CLAIMS

1. A sensor device comprising

a sensor receiving portion; and

a sensor arranged in the sensor receiving portion; and

a cap covering the sensor and the sensor receiving portion, wherein the cap includes a plurality of recesses in an inner side wall of the cap.

2. The sensor device of claim 1, wherein the cap comprises a membrane where the plurality of recesses is located.

3. The sensor device of any one of the preceding claims, wherein the cap includes at least one ring being at least a part of the plurality of recesses.

4. The sensor device of claim 3, wherein the cap includes a concentric ring arrangement, to which the at least one ring belongs, being at least a part of the plurality of recesses.

5. The sensor device of claim 3 or 4, wherein a width of the at least one ring is different from a width of another ring.

6. The sensor device of claims 3 to 5, wherein the width of the at least one ring ranges from around 0.01mm to around 1.2mm.

7. The sensor device of any one of the preceding claims, wherein the recesses of the plurality of recesses have different depths.

8. The sensor device of claim 7, wherein the depths range between around 0.6 mm to around 3 mm from the cap surface.

9. The sensor device of any one of the preceding claims, wherein the cap includes one or more elements, each having a shape selected from a group: circle, triangle, square and rectangle, being at least a part of the plurality of recesses.

10. The sensor device of claims 2 to 9, wherein the membrane comprises material that is different from the material of the remainder of the cap.

11. The sensor device of any one of the preceding claims, further comprising a base where the sensor receiving portion is located.

12. The sensor device of any one of the preceding claims, further comprising a sleeve in which the cap and the sensor receiving portion are disposed, the sleeve comprising an opening such that a region including the plurality of recesses is released via the opening.

13. The sensor device of claim 12, wherein the outer surface of the sleeve comprises a screw thread.

14. The sensor device of claims 12 or 13, wherein the sleeve is made from material having yield strength above 152500 psi.

15. The sensor device of claims 12 to 14, wherein the sleeve comprises stainless steel.

16. The sensor device of any one of claims 11 to 15, wherein the cap is mounted on the sensor receiving portion such that the cap and the base completely encapsulate the sensor.

17. The sensor device of any one of the preceding claims, further comprising a damping fluid in an enclosure around the sensor, the damping fluid having viscosity in the range of 50000 mPa.s to 1000000 mPa.s.

18. The sensor device of claim 17, wherein the damping fluid comprises silicone oil.

19. The sensor device of any one of the preceding claims, wherein the cap is made from material with yield strength above 185200 psi and thermal conductivity below 7.50 W/m-K.

20. The sensor device of any one of the preceding claims, wherein the cap comprises titanium beta 21.

21. The sensor device of any one of the preceding claims, wherein the sensor receiving portion comprises ceramic material.

CLAIMS

1. A sensor device comprising

a sensor receiving portion; and

a sensor arranged in the sensor receiving portion; and

a cap covering the sensor and the sensor receiving portion, wherein the cap includes a plurality of recesses in an inner side wall of the cap.

2. The sensor device of claim 1, wherein the cap comprises a membrane where the plurality of recesses is located.

3. The sensor device of claim 1, wherein the cap includes at least one ring being at least a part of the plurality of recesses.

4. The sensor device of claim 3, wherein the cap includes a concentric ring arrangement, to which the at least one ring belongs, being at least a part of the plurality of recesses.

5. The sensor device of claim 3, wherein a width of the at least one ring is different from a width of another ring.

6. The sensor device of claim 3, wherein the width of the at least one ring ranges from around 0.01mm to around 1.2mm.

7. The sensor device of claim 1, wherein the recesses of the plurality of recesses have different depths.

8. The sensor device of claim 7, wherein the depths range between around 0.6 mm to around 3 mm from the cap surface.

9. The sensor device of claim 1, wherein the cap includes one or more elements, each having a shape selected from a group: circle, triangle, square and rectangle, being at least a part of the plurality of recesses.

10. The sensor device of claim 2, wherein the membrane comprises material that is different from the material of the remainder of the cap.

11. The sensor device of claim 1, further comprising a base where the sensor receiving portion is located.

12. The sensor device of claim 1, further comprising a sleeve in which the cap and the sensor receiving portion are disposed, the sleeve comprising an opening such that a region including the plurality of recesses is released via the opening.

13. The sensor device of claim 12, wherein the outer surface of the sleeve comprises a screw thread.

14. The sensor device of claim 12, wherein the sleeve is made from material having yield strength above 152500 psi.

15. The sensor device of claim 12, wherein the sleeve comprises stainless steel.

16. The sensor device of claim 11, wherein the cap is mounted on the sensor receiving portion such that the cap and the base completely encapsulate the sensor.

17. The sensor device of claim 1, further comprising a damping fluid in an enclosure around the sensor, the damping fluid having viscosity in the range of 50000 mPa.s to 1000000 mPa.s.

18. The sensor device of claim 17, wherein the damping fluid comprises silicone oil.

19. The sensor device of claim 1, wherein the cap is made from material with yield strength above 185200 psi and thermal conductivity below 7.50 W/m-K.

20. The sensor device of claim 1, wherein the cap comprises titanium beta 21.

21. The sensor device of claim 1, wherein the sensor receiving portion comprises ceramic material.