

Solutions to the tasks: Chapter 10 – Microsystems and nanosystems

Task 10.1 (Lactate biosensor)

The solution to this task closely resembles the sketch of the membrane stack for a glucose biosensor's working electrode (Figure 10.9). The only difference is the enzyme lactate oxidase in the enzyme membrane instead of the glucose oxidase and, therefore, the different enzymatic reactions:

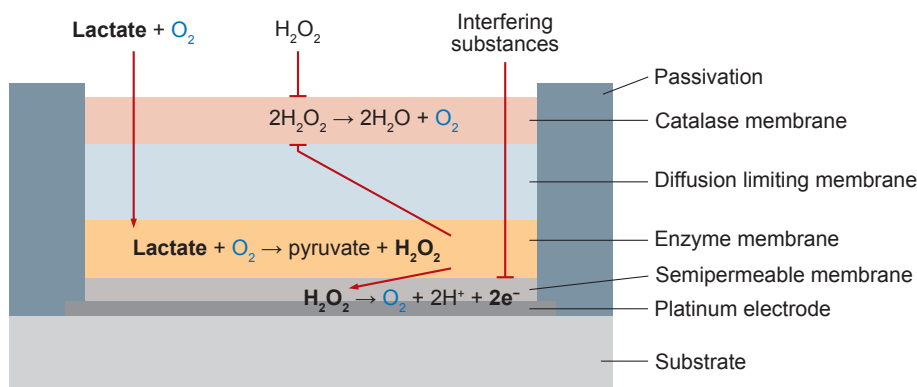
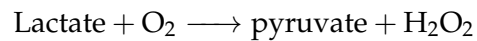


Figure 1: Working electrode of an advanced lactate biosensor using oxygen as cosubstrate ("first-generation biosensor").

Similarly, other biosensors are possible as long as a stable oxidase exists. E.g., a glutamate biosensor would rely on the enzyme glutamate oxidase, which catalyzes the reaction:

