culturing chamber; or multitude of the netting/mesh structure
25 units are packed to form a stacked body to be put into the culturing chamber.

12. A cell culture device according to claim 10, wherein the netting/mesh structure unit comprises two or three layers of the first netting/mesh film and one layer of the second netting/mesh film, and wherein the second netting/mesh film is disposed between any two layers of the first netting/mesh film, or on all the layers of the first netting/mesh
30 film, or under all the layers of the first netting/mesh film.

13. A cell culture device according to claim 10, wherein a material of the first netting/mesh film comprises polyethylene terephthalate (PET), and a material of the second netting/mesh film comprises polyethylene terephthalate (PET), polypropylene (PP), polyethylene (PE), polytetrafluoroethylene (PTFE) or nylon.

14. A cell culture device according to claim 10, wherein the first netting/mesh film is of a netting/mesh material with hydrophilic surface treatment and the second netting/mesh film is of rigid netting/mesh material.