CLAIMS

1. A sensing device comprising:

a sensor arrangement comprising:

an optical fiber; and

at least one spacer element arranged adjacent to the optical fiber, wherein

the optical fiber is arranged in a serpentine shape, and having at least two sections facing each other,

the at least two sections of the optical fiber are arranged spaced apart from each other,

the at least one spacer element is arranged in between the at least two sections of the optical fiber and is spaced apart from the at least two sections of the optical fiber, and

the optical fiber and the at least one spacer element are adapted to cooperate to receive a force applied to the sensor arrangement to modulate an optical signal propagating in the optical fiber.

2. The sensing device as claimed in claim 1, wherein the optical fiber and the at least one spacer element are arranged in a same plane.

3. The sensing device as claimed in claim 1, wherein the at least two sections of the optical fiber are arranged at least substantially parallel to each other.

4. The sensing device as claimed in claim 1, wherein the optical fiber is arranged with at least one curved section.

5. The sensing device as claimed in claim 1, wherein the optical fiber comprises a multimode optical fiber.

6. The sensing device as claimed in claim 1, wherein the at least one spacer element comprises at least one of a dummy optical fiber, a tube or a rod.

7. The sensing device as claimed in claim 1, wherein the sensor arrangement further comprises a pair of cover layers, and wherein the optical fiber and the at least one spacer element are arranged in between the pair of cover layers.

8. The sensing device as claimed in claim 7, wherein each cover layer of the pair of cover layers comprises a plurality of fibrous materials arranged in a mesh-like structure.

9. The sensing device as claimed in claim 8, wherein the plurality of fibrous materials comprise at least one of a polymer, a metal or a plastic material.

10. The sensing device as claimed in claim 8, wherein a gap is defined between adjacent fibrous materials of the plurality of fibrous materials arranged in the mesh-like structure.

11. The sensing device as claimed in claim 1, further comprising an optical transceiver optically coupled to the optical fiber of the sensor arrangement.

12. The sensing device as claimed in claim 11, wherein the optical transceiver comprises an optical source configured to generate the optical signal propagating in the optical fiber.

13. The sensing device as claimed in claim 11, wherein the optical transceiver comprises an optical detector configured to detect the optical signal that is modulated by the force applied to the sensor arrangement.

14. The sensing device as claimed in claim 1, further comprising a processing circuit configured to retrieve information corresponding to the force from the optical signal that is modulated by the force applied to the sensor arrangement.

15. A method for sensing a force, the method comprising:

providing an optical signal to an optical fiber for propagation in the optical fiber;

applying a force to the optical fiber and at least one spacer element arranged adjacent to the optical fiber to modulate the optical signal propagating in the optical fiber; and

detecting the optical signal modulated by the force, wherein

the optical fiber is arranged in a serpentine shape, and having at least two sections facing each other,

the at least two sections of the optical fiber are arranged spaced apart from each other, and

the at least one spacer element is arranged in between the at least two sections of the optical fiber and is spaced apart from the at least two sections of the optical fiber.

16. The method as claimed in claim 15, further comprising retrieving information corresponding to the force from the detected optical signal.