

# Jilt Sietsma

Full professor Microstructure Control in Metals



Ph.D. at Delft University of Technology,  
1987

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Research interests:  
Understanding the behaviour of  
metallic microstructures upon  
application of elevated  
temperature, mechanical  
loading, radiation, magnetic  
fields and other extreme or  
non-extreme conditions.

## Metallic microstructures

Recent Research activities:

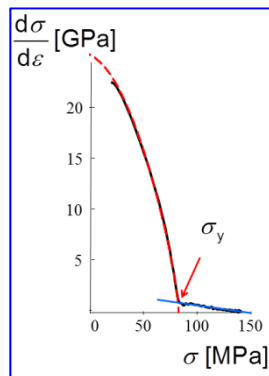
- Development of microstructural models for phase transformations in metals
- Atomistic modelling of nucleation and growth processes in phase transformations
- Modelling mechanical behaviour of multiphase microstructures
- Studies on the dislocation behaviour at stresses below the yield stress
- Formation of damage at the microstructural scale, a.o. in railway applications
- Radiation damage in materials for nuclear applications
- Involved in research on primary processing and recycling of metals

Teaching activities:

- Several courses at Bachelor and Master level on microstructure behaviour in metals: microstructure behaviour, mechanical behaviour, magnetic behaviour
- Student projects on various topics related to metallic microstructures
- Co-author of textbook-in-development *Microstructure Control in Metals*

Other activities:

- Scientific Director 3TU Research Centre High-Tech Materials
- M2i Research cluster coordinator Advanced Metals Processing, Microstructure and Properties
- Guest professor Gent University
- Programme leader FOM/M2i-IPP *Physics of Failure*



*Identification of the yield stress in an extended Kocks-Mecking plot, based on pre-yield dislocation behaviour [P. van Liempt & J. Sietsma, *Materials Science & Engineering A662* (2016) 80–87]*

Selected publications 2015:

- M.G. Mecozzi, C. Bos & J. Sietsma, *A mixed-mode model for the ferrite-to-austenite transformation in a ferrite/pearlite microstructure*, *Acta Materialia* 88 (2015) 302–313
- E. Pinto Da Silva, D. De Knijf, W. Xu, C. Föjler, Y. Houbaert, J. Sietsma & R. Petrov, *Isothermal transformations in advanced high strength steels below martensite start temperature*, *Materials Science and Technology* 31 (2015) 808–816
- Farideh HajyAkbari, Jilt Sietsma, Amarante J. Böttger & Maria J. Santofimia, *An improved X-ray diffraction analysis method to characterize dislocation density in lath martensitic structures*, *Materials Science and Engineering A* 639 (2015) 208–218
- Zhi Sun, Y. Xiao, J. Sietsma, H. Agterhuis & Y. Yang, *A cleaner process for selective recovery of valuable metals from electronic waste of complex mixtures of end-of-life electronic products*, *Environmental Science and Technology* 49 (2015) 7981–7988

