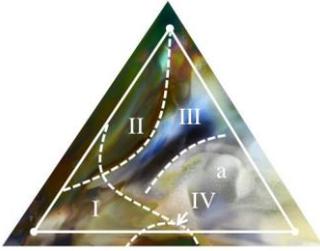
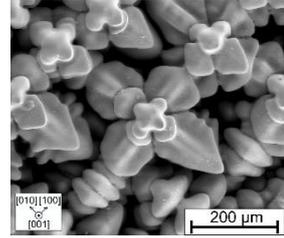


## Fundamental Aspects of Materials Science and Engineering (FAMSE)



Prof. Dr. Tong Li  
Prof. Dr.-Ing. Gunther Eggeler  
Prof. Dr.-Ing. Alfred Ludwig



**Tuesdays, 12:00 – 14:45 pm, Room IC 04/408**

The lecture series “Fundamental Aspects of Materials Science and Engineering” builds up on basic materials science knowledge and introduces a few advanced topics. We discuss why an atomistic and thermodynamic understanding is important in materials engineering. We take a look at different material classes, which are in the focus of today's research: catalytic materials, superalloy single crystals and shape memory alloys. And we learn about ternary phase diagrams, intermetallic phases and how combinatorial materials research works. These topics are of general importance in materials science and allow to apply fundamental knowledge to several material classes.

### I. Thermodynamic Aspects and Advanced Catalytic Materials (Prof. Dr. Tong Li)

- (1) 08. April 2025: Thermodynamics in materials science – fundamentals (TL)
- (2) 15. April 2025: Advanced Catalytic materials (TL)
- (3) 22. April 2025: Catalytic function materials II (TL)
- (4) 29. April 2025: Classroom exercise (Bia He)

### II. Superalloy Single Crystals & Shape Memory Alloys (Prof. Dr.-Ing. Gunther Eggeler)

- (5) 06. May 2025: Basic aspects of high temperature strength (GE)
- (6) 13. May 2025: Superalloys: Processing, microstructure and properties (GE)
- (7) 20. May 2025: Martensitic transformations and shape memory effects (GE)
- (8) 27. May 2025: Mechanical properties of shape memory alloys (GE)
- (9) 3. June 2025: Classroom exercise (Nico Paufler)

**Pentacoste Break: 10. – 14. June**

### III. Phase diagrams, intermetallic phases and combinatorial materials research (Prof. Dr.-Ing. Alfred Ludwig)

- (10) 17. June 2025: Binary and ternary phase diagrams (ONLINE)
- (11) 24. June 2025: Intermetallic compounds (ONLINE)
- (12) 08. July 2025: Combinatorial materials research (LIVE)
- (13) 15. July 2025: Classroom exercise & Lab-tour (Jan Lucas Bürgel)