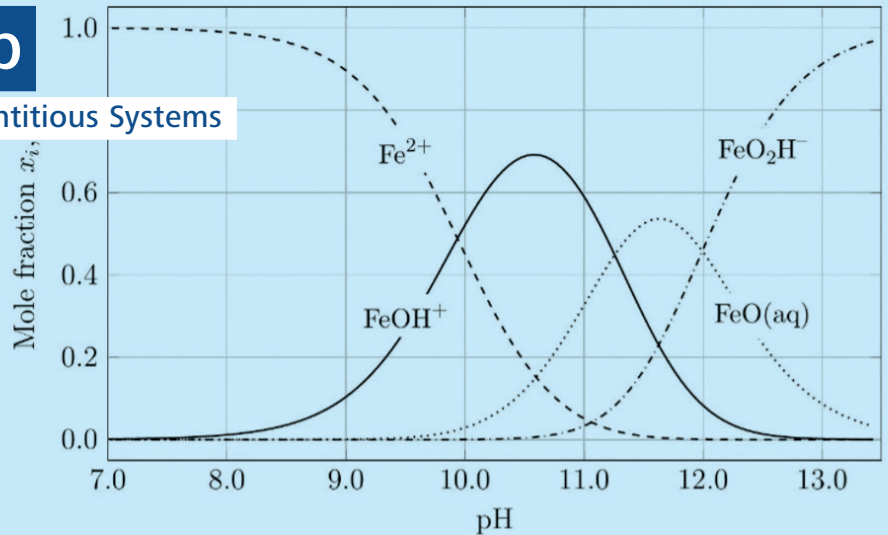


GEMS Workshop

Thermodynamic Modeling of Cementitious Systems



WORKSHOP

Tuesday – Friday
3 – 6 June 2025

from 9:00 am – 3:00 pm

Event location

Empa, Dübendorf, Akademie
Überlandstrasse 129
8600 Dübendorf

Online registration

www.empa-akademie.ch/gems



Contact

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Topic

Cementitious materials show a rapid and complex evolution of pore water composition and mineral assemblage during hydration.

Thermodynamic equilibrium and mass balance calculations are a valuable tool to understand the different processes in cementitious systems. They can help to understand the consequences of different factors such as cement composition, hydration, leaching or temperature on the composition and the properties of a hydrated cementitious system on a chemical level.

The intention of this workshop is to give an introduction to use mass balance calculations as well as GEMS (Gibbs Energy Minimizations), a thermodynamic modelling software using free energy minimization developed at PSI, and its applications to cementitious systems.

Learning outcomes

- Understanding of the principles of thermodynamic equilibrium and mass balance calculations
- Basic knowledge on thermodynamic data
- Ability to calculate the hydrate composition of cementitious materials

- Ability to create single systems and process files in GEMS to calculate:
 - hydrate compositions of cementitious materials
 - saturation indices
 - chemical interactions of cementitious materials with the environment

Lecturer

Barbara Lothenbach, Empa
Frank Winnefeld, Empa
George-Dan Miron, Georg Kosakowski, PSI
Shishir Mundras, Fabio Furcas, ETH

General Information

Costs: PhD students: CHF 780.–
Postdoc/scientists: CHF 1000.–
Industry: CHF 1500.–

The workshop fees cover workshop material as well as food and beverage during the workshop.

Registration deadline: 18 April 2025

Cancellations: You will receive all amounts paid minus 10% cancellation fee for all cancellations made before 18 April 2025. In case of cancellation after 18 April 2025 50% of the participation fee will be charged. After 28 April 2025 or in case of no-show, the total amount will be due. A substitute person can be named at any time.

