Claims

What is claimed is:

1. A method for processing a stimulation signal, the method comprising:

monitoring an output voltage on an electrode, the electrode being provided with the stimulation signal;

determining whether the output voltage is lower than a threshold voltage;

if it is determined that the output voltage is lower than the threshold voltage, modifying the waveform of the stimulation signal; and

providing the modified stimulation signal to an object via the electrode;

wherein the stimulation signal is a current pulse signal,

wherein modifying the waveform of the stimulation signal comprises increasing current amplitude of the stimulation signal and decreasing pulse duration of the stimulation signal.

2. The method of claim 1, further comprising:

if it is determined that the output voltage is higher than or equal to the threshold voltage, providing the stimulation signal to the electrode.

3. The method of claim 1, further comprising

modifying the waveform of the stimulation signal such that the modified stimulation signal provides higher power efficiency compared to an original stimulation signal, the power efficiency being determined with respect to a compliance voltage.

4. The method of claim 1, further comprising

modifying the waveform of the stimulation signal such that the modified stimulation signal provides a constant charge compared to an original stimulation signal.

5. The method of claim 1, wherein

modifying the waveform of the stimulation signal comprises modifying at least one of the amplitude, the duration, or the shape of the stimulation signal.

~~6. The method of claim 1, wherein~~

~~the stimulation signal is a current pulse signal.~~

~~7. The method of claim 6, wherein~~

~~modifying the waveform of the stimulation signal comprises increasing the current amplitude of the stimulation signal and decreasing the duration of the stimulation signal.~~

86. The method of claim 1, wherein

modifying the waveform of the stimulation signal comprises modifying one or more stimulation parameters and generating the modified stimulation signal based on the one or more stimulation parameters.

~~9~~7. The method of claim ~~8~~6, wherein

the stimulation parameters comprise amplitude, duration and shape.

~~10~~8. The method of claim 1, wherein

monitoring the output voltage on the electrode comprises periodically or instantaneously monitoring the output voltage on the electrode.

~~11~~9. A stimulator, comprising:

a stimulation circuit configured to provide a stimulation signal to an object via an electrode;

a monitoring circuit configured to monitor an output voltage on the electrode and determine whether the output voltage is lower than a threshold voltage;

wherein the stimulation circuit is further configured to modify the waveform of the stimulation signal and provide the modified stimulation signal to the electrode, if it is determined that the output voltage is lower than the threshold voltage;

wherein the stimulation signal is a current pulse signal, and the stimulation circuit is configured to increase current amplitude of the stimulation signal and decrease pulse duration of the stimulation signal to provide the modified stimulation signal, if it is determined that the output voltage is lower than the threshold voltage.

~~12~~10. The stimulator of claim ~~11~~9, wherein

the stimulation circuit is configured to provide the stimulation signal to the electrode, if it is determined that the output voltage is higher than or equal to the threshold voltage.

~~13~~11. The stimulator of claim ~~11~~9, wherein

the stimulation circuit is configured to modify the waveform of the stimulation signal such that the modified stimulation signal provides higher power efficiency compared to an original stimulation signal, the power efficiency being determined with respect to a compliance voltage.

~~14~~12. The stimulator of claim ~~11~~9, wherein

the stimulation circuit is configured to modify the waveform of the stimulation signal such that the modified stimulation signal provides a constant charge compared to an original stimulation signal.

~~15~~13. The stimulator of claim ~~11~~9, wherein

the stimulation circuit is configured to modify at least one of the amplitude, the duration, or the shape of the stimulation signal, if it is determined that the output voltage is lower than the threshold voltage.

~~16. The stimulator of claim 11, wherein~~

~~the stimulation signal is a current pulse signal, and~~

~~the stimulation circuit is configured to increase the current amplitude of the stimulation signal and decrease the duration of the stimulation signal, if it is determined that the output voltage is lower than the threshold voltage~~

~~17~~14. The stimulator of claim ~~11~~9, wherein the stimulation circuit comprises

a controller configured to modify one or more stimulation parameters, if it is determined by the monitoring circuit that the output voltage is lower than the threshold voltage; and

a stimulation signal generator configured to generate the stimulation signal based on the one or more stimulation parameters, and generate the modified stimulation signal based on the one or more modified stimulation parameters.

15. The stimulator of claim 14, wherein

the stimulation parameters comprise amplitude, duration and shape.

~~18~~16. The stimulator of claim ~~17~~14, wherein

the controller is a digital controller comprising a state machine configured to modify the one or more stimulation parameters.

~~19~~17. The stimulator of claim ~~17~~14, wherein

the stimulation signal generator comprises a digital to analog converter configured to convert the stimulation parameters into the stimulation signal, or convert the modified stimulation parameters into the modified stimulation signal.

~~20~~18. The stimulator of claim ~~11~~9, wherein

the stimulator comprises a neurostimulator or a muscular stimulator.