Claims

1. An implantable electrode comprising:

at least one contact element for contacting bodily tissue;

a connection portion comprising at least one connecting line for connecting a medical device to the at least one contact element; and

a cylindrical core,

wherein the cylindrical core is flexible along a longitudinal axis of the electrode,

wherein the connection portion is wound around the core and individual turns, or all turns, in the wound form of the cylindrical portion are fastened to the core, and

wherein the connection portion is formed flat and the at least one connecting line is embedded in the flat connection portion,

wherein the at least one connecting line is arranged between two electrically insulating thermoplastic polymer films which are permanently connected to one another,

wherein a first of the two films is planer and has the at least one contact element formed on one of its sides and the at least one connecting line formed on a side of the first film opposite the at least one contact element,

wherein a second of the two films is planar and is connected to the first film on the one side of the

first film where the at least one connecting line is formed,

wherein the first and second films forming the connection portion are wound around the core.

2. The implantable electrode according to claim 1, wherein the connection portion is helical, at least in one or more portions.

3. The implantable electrode according to claim 1, wherein the connection portion is formed as a flat ribbon wound around the longitudinal axis.

4. The implantable electrode according to claim 1, wherein the connection portion has broad and narrow sides, wherein one of the broad sides is an outer side pointing away from the longitudinal axis.

5. The implantable electrode according to claim 4, wherein the connection portion has an inner side facing towards the longitudinal axis, wherein the inner side is smaller than the outer side.

6. The implantable electrode according to claim 5, wherein the outer side is stretched to a greater extent than the inner side.

7. The implantable electrode according to claim 5, wherein the outer side has been mechanically extended and at the same time thermally treated.

8. The implantable electrode according to claim 1, wherein the connection portion is provided with a coating exerting a mechanical stress onto the connection portion.

9. The implantable electrode according to claim 1, wherein the electrode is embodied with a contact portion comprising the contact element, wherein the contact portion is substantially flat.