Vienna Institute for Archaeological Science

Radiolarite Investigations II

Macroscopical analysis

Microscopical analysis provides detailed information concerning fossil inclusions in silicates. Goal of these investigations is the determination of characteristic fauna communities in specific sources. The micropictures were produced using a reflected light stereo microscope and, for a higher resolution and topographical information of the fossil inclusions on the unpolished rock surface, a SEM – unit.
For the SEM – analysis, the samples were not coated with carbon or gold. The big vacuum chamber (d=40 cm) makes it possible to bring in the complete objects without damaging them in order to take samples. Still at the beginning, this non destructive method looks promising for further research.

SEM: Zeiss EVO 60 XVP - environmental Scanning Electron Microscope
Photo: M. Mehofer

The following images are a representative selection of Mesozoic Radiolaria aimed at giving a general overview of the different morphotypes.

Archaeodictyomitra sp
Jurassic-Cretaceous
Theokafta, Epidavros, Greece
140 microns SEM

Hsuum maxwelli
?Jurassic-Cretaceous?
Theokafta, Epidavros, Greece
200 microns SEM

Unuma echinatus
Aalanian-Bathonian (Jurassic)
Theokafta, Epidavros, Greece
180 microns SEM

Protunuma fusiformis
Bathonian-Tithonian (Jurassic)
Theokafta, Epidavros, Greece
190 microns SEM

Zamoidellum ovum
Oxfordian-Tithonian (Jurassic)
Theokafta, Epidavros, Greece
110 microns SEM

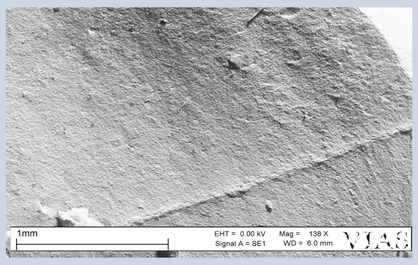
Tricolocapsa plicarum
Bajocian-Bathonian (Jurassic)
Theokafta, Epidavros, Greece
130 microns SEM

Parvicingula dhimenaensis
Bajocian-Tithonian (Jurassic)
Theokafta, Epidavros, Greece
255 microns SEM

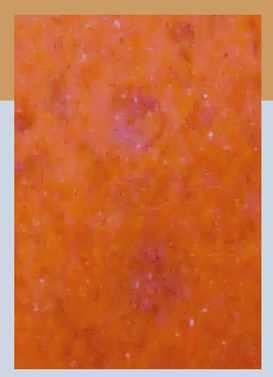
MIRACLE project, University College, *London, U.K, Micropalaeontology Unit; now at Northern Illinois University, U.S.A, 2002.*

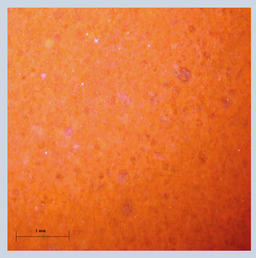
General problem: What is radiolarite?

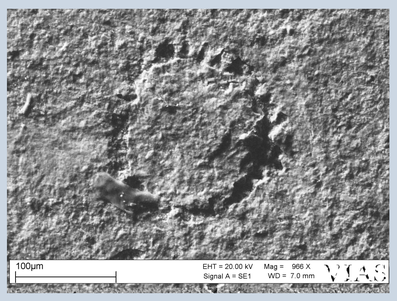
Researchers concerned with raw material description are facing a terminology problem. Usually the term “radiolarite” is used depending on the percentage of fossils included in the material. Some scientists define radiolarite at a percentage of 30, of 50 or even only at 70% radiolaria visible under the microscope. A solution of this problem might be a **definition after the index fossil**, which makes a chert a **radiolarite**, a **spiculite** or a **spongiolite**. That would release the researchers from guessing percentages.



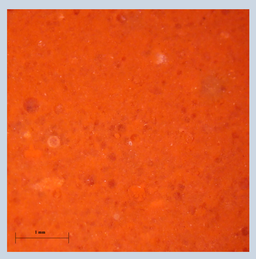
Feuerstein

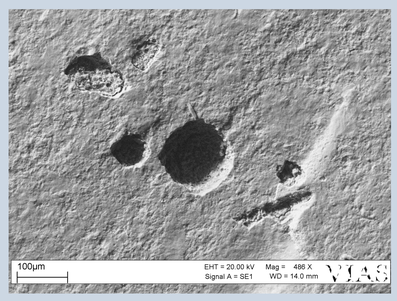




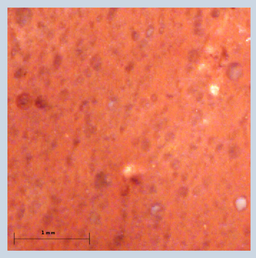


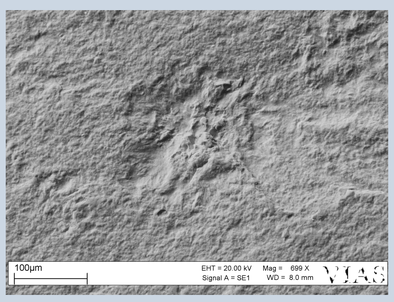
Grubalacke



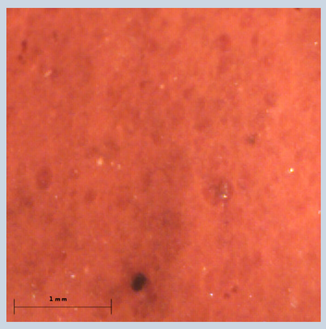


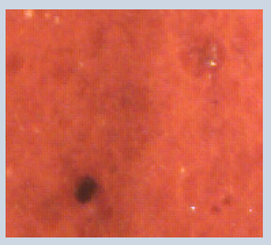
Vienna Mauer

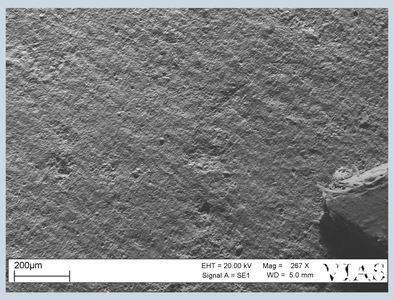




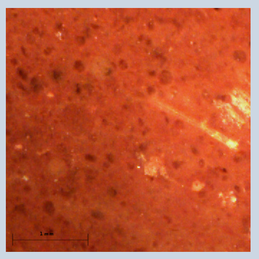
Szentgál – Tüzköveshegy







Vlara Bolešov



Unless noted otherwise, all SEM – pictures produced by M. Mehofer

All reflected light microscope– pictures produced by M. Brandl

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