

CHEM-E1130 Catalysis

Exam 10.4.2019

Questions as remembered after exam

1. Definition of a catalyst. Based on definition how does it affect the chemical process? What are the requirements of an industrial catalyst?
2. Define the following terms
 - a) mesopore
 - b) Tamman temperature
 - c) Point of zero charge (PZC)
 - d) dispersion
 - e) homogenous catalysis
 - f) steam reforming
3. Preparation of supported metal catalysts with ALD. Principle of the method. How can metal loading be controlled? Benefits/limitations.
4. Poisoning of catalysts. Describe the phenomenon, provide example(s), how does it affect activity/selectivity/lifetime of catalyst. How can poisoning be avoided?
5. Two samples of supported metal catalysts are prepared, one on gamma-alumina, one on zirconia. Specific surface areas are 300 m²/g and 60 m²/g, respectively. 5 wt-% of Ni is deposited on both samples, based on XRF results. How can the samples be distinguished from each other now?

Describe the principle of at least two characterization methods that could solve the problem and what information they would provide.

(There was far more text here, but these are the relevant parts)