366.092 Sensorik

366.051 Sensorik für MS

Exam questions: examples

- Which are the two classification categories concerning the output of chemical sensors? Explain and name one example for each category.
- Define the term „electrochemical sensor“. Name the three subcategories.
- Define the terms „chemical sensor“ and „biological sensor“.
- What is the „electronic tongue“ and what are the applications? What are the advantages of an „electronic tongue“ in comparison to a „human tongue“?
- Describe the potentiometric measurement principle (electrochemical sensors).
- Explain the term „electrochemical potential“ (define the „chemical potential μ_i“ first).
- Which quantity in electrochemistry is named by “activity α” (unit mol/l)?
- Explain the working principle on an „enzyme sensor“.
- Name the difference between chemical sensors and physical chemosensors. Which are the four energy domains for the physical chemosensors (which physical properties are being measured)?
- Do physical chemosensors have any advantages over the chemical sensors and if yes, name a few.
- What is the „pulse oximeter“? Explain briefly its working principle.
- How does an „optical smoke detector“ work in principal? Explain briefly.
- If you are to choose a sensor (any) which are the environmental and economic factors that you should take into consideration?
- Explain the working principle of a simple fluxgate sensor and name one application.
- Define the term „gas sensor“. Name two applications of gas sensing and two measurement technologies/methods.
- Explain the detection principle of a metal oxide gas sensor. What are the disadvantages?
- What is a „lambda sensor“? Explain briefly.

- Explain the working principle of a hall sensor and name one application.
- Explain briefly the giant magnetoresistance effect.
- What is the difference between GMR and TMR effect?
- What is the „electronic nose“ and what are the applications? What are the advantages of an „electronic nose“ in comparison to a „human nose“?
- What is the working principle of a „carbon microphone“?
- What is the working principle of a „condenser microphone“ (Kondesatormikrofon)?
- Define the term „sensitivity“ of a microphone.
- Describe the working principle of a „SAW“ temperature sensor.