



Announcement - Wintersemester 2025/2026

Industrial High-Temperature Processes

SWS: 3 V + 1 Ü, LV 610802000

Lecturer: Univ.-Prof. Dr. rer. nat. Markus Reinmöller

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Start: **14.10.2025**

Time: **14:00 – 17:15 a.m.**

Site: **V 23.01, IFK, Pfaffenwaldring 23**

Content of the lecture:

Introduction of industrial high-temperature processes:

- Relevance, global amounts, global markets, and global emissions

Various high-temperature processes from the following fields:

- Thermal energy generation (introduction into the processes in various thermal power plants; thermal steam generators; high-temperature fuel cells; thermal energy storage etc.)
- Thermal refinement (extraction and separation processes of raw materials, such as cement and construction materials; melt generation processes, such as glass production; metallurgical refinement processes, such as direct reduction, iron production, non-iron metal production; subsequent emission cleaning processes etc.)
- Thermal generation of base materials (gasification; pyrolysis; metallurgical coke production; hydrogen production; further processes)
- Thermal syntheses (ammonia synthesis; Fischer-Tropsch liquids; thermal cracking and reforming processes etc.)
- Thermal recycling processes (chemical recycling)

Mechanisms of emission formation and related reduction methods in all of these high-temperature processes. Various calculation tasks for practical processes (resource- and energy-based balancing of these processes, emission calculations etc.)

Future improvements of these processes (enhanced energy and resource efficiency, emission reduction, process coupling etc.)

Univ.-Prof. Dr. rer. nat. M. Reinmöller