

Program for DMG-MSA Shortcourse / Workshop

Bochum, 28. September - 2. October 2026

Monday, 28. September

Fundamentals of Diffusion Chronometry

- 09:00 – 09:15 Welcome, Introduction and Technical / organizational aspects
- 09:15 – 10:45 **Lecture 1** Physical aspects of diffusion in different media and definition of various diffusion coefficients
- 10:45 – 11:15 COFFEE BREAK
- 11:15 – 12:45 **Lecture 2** Mathematical aspects of diffusion
- 12:45 – 14:00 LUNCH
- 14:00 – 15:30 **Practical 1** Setting up a basic Excel Table for diffusion calculations
- 15:30 – 16:00 COFFEE BREAK
- 16:00 – 18:00 **Practical 2** Fitting experimental diffusion profiles

Tuesday, 29. September

Measuring and modelling diffusion

- 09:00 – 10:00 **Lecture 3** Factors controlling diffusion coefficients
- 10:00 – 10:30 **Practical 2 continued** Fitting experimental diffusion profiles and getting an Arrhenius relation
- 10:30 – 11:00 COFFEE BREAK
- 11:00 – 12:15 **Lecture 4** Experimental approaches and the role of point defect thermodynamics
- 12:15 – 13:30 LUNCH
- 13:30 – 15:00 **Lecture 5** Setting up a model
- 15:00 – 15:30 **Lecture 6** Determining the crystallographic orientation of your crystal
- 15:30 – 16:00 COFFEE BREAK
- 16:00 – 17:30 **Practical 3** Fitting natural diffusion profiles to get residence times
- 17:30 – 18:00 **Case Study 1** Diffusion chronometry example

Wednesday, 30. September

Numerical methods and cooling systems (non-isothermal)

- 09:00 – 10:00 **Lecture 7** Numerical methods
- 10:00 – 12:30 **Practical 4** Modelling diffusion profiles with Excel using the method of finite differences:
- (a) isothermal model -> Practical 3
 - (b) cooling model to determine the cooling rate from fitting
- (COFFEE BREAK in between)
- 12:30 – 14:00 LUNCH
- 14:00 – 14:30 **Practical 5** Convolution in analytical measurements of diffusion profiles
- 14:30 – 16:00 **Case study 2:** Diffusion chronometry with garnet and aspects of multi-component diffusion
- 16:00 – 18:00 **Poster Session/COFFEE BREAK**

Thursday, 01. October

- 09:00 – 10:30 **Practical 6** Solving the same problems as before now using **Jupyter**
- 10:30 – 11:00 COFFEE BREAK

Modelling Diffusion using Jupyter

- 11:00 – 12:30 **Practical 6** continued
- 12:30 – 14:00 LUNCH

More advanced topics

- 14:00 – 15:00 **Case study 3:** Grain boundary diffusion in met. rocks
- 15:00 – 16:00 **Lecture 8** Diffusion in polycrystalline materials
- 16:00 – 17:30 **Practical 7** Modelling element exchange through grain boundaries and fluids
show new net transfer model
- [Including COFFEE BREAK]
- 18:30 **DINNER**

Friday, 02. October

- 09:00 – 10:00 **Lecture 9** Moving Boundaries & Closure Temperature
- 10:00 – 11:00 **Lecture 10** Phase field method – a sampling of what can be done
- 11:00 – 11:30 COFFEE BREAK
- 11:30 – 12:30 **Lecture 11** Novel methods for measuring diffusion coefficients including isotopic effects
- 12:30 – 14:00 LUNCH
- 14:00 – 15:00 **Lecture 12** Diffusion model for plagioclase
- 15:00 – 16:00 **Practical 8** Multitrace model

Closing comments and Discussion and Beer

Lecturers:

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