

GEO242 Magmatisk og metamorf petrologi

Lecturer: Cédric Hamelin (cedric@marinegeosciences.com)

The main objective of this course is to teach the student to read the story written in each igneous and metamorphic rock. During the lectures, you will hear about a variety of petrological tools to get a more advanced understanding of igneous and metamorphic processes. You will also have the opportunity to apply those methods during various labs (computing petrogenetic model, using a petrological microscope, etc...). This course is using some of the basic petrology knowledge of the GEOV103 Introduction to Mineralogy and Petrography.

Textbook: "Petrology, Principles and Practice" by Gautam Sen. This textbook is available as a pdf version on the UiB library website.

Other recommended readings:

- "An Introduction to Igneous and Metamorphic Petrology" by John Winter
- "Origin of Igneous Rocks" by P.C. Hess

The course is divided in 5 units:

- 1) Introduction
(Origin of elements, plate tectonic and magmatism, magma characteristics...)
- 2) Phase relations in Magmatic Systems
(Phase diagram, cooling and melting a rock, experimental petrology...)
- 3) Melting, Transport and Crystallization
(Basic introduction to geochemistry during igneous processes...)
- 4) Ridges, Hotspots and Subduction
(Different types of magmatism on earth and their characteristics...)
- 5) Metamorphism
(Agents of metamorphism, different types of metamorphism and associated textures)

Labs: Various... from thin-section description to calculation of simple petrological models.

Kolloquium: Each student will have to present a short scientific paper related to the lecture (or found in the news if there is any article relevant in press during the semester!).