Claims

1. A method (200) for measuring an analyte concentration using an electrochemical analyte sensor, the analyte sensor comprising a first electrode and a second electrode, the first electrode being configured to react with the analyte for generating an electrical signal, the method comprising:

   applying (201) a modulated voltage signal between the first electrode and the second electrode,

   determining (202) a current signal in response to the applied modulated voltage signal,

   determining (203) an electric potential working point of the analyte sensor based on the determined current signal,

   operating (204) the analyte sensor at the determined electric potential working point, and

   measuring (205) the analyte concentration based on the electrical signal generated by the first electrode.

2. The method according to the preceding claim, wherein the modulated voltage signal applied between the first electrode and the second electrode is applied in time-discrete steps.

3. The method according to one of the preceding claims, wherein the step of determining a current signal in response to the applied modulated voltage signal comprises:

   determining the amplitude of the current signal and the average current signal at the first electrode in response to the applied modulated voltage signal and in response to the electrical signal generated at the first electrode from the reaction with the analyte.

4. The method according to claim 3, wherein the step of determining (203) an electric potential working point of the analyte sensor based on the determined current signal comprises:
   regulating the applied modulated voltage signal such that the ratio of the determined amplitude of the current signal at the first electrode to the determined average current signal falls within a predetermined range to determine an electric potential working point of the first electrode.

5. The method according to one of the preceding claims, wherein the first electrode is a working electrode.

6. The method according to one of the preceding claims, wherein the second electrode is selected from a group comprising the following types: a counter electrode and a combined counter/reference electrode.

7. The method according to one of the preceding claims, wherein energy released by the electrochemical reaction of the analyte with the first electrode is harvested for supplying energy to the operation of the analyte sensor.

8. The method according to one of the preceding claims, wherein the analyte is glucose and wherein the concentration of glucose is measured.

9. The method according to one of the preceding claims, wherein the measured analyte concentration is outputted on a display.

10. An analyte sensor for measuring an analyte concentration, the analyte sensor comprising a first electrode and a second electrode, the first electrode being configured to electrochemically react with the analyte for generating an electrical signal and the analyte sensor being configured for measuring an analyte concentration according to one of the preceding claims.

11. The analyte sensor according to claim 10, wherein the first electrode is a working electrode.

12. The analyte sensor according to claim 10 or 11, wherein the second electrode is an electrode selected from a group comprising the following types: a counter electrode and a combined counter/reference electrode.

13. The analyte sensor according to one of claims 10 to 12, wherein the second electrode comprises gold or platinum.

14. The analyte sensor according to one of claims 10 to 13, wherein the first electrode comprises an enzyme, e.g. glucose oxidase.

15. The analyte sensor according to one of claims 10 to 14, wherein the first electrode comprises a polymeric transition complex, e.g. a transition metal complex selected from osmium-complexes, ruthenium-complexes, vanadium-complexes, cobalt-complexes, or iron-complexes, such as ferrocenes, e.g. 2-aminoethylferrocene.

16. The analyte sensor according to claim 14 or 15, the first electrode comprising at least one transition metal complex comprising a modified poly(vinylpyridine) backbone loaded with poly(bi-imidizyl) Os complexes covalently coupled through a bidentate linkage.

17. The analyte sensor according to one of claims 10 to 16, wherein the second electrode is configured to measure an oxygen saturation in the environment of the second electrode.

18. The analyte sensor according to one of claims 10 to 17, wherein the first and second electrode are arranged on opposing sides of a/the substrate of the analyte sensor.

19. A system for measuring an analyte concentration comprising the analyte sensor according to one of claims 10 to 18.

20. The system according to claim 19, the system comprising an implantable medical device with the analyte sensor according to one of claims 10 to 18.