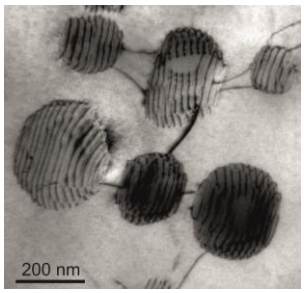
LECTURE ANNOUNCEMENT SS 2024

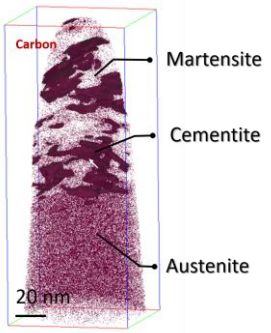
Scanning and Transmission Electron Microscopy / Advanced Characterisation Methods (STEM - ACM)



Fridays, 15.00 – 18.00

Room IC 04/410

Prof. Dr. Tong Li
apl. Prof. Dr.-Ing. Jan Frenzel
Dr. rer. nat. Christoph Somsen



The lecture course *STEM - ACM* will be given in the English language. It is aimed at students of the Master's programmes **of Mechanical Engineering** (special subjects: Materials Engineering and Micro-Engineering) and of the Master's programme **Materials Science and Simulation** (**MSS**). The lecture course teaches the fundamentals that are essential for correct interpretation of microstructural results from electron-microscopic investigations. Tong Li will cover, in the **first part** of the course, the structure of matter, important crystallographic methods and the interaction between electrons and solids. In the **second part** of the course, Tong Li will introduce atom probe tomography (APT) and demonstrate how APT can be correlated with other microscopy techniques. In the **third part** of the course, Jan Frenzel will present the fundamentals and applications of scanning electron microscopy (SEM). Special emphasis will here be placed on orientation imaging microscopy (EBSD). In the **fourth part**, Christoph Somsen will explain the structure of a transmission electron microscope (TEM) and introduce contrast theory and analytical electron microscopy. In four exercises, integrated into the lecture plan, the subject matter will be consolidated and illustrated with practical examples.

(1)	19. April 2024	Crystals and waves
(2)	26. April 2024	Crystallographic techniques and working with orientations
(3)	03. May 2024	Principles of atom probe tomography (APT)
(4)	10. May 2024	APT data analysis and correlative APT
(5)	17. May 2024	Exercise I
(6)	24. May 2024	no lecture
(7)	31. May 2024	Principles of scanning electron microscopy (SEM)
(8)	07. June 2024	no lecture
(9)	14. June 2024	no lecture
(10)	21. June 2024	Basics of orientation analysis in the SEM (EBSD)
(11)	28. June 2024	Exercise II
(12)	05. July 2024	Key elements of transmission electron microscopy (TEM)
(13)	12. July 2024	TEM diffraction contrast and analysis of defects and analytical TEM
(14)	19. July 2024	Exercise III

Contact person for this course:

Dr. rer. nat. Christoph Somsen, IC 04/321
M.Sc. Fan Bai, Room ZGH 02/115
E-mail: Christoph.Somsen@rub.de, Tel. 0234-32-26041