CLAIMS

1. An electrode assembly system ~~(20, 120)~~ for treatment of internal organ oedema by electro-osmosis and/or electrophoresis by delivering an electric field, the system comprising

a first electrode ~~(30; 240; 440)~~,

a second electrode ~~(40, 140; 340; 440', 540)~~, and

a control unit ~~(50)~~,

wherein the first electrode ~~(30; 240; 440)~~ and second electrode ~~(40, 140; 340; 440', 540)~~ are electrically connected to the control unit ~~(50)~~,

characterized in that

the control unit ~~(50)~~ is adapted to charge the first electrode ~~(30; 240; 440)~~ negatively and the second electrode ~~(40, 140; 340; 440', 540)~~ positively, and the control unit ~~(50)~~ is adapted to directly control a strength of an electric field induced by the first electrode ~~(30; 240; 440)~~ and the second electrode ~~(40, 140; 340; 440', 540)~~ to a preset value for generating a treatment-specific electric flux.

2. The electrode assembly system ~~(20, 120)~~ according to claim 1, wherein the control unit ~~(50)~~ is adapted to switch the polarity of the charged first and second electrodes.

3. The electrode assembly system ~~(20, 120)~~ according to claim 1 or claim 2, wherein the first electrode is a patch electrode ~~(240, 440)~~ and the second electrode is a patch electrode ~~(340, 440')~~ to be positioned opposite one the other of the internal organ ~~(10, 11)~~ so that the electric field generated by the negatively and positively charged first and second electrodes is spanned ~~(55, 155)~~ through the internal organ ~~(10, 11)~~.

4. The electrode assembly system ~~(20, 120)~~ according to claim 1 or 2, wherein the first electrode is a coil electrode ~~(30, 540)~~, and the second electrode is a patch electrode ~~(140, 440)~~, wherein the first electrode ~~(30, 540)~~ is to be positioned inside a liquid vessel of the internal organ ~~(10,11)~~ and the second electrode ~~(140,440)~~ is to be positioned outside of the internal organ ~~(10,11)~~ so that the electric field generated by the negatively and positively charged first and second electrodes is spanned through the internal organ oedema part.

5. The electrode assembly system ~~(20, 120)~~ according to claim 1 or 2, wherein the first electrode is a coil electrode ~~(30)~~ and the second electrode is a coil electrode ~~(40)~~, wherein the first electrode ~~(30)~~ is to be positioned inside a liquid vessel of the internal organ ~~(10)~~ and the second electrode ~~(40)~~ is to be positioned inside a liquid vessel of the internal organ ~~(10)~~ so that the electric field generated by the negatively and positively charged first and second electrodes is spanned through the internal organ oedema part.

6. The electrode assembly system ~~(20, 120)~~ according to any one of claims 1 to 5, wherein the control unit ~~(50)~~ is adapted to control the charge of the negatively and positively charged first and second electrodes to control the strength of the electric field at the place of the internal organ oedema.

7. The electrode assembly system ~~(20, 120)~~ according to any one of claims 1 to 6, wherein

the control unit ~~(50)~~ is configured to allow the preset value of the strength of the electric field to be set and/or entered into the control unit ~~(50)~~ by a user, the control unit ~~(50)~~ is configured to automatically control the strength of the electric field to the preset value for the strength of the electric field, and/or

the control unit ~~(50)~~ is configured to cause and maintain the strength of the electric field at the preset value for the strength of the electric field independently of external influences.

8. The electrode assembly system ~~(20, 120)~~ according to any one of claims 1 to 7, wherein the first electrode and the second electrode have each an electrically isolating sheath, preferably wherein the electrically isolating sheath comprises a material taken from the group encompassing silicone, thermoplast, PEEK, PHA and PHB.

9. The electrode assembly system ~~(20, 120)~~ according to any one of claims 1 to 8, wherein the electrodes are positioned extracorporally, preferably wherein the electrodes are positioned in physical contact with the external skin surface, more preferably wherein the electrodes can be attached or adhered to the skin surface.

~~10. Use of an electrode assembly system (20, 120) according to any one of claims 1 to 9 for inducing an osmotic-like and/or electrophoretic-like effect for treatment of internal organ oedema by means of inducing an electric field, wherein the control unit (50) of the electrode assembly is set to a value for the strength of the electric field by a user to directly control an electric field induced by the first electrode (30; 240; 440) and the second electrode (40, 140; 340; 440', 540) to the preset value for generating a treatment-specific electric flux, wherein the preset value of strength of the electric field is preferably caused and maintained by the control unit independent of external influences.~~

~~11. A process of treatment of internal organ oedema using an electrical field delivering electrode system comprising two patch electrodes and a control unit, wherein the two patch electrodes are to be positioned at two places on the outer surface of the internal organ, wherein the two patch electrodes are connected to the control unit and wherein the control unit is adapted to provide an electric field between the electrodes to induce electro-osmosis and/or electrophoresis.~~

~~12. A process of treatment of internal organ oedema using an electrical field delivering electrode system comprising a patch electrode, a coil electrode and a control unit, wherein the patch electrode is positioned on the outer surface of the internal organ, wherein the coil electrode is positioned in a liquid carrying vessel of the internal organ, the patch electrode and the coil electrode are connected to the control unit and the control unit is adapted to provide an electric field between the two electrodes to induce electro-osmosis and/or electrophoresis, wherein optionally the patch electrode is positioned for the heart on the epicardial side of the heart and wherein the coil electrode is positioned for the heart inside the ventricular cavity.~~

~~13. A process of treatment of internal organ oedema using an electric field delivering electrode system comprising two coil electrodes, wherein the two coil electrodes are positioned in different liquid carrying vessels within the internal organ, the two coil electrodes are connected each to the control unit and the control unit is adapted to deliver an electric field between the two electrodes to induce electro osmosis and/or electrophoresis, wherein optionally one of the two coil electrodes is placed in the coronary sinus and the other of the two electrodes is positioned in the right or left ventricular cavity.~~

~~14. The process of treatment of internal organ oedema according to any one of claims 11 to 13, wherein the internal organ oedema is a myocardial oedema or an oedema of the kidney or an oedema of the liver, and wherein the electro-osmosis and/or electrophoresis is generated for a reduction up to a removal of the internal organ oedema and wherein the electroosmotic and/or electrophoretic effect comprises an accumulation of oedema fluid at the electrodes to be carried away from the electrodes and/or an increased lymphatic flow in the lymphatic vessels induced by the electric field.~~

~~15. The process of treatment of internal organ oedema according to any one of the claims 11 to 14, wherein the control unit is configured to switch the polarity of the electrodes in predetermined time intervals, preferably wherein the predetermined time intervals comprise intervals between ten minutes and three months, especially between 12 hours and 7 days.~~