CLAIMS

1. A microcrystalline glass product, comprising following components in percentage by weight: SiO_2: 45-70%; Al_2O_3: 8-18%; Li_2O: 10-25%; ZrO_2: 5-15%; P_2O_5: 2-10%; and Y_2O_3: greater than 0 but less than or equal to 8%, $(Li_2O+ZrO_2+P_2O_5)/Y_2O_3$ is 9.0-50.0.

2. The microcrystalline glass product according to claim 1, further comprising the following components in percentage by weight: K_2O: 0-5%; and/or MgO: 0-2%; and/or ZnO: 0-2%; and/or Na_2O: 0-6%; and/or SrO: 0-5%; and/or BaO: 0-5%; and/or CaO: 0-5%; and/or TiO_2: 0-5%; and/or B_2O_3: 0-5%; and/or Ln_2O_3: 0-5%; and/or a clarifying agent: 0-2%, wherein Ln_2O_3 is one or more of La_2O_3, Gd_2O_3, and Yb_2O_3, and the clarifying agent is one or more of Sb_2O_3, SnO_2, SnO, CeO_2, F, Cl, and Br.

3. The microcrystalline glass product according to claim 1 or 2, wherein the components are expressed in percentage by weight, and a content of each component satisfies more than one of following four situations:

1) Y_2O_3/ZrO_2 is greater than 0;

2) $Al_2O_3/(Li_2O+ZrO_2+P_2O_5)$ is 0.16-0.9;

3) Na_2O/Y_2O_3 is 6.0 or less;

4) $Y_2O_3/(Al_2O_3+SiO_2)$ is greater than 0 but less than or equal to 0.15.

4. The microcrystalline glass product according to claim 1 or 2, comprising the following components in percentage by weight: SiO_2: 50-65%; and/or Al_2O_3: 8-15%; and/or Li_2O: 13-22%; and/or ZrO_2: 6-12%; and/or P_2O_5: 3.5-9%; and/or K_2O: 0-4%; and/or MgO：0-1%； and/or ZnO：0-1%； and/or Na_2O: 1-5%; and/or Y_2O_3: 1-7%; and/or SrO: 0-3%; and/or BaO: 0-3%; and/or CaO: 0-3%; and/or TiO_2: 0-3%; and/or B_2O_3: 0-3%; and/or Ln_2O_3: 0-4%; and/or a clarifying agent: 0-1%, wherein Ln_2O_3 is one or more of La_2O_3, Gd_2O_3, and Yb_2O_3, and the clarifying agent is one or more of Sb_2O_3, SnO_2, SnO, CeO_2, F, Cl, and Br.

5. The microcrystalline glass product according to claim 1 or 2, wherein the components are expressed in percentage by weight, and a content of each component satisfies more than one of following five situations:

1) Y_2O_3/ZrO_2 is 0.1-1.0;

2) $(Li_2O+ZrO_2+P_2O_5)/Y_2O_3$ is 9.0-40.0;

3) $Al_2O_3/(Li_2O+ZrO_2+P_2O_5)$ is 0.18-0.6;

4) Na_2O/Y_2O_3 is 0.1-5.0;

5) $Y_2O_3/(Al_2O_3+SiO_2)$ is 0.01-0.12.

6. The microcrystalline glass product according to claim 1 or 2, wherein the components are expressed in percentage by weight, and a content of each component satisfies more than one of the following five situations:

1) Y_2O_3/ZrO_2 is 0.2-0.6;

2) $(Li_2O+ZrO_2+P_2O_5)/Y_2O_3$ is 9.0-21.0;

3) $Al_2O_3/(Li_2O+ZrO_2+P_2O_5)$ is 0.19-0.5;

4) Na_2O/Y_2O_3 is 0.3-2.0;

5) $Y_2O_3/(Al_2O_3+SiO_2)$ is 0.03-0.09.

7. The microcrystalline glass product according to claim 1 or 2, wherein a crystal phase of the microcrystalline glass product mainly comprises lithium monosilicate; lithium monosilicate has a higher weight percentage than other crystal phases, and lithium monosilicate accounts for 10-63.5% by weight of the microcrystalline glass product.

8. The microcrystalline glass product according to claim 1 or 2, wherein a crystal phase of the microcrystalline glass product mainly comprises lithium monosilicate; lithium monosilicate has a higher weight percentage than other crystal phases, and lithium monosilicate accounts for 15-55% by weight of the microcrystalline glass product.

9. The microcrystalline glass product according to claim 1 or 2, wherein the microcrystalline glass product comprises a lithium phosphate crystal phase, and the lithium phosphate crystal phase accounts for 3-15% by weight of the microcrystalline glass product.

10. The microcrystalline glass product according to claim 1 or 2, wherein a surface stress of the microcrystalline glass product is 600 MPa or more; and/or a four-point bending strength

is 600 MPa or more; and/or an ion-exchange layer depth is 20 μm or more; and/or a drop ball test height is 1300 mm or more; and/or a fracture toughness is 1 $MPa \cdot m^{1/2}$ or more; and/or a Vickers hardness is 700 kgf/mm^2 or more; and/or a crystallinity is 50% or more; and/or a crystal grain size is 50 nm or less ; and/or a haze of the microcrystalline glass product with a thickness of 1 mm or less is 0.15% or less; and/or an average transmittance of the microcrystalline glass product with the thickness of 1 mm or less at a wavelength of 400-800 nm is 89% or more; and/or a transmittance of the microcrystalline glass product with the thickness of 1 mm or less at the wavelength of 550 nm is 91% or more; and/or an average light ｜B｜ value of the microcrystalline glass product with the thickness of 1 mm or less at 400-800 nm is 0.6 or less.

11. The microcrystalline glass product according to claim 1 or 2, wherein the microcrystalline glass product includes a colorant, the colorant comprises following components in percentage by weight: NiO: 0-4%; and/or Ni_2O_3: 0-4%; and/or CoO: 0-2%; and/or Co_2O_3: 0-2%; and/or Fe_2O_3: 0-7%; and/or MnO_2: 0-4%; and/or Er_2O_3: 0-8%; and/or Nd_2O_3: 0-8%; and/or Cu_2O: 0-4%; and/or Pr_2O_3: 0-8%; and/or CeO_2: 0-4%.

12. Microcrystalline glass, comprising following components in percentage by weight: SiO_2: 45-70%; Al_2O_3: 8-18%; Li_2O: 10-25%; ZrO_2: 5-15%; P_2O_5: 2-10%; and Y_2O_3: greater than 0 but less than or equal to 8%, $(Li_2O+ZrO_2+P_2O_5)/Y_2O_3$ is 9.0-50.0.

13. The microcrystalline glass according to claim 12, further comprising the following components in percentage by weight: K_2O: 0-5%; and/or MgO: 0-2%; and/or ZnO: 0-2%; and/or Na_2O: 0-6%; and/or SrO: 0-5%; and/or BaO: 0-5%; and/or TiO_2: 0-5%; and/or CaO: 0-5%; and/or B_2O_3: 0-5%; and/or Ln_2O_3: 0-5%; and/or a clarifying agent: 0-2%, wherein Ln_2O_3 is one or more of La_2O_3, Gd_2O_3, and Yb_2O_3, and the clarifying agent is one or more of Sb_2O_3, SnO_2, SnO, CeO_2, F, Cl, and Br.

14. The microcrystalline glass according to claim 12 or 13, wherein the components are expressed in percentage by weight, and a content of each component satisfies more than one of following four situations:

1) Y_2O_3/ZrO_2 is greater than 0;

2) $Al_2O_3/(Li_2O+ZrO_2+P_2O_5)$ is 0.16-0.9;

3) Na_2O/Y_2O_3 is 6.0 or less;

4) $Y_2O_3/(Al_2O_3+SiO_2)$ is greater than 0 but less than or equal to 0.15.

15. The microcrystalline glass according to claim 12 or 13, comprising the following components in percentage by weight: SiO_2: 50-65%; and/or Al_2O_3: 8-15%; and/or Li_2O: 13-22%; and/or ZrO_2: 6-12%; and/or P_2O_5: 3.5-9%; and/or K_2O: 0-4%; and/or MgO：0-1%；and/or ZnO：0-1%；and/or Na_2O: 1-5%; and/or Y_2O_3: 1-7%; and/or SrO: 0-3%; and/or TiO_2: 0-3%; and/or BaO: 0-3%; and/or CaO: 0-3%; and/or B_2O_3: 0-3%; and/or Ln_2O_3: 0-4%; and/or a clarifying agent: 0-1%, wherein Ln_2O_3 is one or more of La_2O_3, Gd_2O_3, and Yb_2O_3, and the clarifying agent is one or more of Sb_2O_3, SnO_2, SnO, CeO_2, F, Cl, and Br.

16. The microcrystalline glass according to claim 12 or 13, wherein the components are expressed in percentage by weight, and a content of each component satisfies more than one of following five situations:

1) Y_2O_3/ZrO_2 is 0.1-1.0;

2) $(Li_2O+ZrO_2+P_2O_5)/Y_2O_3$ is 9.0-40.0;

3) $Al_2O_3/(Li_2O+ZrO_2+P_2O_5)$ is 0.18-0.6;

4) Na_2O/Y_2O_3 is 0.1-5.0;

5) $Y_2O_3/(Al_2O_3+SiO_2)$ is 0.01-0.12.

17. The microcrystalline glass according to claim 12 or 13, wherein the components are expressed in percentage by weight, and a content of each component satisfies more than one of following five situations:

1) Y_2O_3/ZrO_2 is 0.2-0.6;

2) $(Li_2O+ZrO_2+P_2O_5)/Y_2O_3$ is 9.0-21.0;

3) $Al_2O_3/(Li_2O+ZrO_2+P_2O_5)$ is 0.19-0.5;

4) Na_2O/Y_2O_3 is 0.3-2.0;

5) $Y_2O_3/(Al_2O_3+SiO_2)$ is 0.03-0.09.

18. The microcrystalline glass according to claim 12 or 13, wherein a crystal phase of the

microcrystalline glass mainly comprises lithium monosilicate; the lithium monosilicate has a higher weight percentage than other crystal phases, and lithium monosilicate accounts for 10-63.5% by weight of the microcrystalline glass.

19. The microcrystalline glass according to claim 12 or 13, wherein a crystal phase of the microcrystalline glass mainly comprises lithium monosilicate; the lithium monosilicate has a higher weight percentage than other crystal phases, and lithium monosilicate accounts for 15-55% by weight of the microcrystalline glass.

20. The microcrystalline glass according to claim 12 or 13, wherein the microcrystalline glass comprises a lithium phosphate crystal phase, and the lithium phosphate crystal phase accounts for 3-15% by weight of the microcrystalline glass.

21. The microcrystalline glass according to claim 12 or 13, wherein a crystallinity of the microcrystalline glass is 50% or more; and/or a crystalgrain size is 50 nm or less; and/or a coefficient of thermal expansion is $75\text{-}95\times10^{-7}$/K; and/or a refractive index is 1.5700-1.5800 ; and/or a body drop height of the microcrystalline glass is 1000 mm or more; and/or a Vickers hardness is 650 kgf/mm^2 or more ; and/or a haze of the microcrystalline glass with a thickness of 1 mm or less is 0.15% or less; and/or an average transmittance of the microcrystalline glass with the thickness of 1 mm or less at a wavelength of 400-800 nm is 89% or more; and/or a transmittance of the microcrystalline glass with the thickness of 1 mm or less at the wavelength of 550 nm is 91% or more; and/or an average light ｜B｜ value of the microcrystalline glass with the thickness of 1 mm or less at 400-800 nm is 0.6 or less.

22. The microcrystalline glass according to claim 12 or 13, wherein the microcrystalline glass includes a colorant, the colorant comprises the following components in percentage by weight: NiO: 0-4%; and/or Ni_2O_3: 0-4%; and/or CoO: 0-2%; and/or Co_2O_3: 0-2%; and/or Fe_2O_3: 0-7%; and/or MnO_2: 0-4%; and/or Er_2O_3: 0-8%; and/or Nd_2O_3: 0-8%; and/or Cu_2O: 0-4%; and/or Pr_2O_3: 0-8%; and/or CeO_2: 0-4%.

23. A glass cover plate, comprising the microcrystalline glass product according to any one of claims 1 to 11, and/or the microcrystalline glass according to any one of claims 12 to 22.

24. A glass component, comprising the microcrystalline glass product according to any one of claims 1 to 11, and/or the microcrystalline glass according to any one of claims 12 to 22.

25. A display device, comprising the microcrystalline glass product according to any one of claims 1 to 11, and/or the microcrystalline glass according to any one of claims 12 to 22, and/or the glass cover plate according to claim 23, and/or the glass component according to claim 24.

26. An electronic device, comprising the microcrystalline glass product according to any one of claims 1 to 11, and/or the microcrystalline glass according to any one of claims 12 to 22, and/or the glass cover plate according to claim 23, and/or the glass component according to claim 24.

27. The method for manufacturing a microcrystalline glass product according to claim 1 to 11 includes the following steps: forming matrix glass; and forming the matrix glass into a microcrystalline glass through a crystallization process, and then forming the microcrystalline glass into a microcrystalline glass product through a chemical strengthening process.

28. The method for manufacturing the microcrystalline glass product according to claim 27, wherein the crystallization process comprises the following steps: increasing the temperature to a prescribed crystallization treatment temperature, after reaching the crystallization treatment temperature, maintaining the temperature for a certain period of time, and then cooling down, wherein the crystallization treatment temperature is 600-750°C, and the holding time at the crystallization treatment temperature is 1-6 hours.

29. The method for manufacturing the microcrystalline glass product according to claim 27, wherein crystallization process comprises the following steps: performing a nucleation process at a first temperature, and then performing a crystal growth process at a second temperature higher than the nucleation process temperature, the first temperature is 470-630°C, the second temperature is 650-750°C; the holding time at the first temperature is 2-15 hours; the holding time at the second temperature is 0.5-6 hours.

30. The method for manufacturing the microcrystalline glass product according to claim

27, wherein the chemical strengthening process comprises: immersing the microcrystalline glass in a salt bath of molten Na salt at a temperature of 430°C to 470°C for 6-20 hours; and/or immersing the microcrystalline glass in a salt bath of molten K salt at the temperature of 400°C to 450°C for 1-8 hours.

31. The method for manufacturing a microcrystalline glass according to claim 12 to 22 includes the following steps: forming matrix glass; and forming the matrix glass into a microcrystalline glass through a crystallization process.

32. The method for manufacturing a microcrystalline glass according to claim 31, wherein the crystallization process comprises the following steps: increasing the temperature to a prescribed crystallization treatment temperature, after reaching the crystallization treatment temperature, maintaining the temperature for a certain period of time, and then cooling down, wherein the crystallization treatment temperature is 600-750°C, and the holding time at the crystallization treatment temperature is 1-6 hours.

33. The method for manufacturing a microcrystalline glass according to claim 31, wherein crystallization process comprises the following steps: performing a nucleation process at a first temperature, and then performing a crystal growth process at a second temperature higher than the nucleation process temperature, the first temperature is 470-630°C, the second temperature is 650-750°C; the holding time at the first temperature is 2-15 hours; the holding time at the second temperature is 0.5-6 hours.