Sample ID and provenance

Sample ID: SP50_CdC

Lithology: Chert

Collection: LusoLit

Outcrop: Casal da Colina

Unit/facies: Middle Jurassic

Thinsection: Yes

Macroscopic description

- COLOR

Color distribution is Mix diffuse. Main colors are gray (10YR 6/1), light gray (10YR 7/1) and white (10YR 8/1).

- FABRIC

The sample's luster is Medium to Dull, and it is Opaque. The feel is semi-smooth and the grain is fine. It has an Uneven structure with a Gradual transition. The patterns are Spots and Shaded. Spots are Speckling, with an Even distribution and present in 1-49% of the sample.

- INCLUSIONS AND FOSSIL CONTENT

Small oxide grains are uncommon, and are possibly surrounded by oxide patina that gives the surrounding area a yellowish coloration. There are white inclusions, however they are small and barely distinguishable from the chert. There are also uncommon Splotches of a different color or chert texture that may be fossils which have been completely replaced by quartz. They are round/oval shaped.

- CORTEX

The cortex is of Outcrop type, Thin to Medium, with a Gradual transition. When tested with dilute hydrochloric acid (HCL 10%), the reaction was nonexistent, hinting that the parent rock may not have any carbonate mineral content.

- QUALITY

Fracture is Conchoidal and the surface has Fractures and Cleavage plains. The quality is Good to Medium.

❖ OBSERVATION

Patination seems to occur naturally, with a yellow/orange colorations but also changes in the texture - lighter and dull.

Outcrop description

- OUTCROP CHARACTERISTICS

Type of outcrop: Primary

Visibility: Reasonable

Accessibility: Easy

State of site: Bad

- CHERT NODULES/BEDS DESCRIPTION

Type of chert nodule: Nodule

Sample variability: Homogeneous

Frequency: Sporadic

Nodule description: Oval, between 3 to 5cm wide. The nodules have a thick cortex and are easily removed from the parent rock.

- SHORT DESCRIPTION

The outcrop is in dismantlement and located in an unused field. The nodules can be found still embedded in the parent rock, while the parent rock either is broken off on the floor or outcropping. The nodules are oval and small (max. 5cm), with a thick cortex and easy to remove from the parent rock.

Petrography analysis form

❖ TEXTURAL COMPOSITION

Texture: Wackestone

Microstructure: Massive

❖ COMPOSITION

ORTHOCHEM	Type	%	Description
MiC quartz (gr)	SE	85	-
Dolomite	SE	10	-
Chalcedony (fb)	SE	<1	Replacing fossils.
MG quartz (gr)	-	5	Filling several flaws in the chert, or as large scattered grains, especially close to the contact with the parent rock.

ALLOCHEM	Freq	Description
Oxide grains	Very frequent	-
Opaques	Very frequent	Either oxides or organic matter. Scattered through the sample, but often concentration in certain locations.
Oxide patina	Uncommon	-

BIOCLASTS	Freq	Description
Unidentifiable fossils (ghosts)	Common	Poorly preserved and without structure or shape. Are completely replaced by quartz or chalcedony.
Ostracod (?)	Rare	Classification is uncertain due to poor preservation.
Tentaculite (?)	Uncommon	Some fossils seem to be tentaculites, however, the time period does not match what is expected from our sample.
Echinoid spine	Rare	Longitudinal section of an echinoid spine without the tubercle.

- OTHER TEXTURAL CHARACTERISTICS

Total porosity (%): <1

Porosity type: -

Other sedimentary structures: Other

Observations

- There is a structure, perhaps a burrow, which seems to be lined by quartz walls, and filled with different sediment, with concentration of opaques in some areas.
- The parent rock has the very frequent presence of fossils, and has a packstone texture.
- The fossil present in photo SP50_CdC_001 may be an Ostracod. However, due to the replacement by chalcedony, the classification is uncertain.
- The fossil present in photo SP50_CdC_007 looks like a Tentaculite. However, according to Flugel (2010, pp. 357), these fossils are exclusive to the Paleozoic and this sample should be Mesozoic. It may simply be a poorly preserved bivalve.

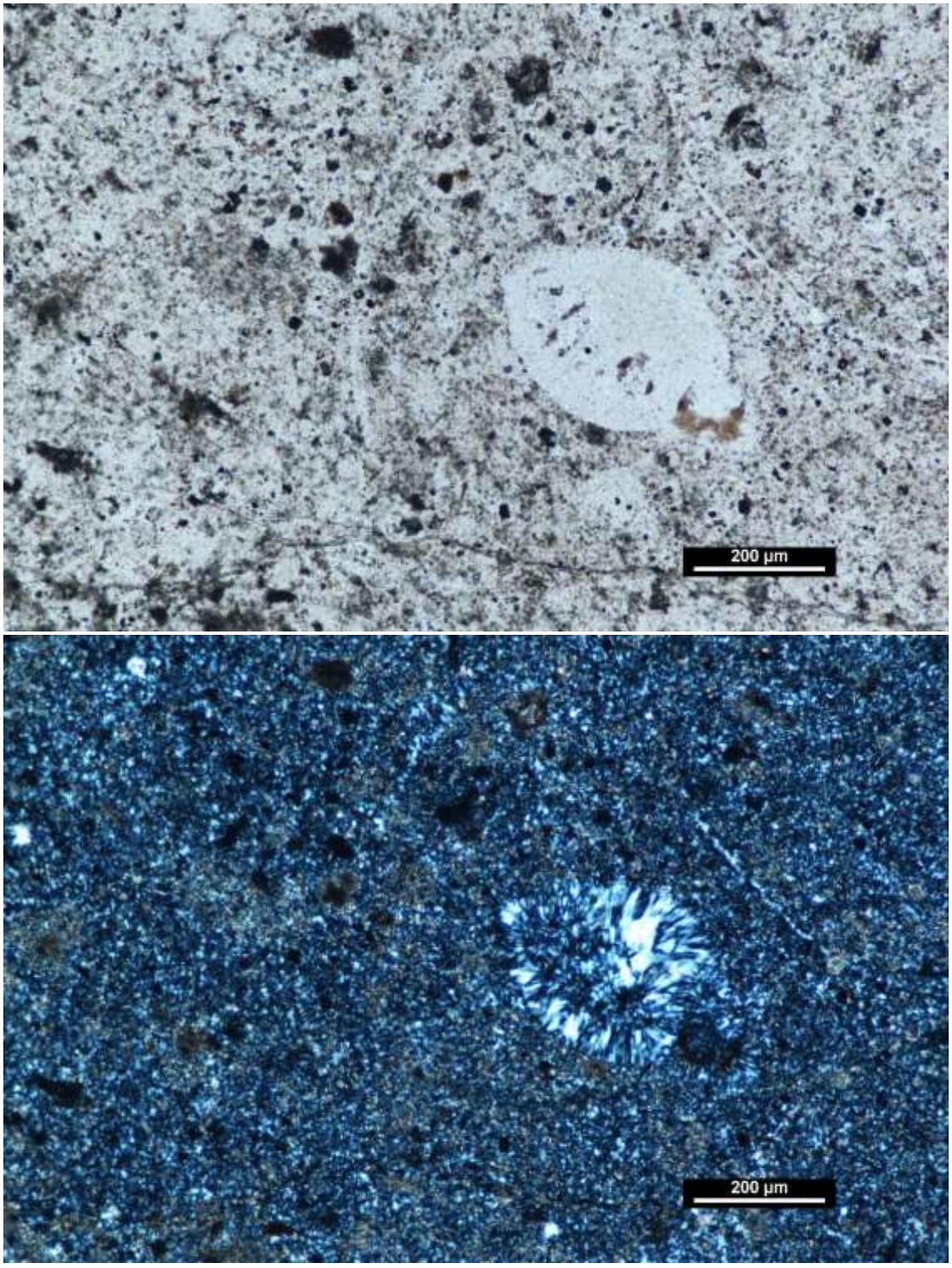
Analysis information

- **ANALYST:** JB
- **DATE:** 06.24.2022
- **EQUIPMENT:** Nikon DS-Ri2

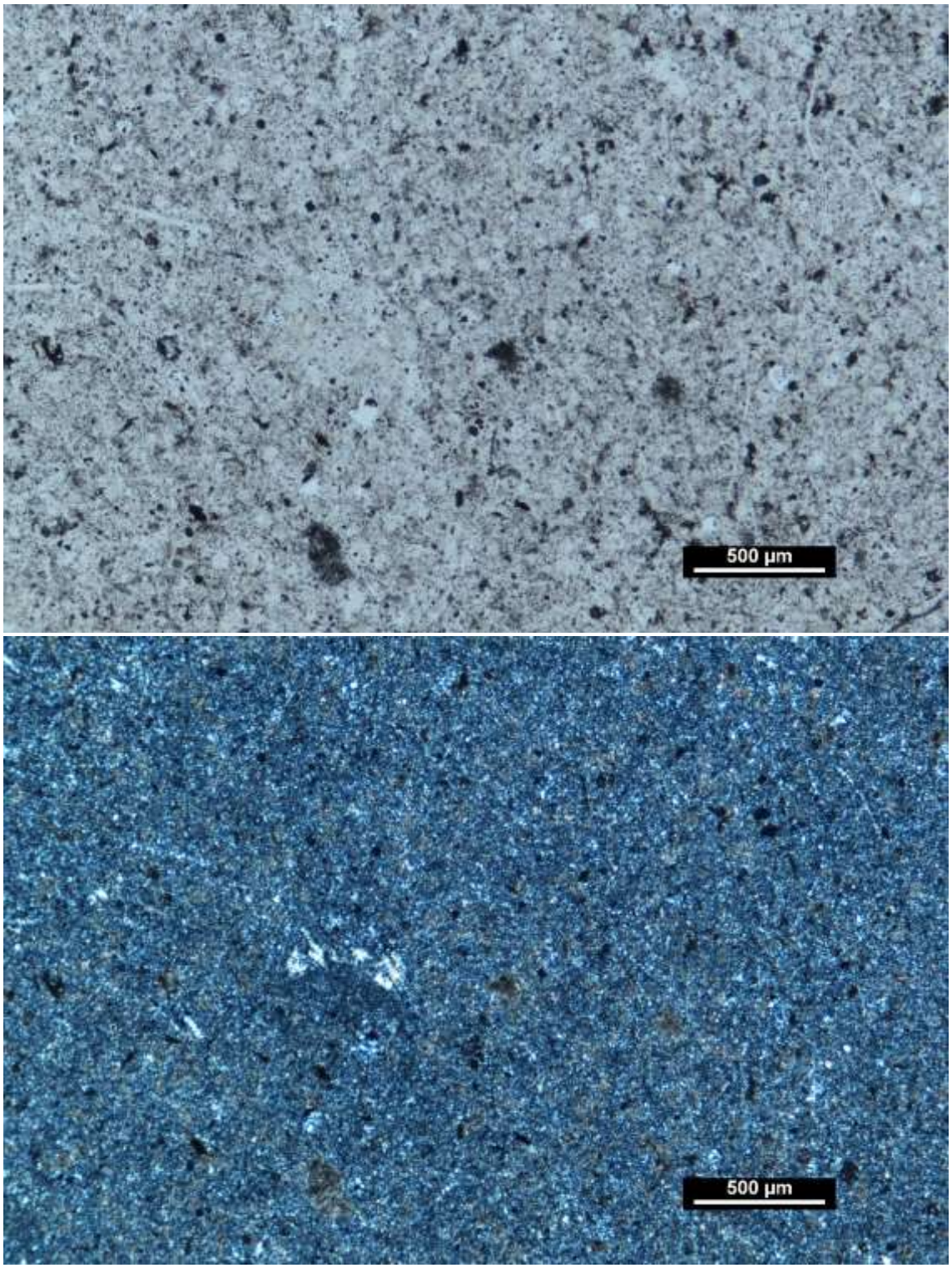
Photos

Photo ID	Aug.	Description
SP50_001	10x	Detail of a fossil (possibly an Ostracod), replaced by two generations of chalcedony (1st generation in the outer edges and 2nd generation replacing the inside).
SP50_002	4x	General view of the thin section.
SP50_003	10x	View of an unidentifiable fossil. The different replacement by chalcedony may be indicative of the fossil's structure.
SP50_004	10x	Megacristalline quartz filling a porosity or fracture.
SP50_005	10x	Megacristalline quartz filling a porosity or fracture.
SP50_006	4x	View of a possible burrow, lined by a 1st generation of MC quartz and filled with different sediments.
SP50_007	10x	View of the parent rock. A fossil similar to a Tentaculite can be seen at the top, and all other fossils are unidentifiable due to poor preservation.
SP50_008	10x	View of the parent rock. A Echinoid spine (longitudinal section) can be identified midst very frequent fossil ghosts.
SP50_009	10x	Contact between the parent rock and the chert. Noticeable differences are in the color of the sediment, but also the different degrees of fossil density and preservation.

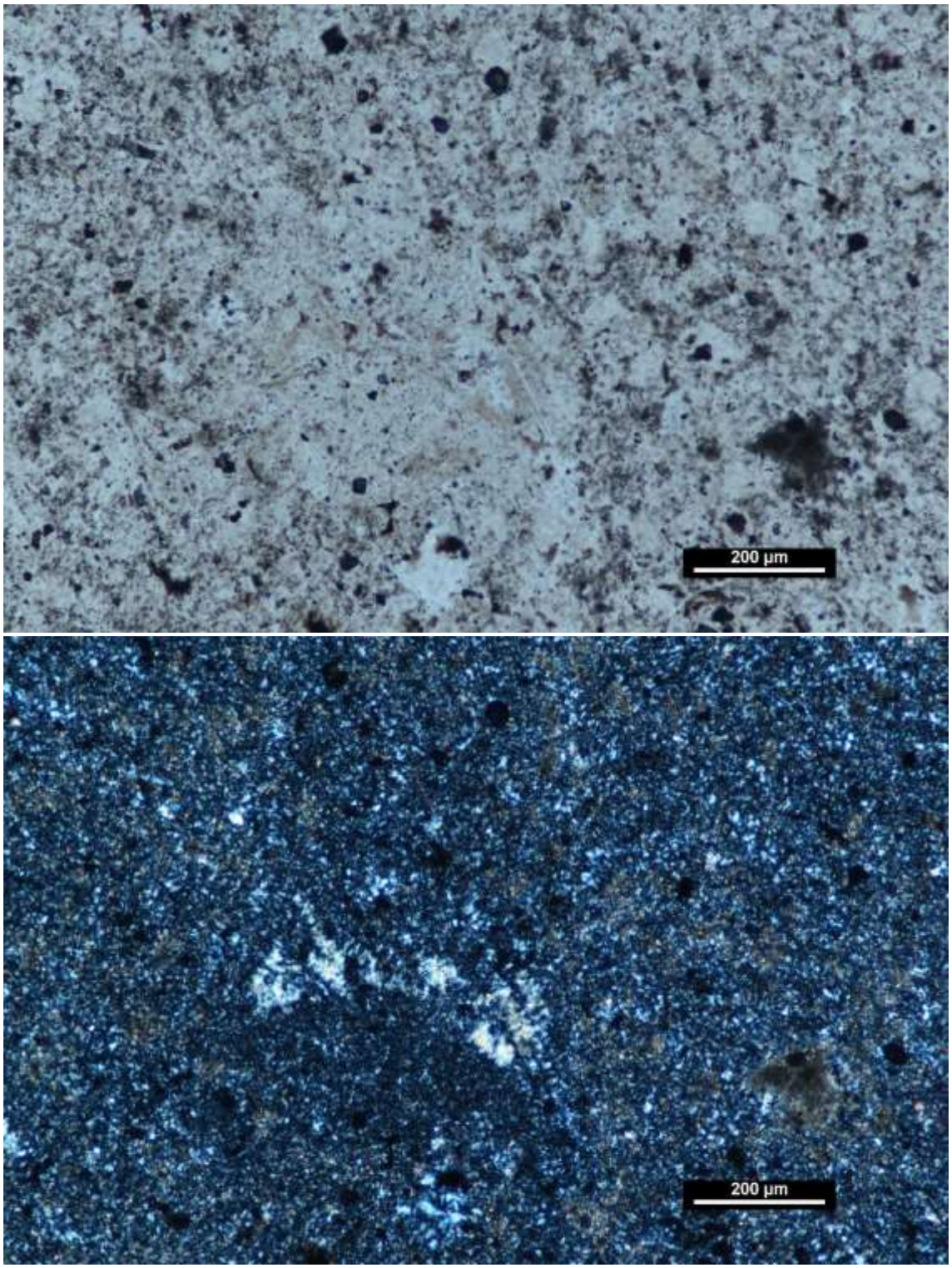
Petrography photos



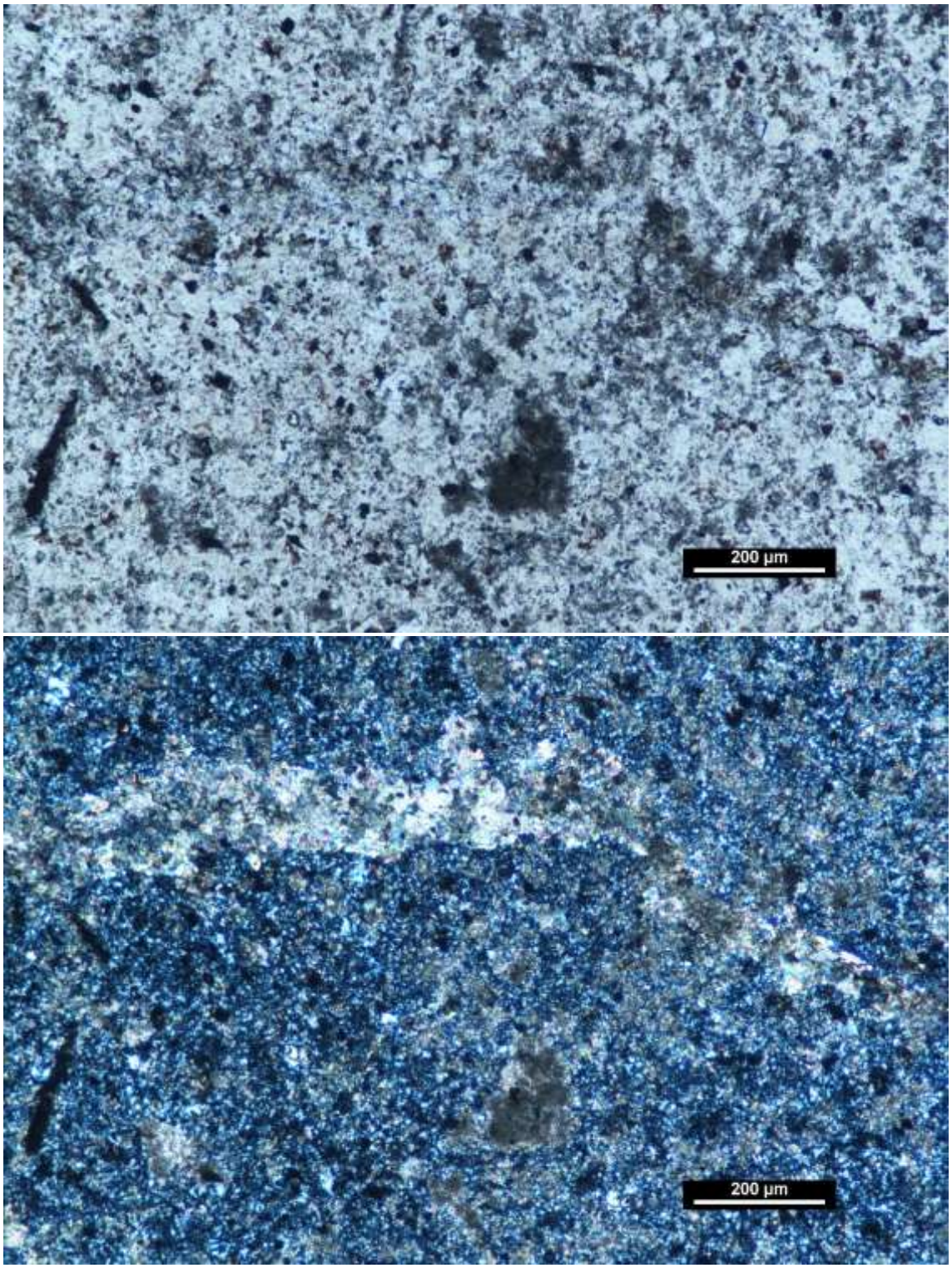
SP50_CdC_001 (PPL and XPL)



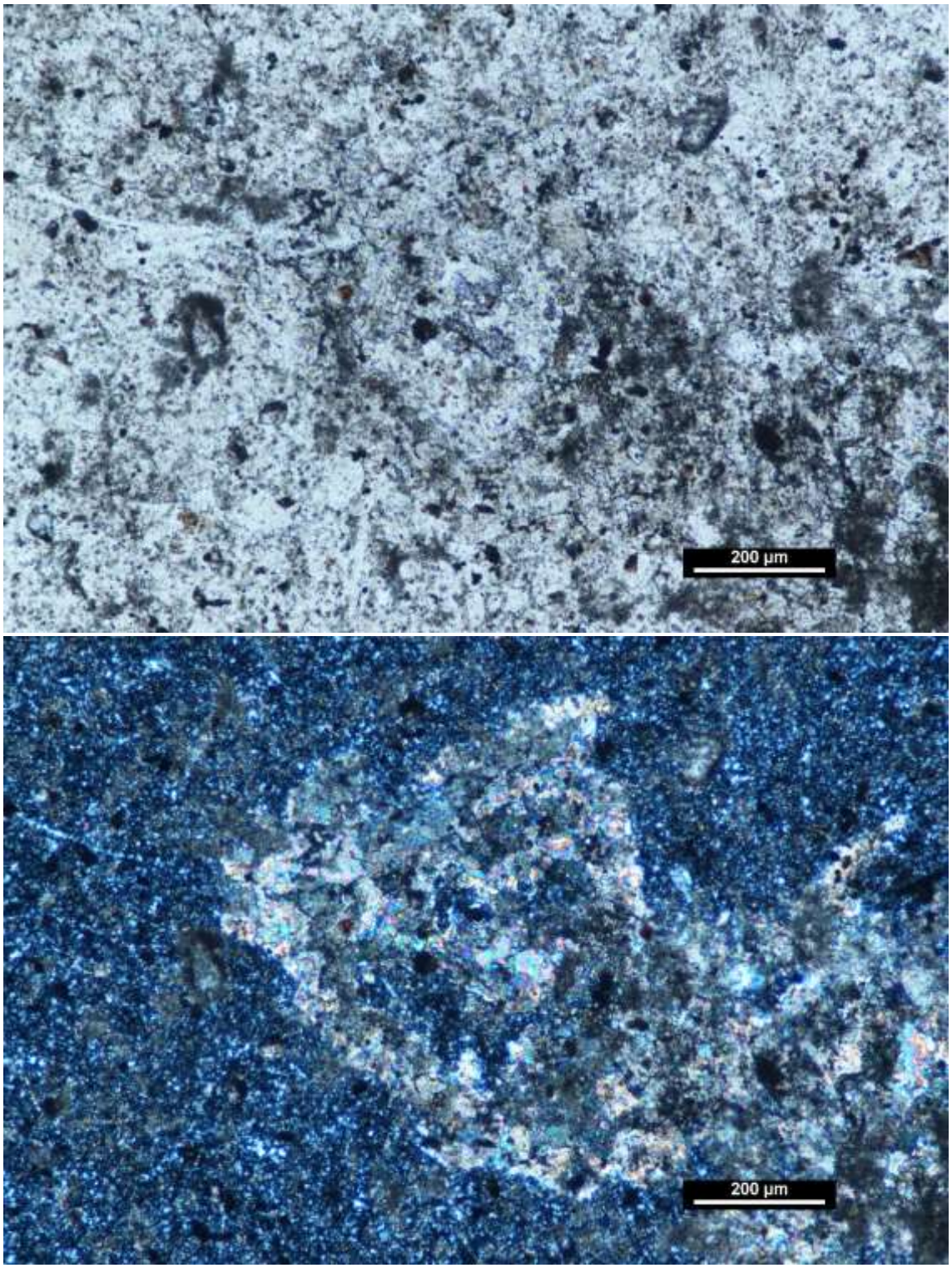
SP50_CdC_002 (PPL and XPL)



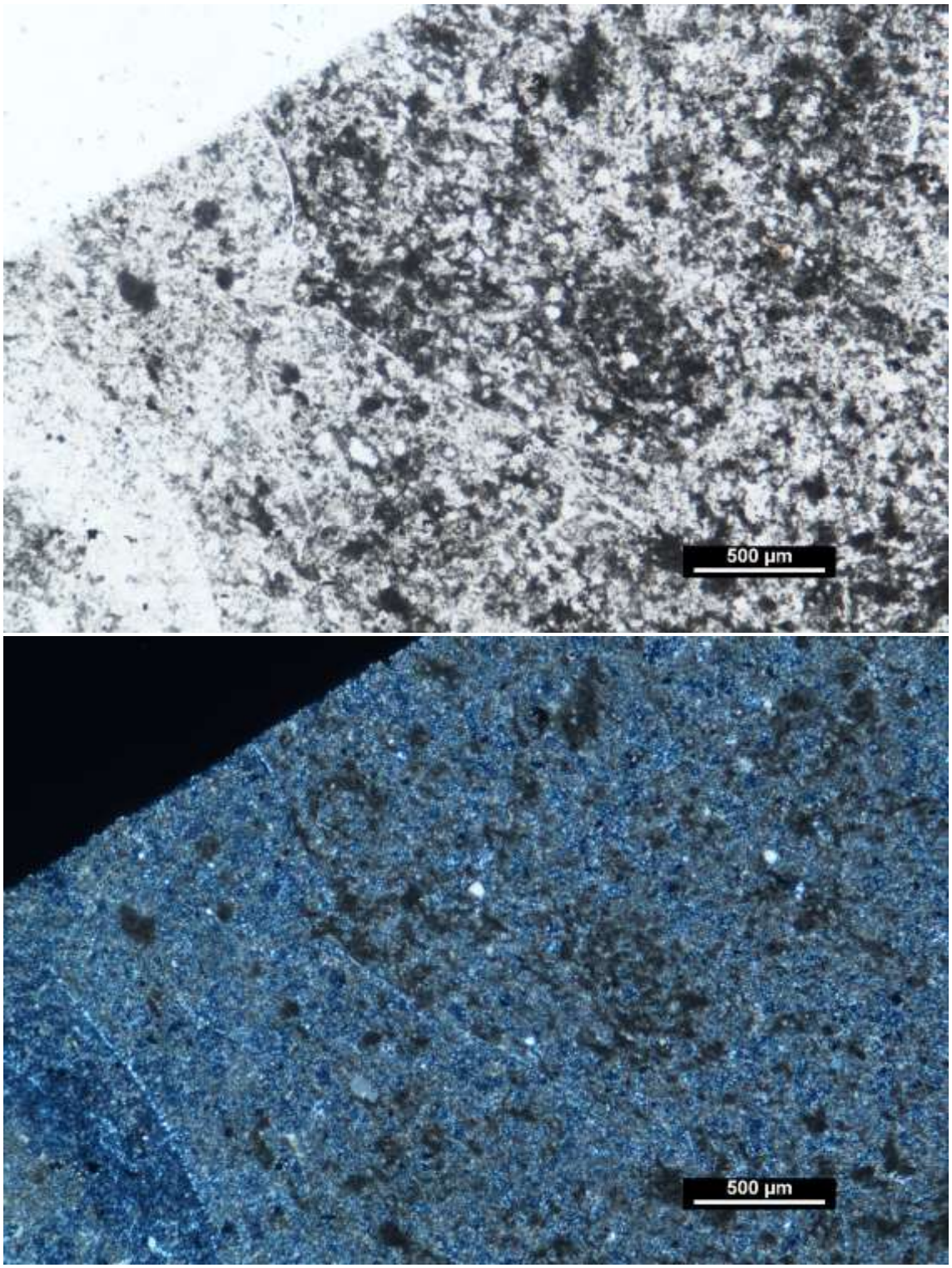
SP50_CdC_003 (PPL and XPL)



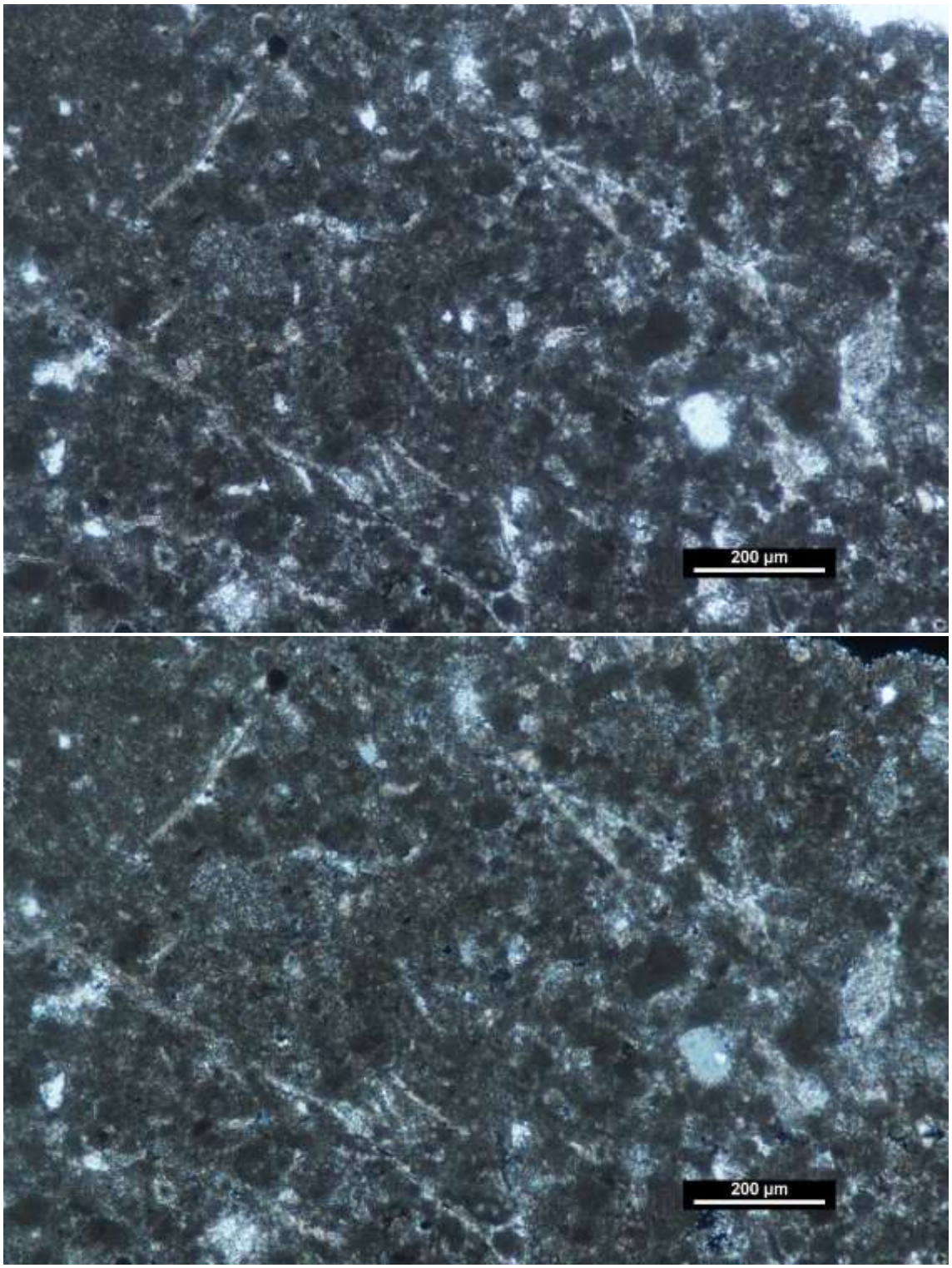
SP50_CdC_004 (PPL and XPL)



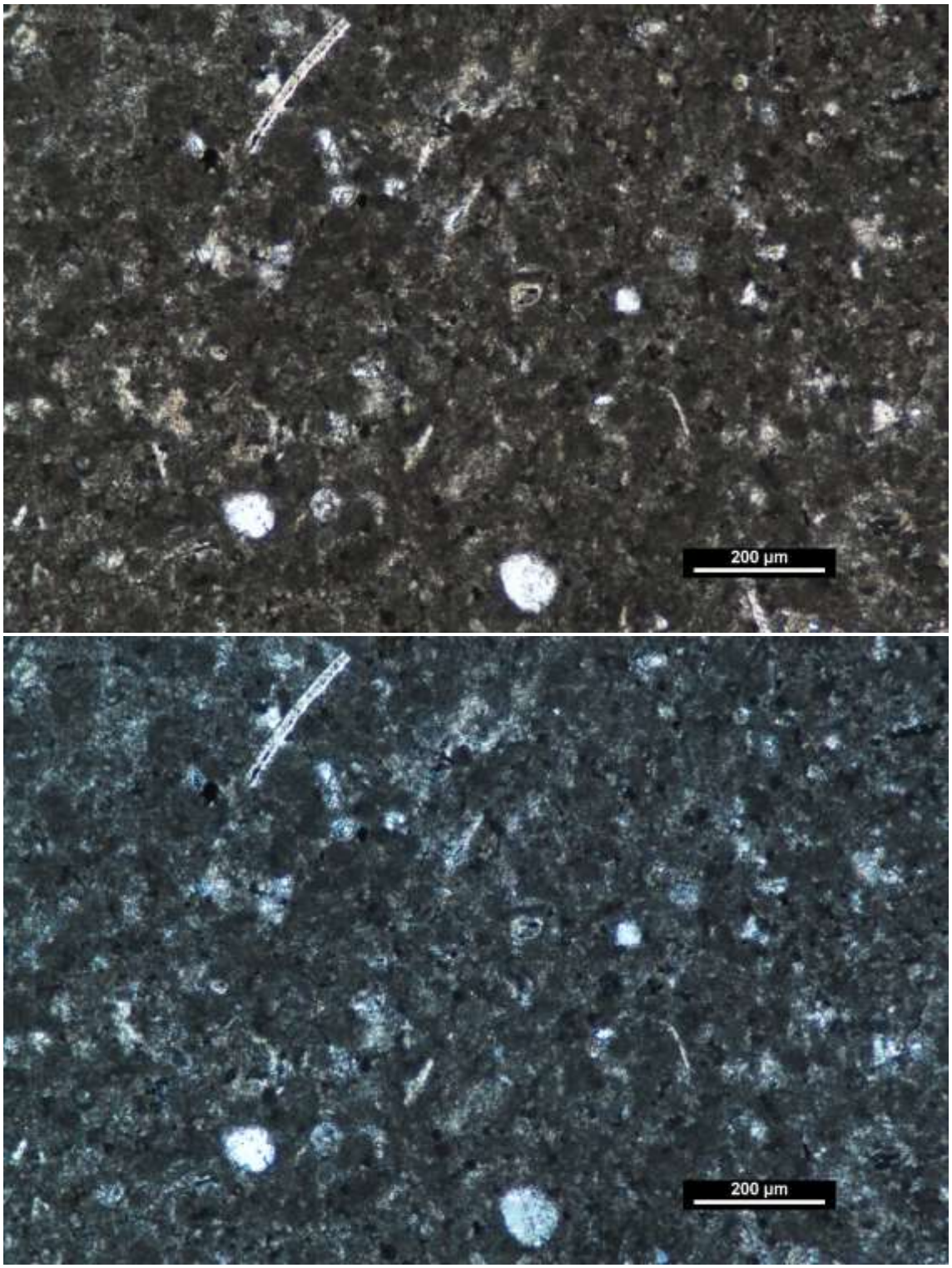
SP50_CdC_005 (PPL and XPL)



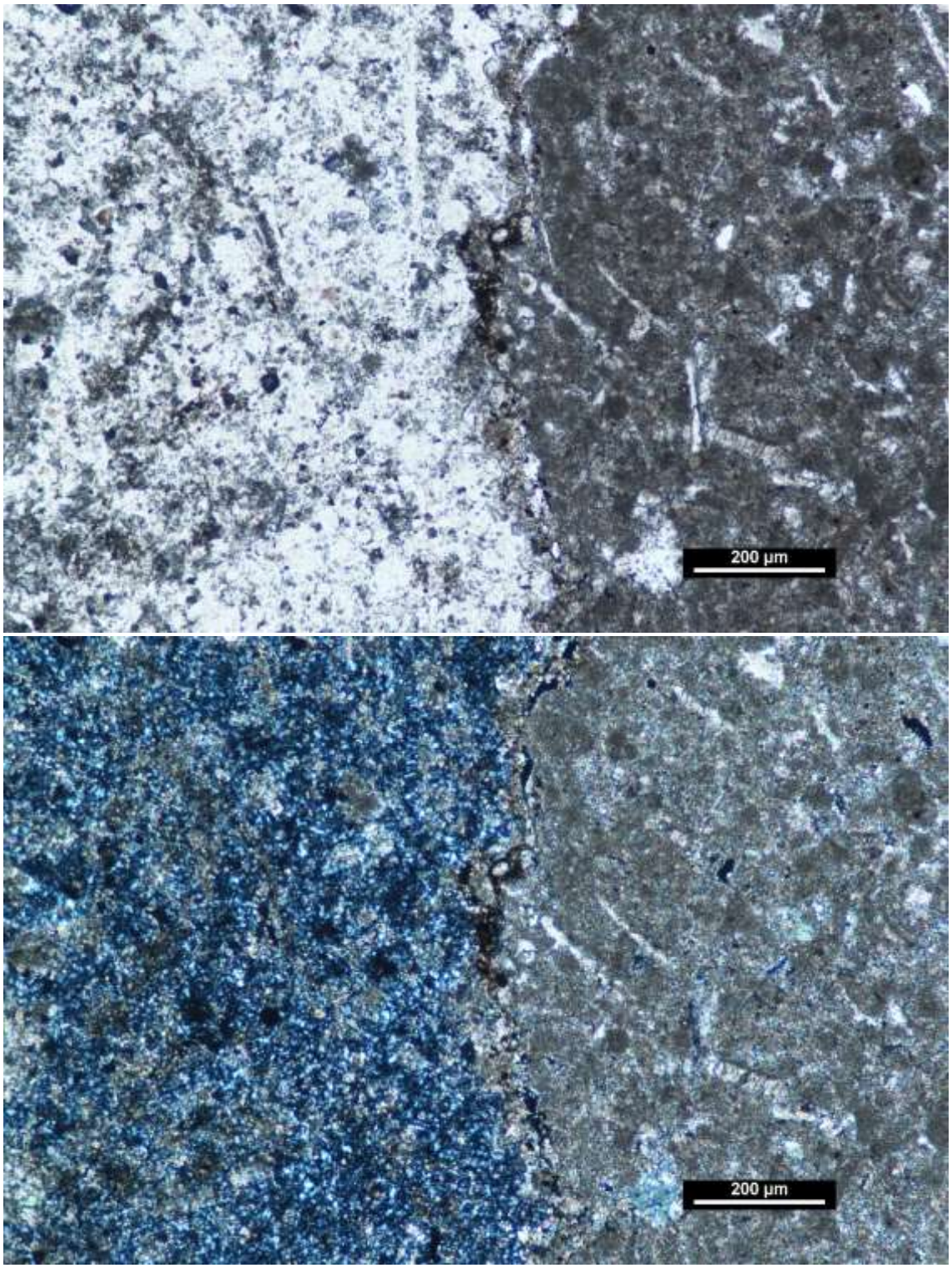
SP50_CdC_006 (PPL and XPL)



SP50_CdC_007 (PPL and XPL)



SP50_CdC_008 (PPL and XPL)

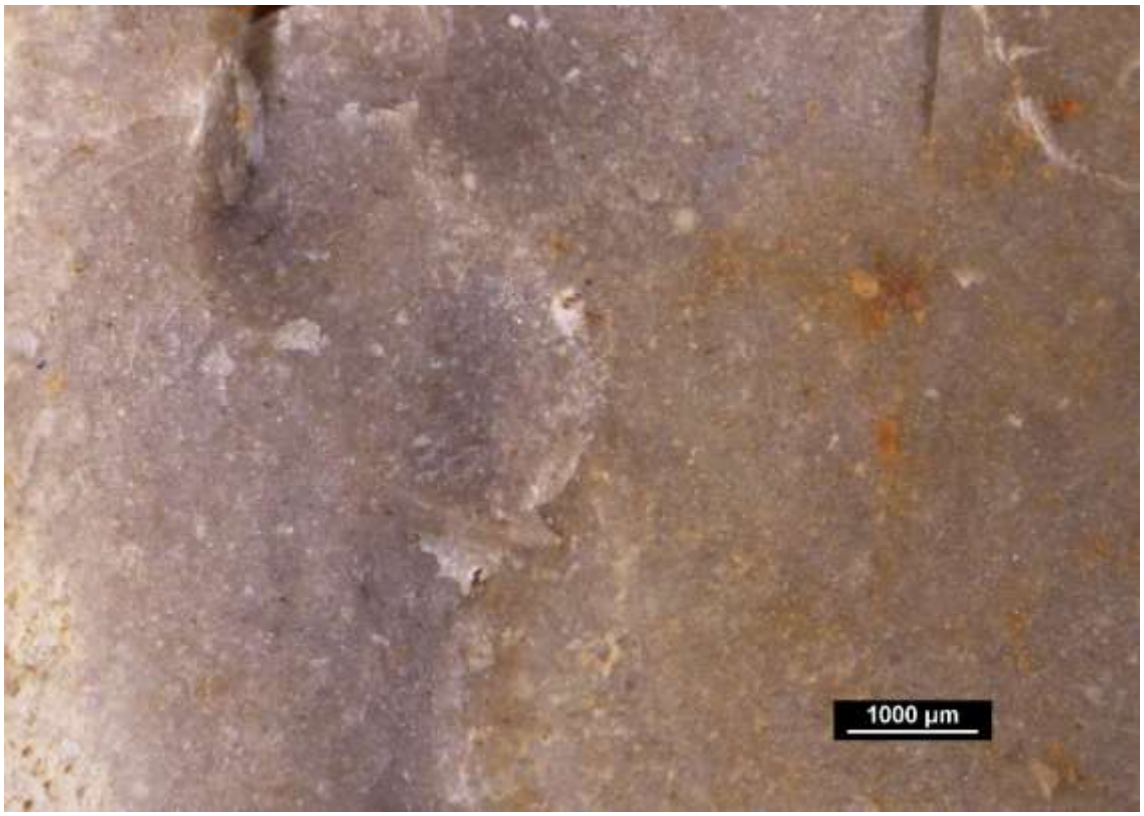


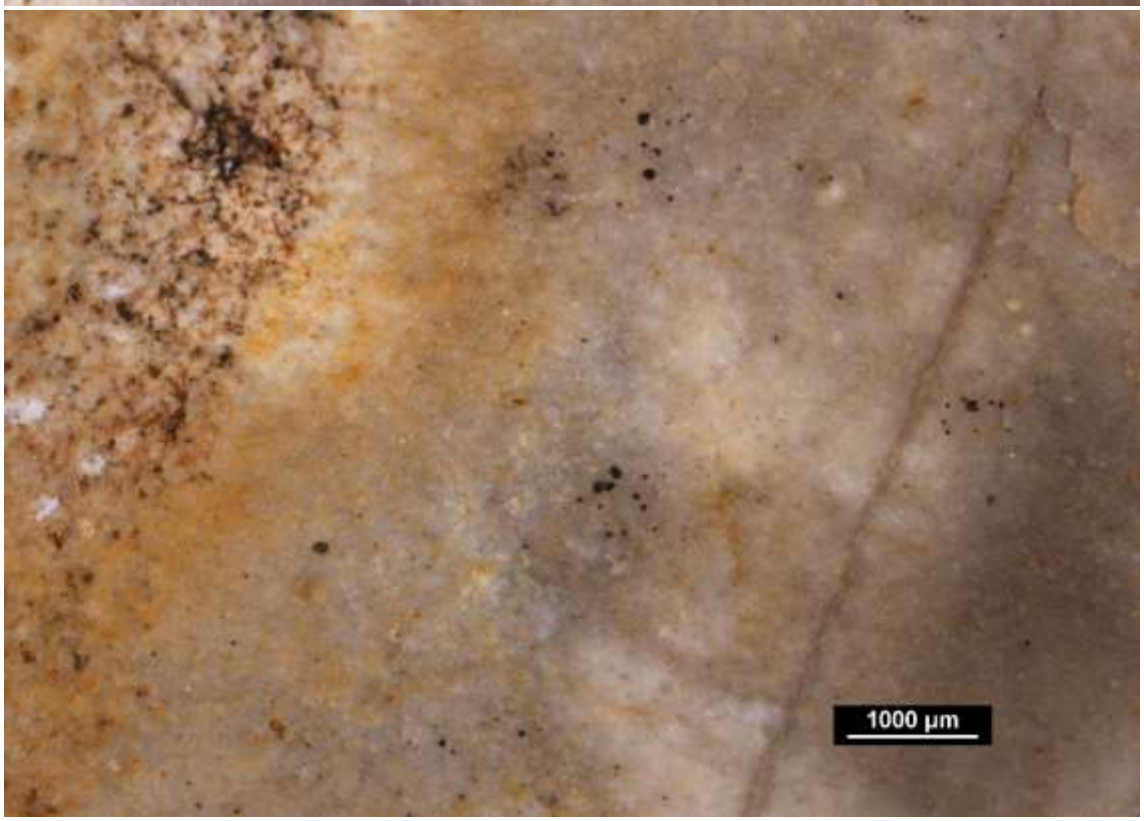
SP50_CdC_009 (PPL and XPL)

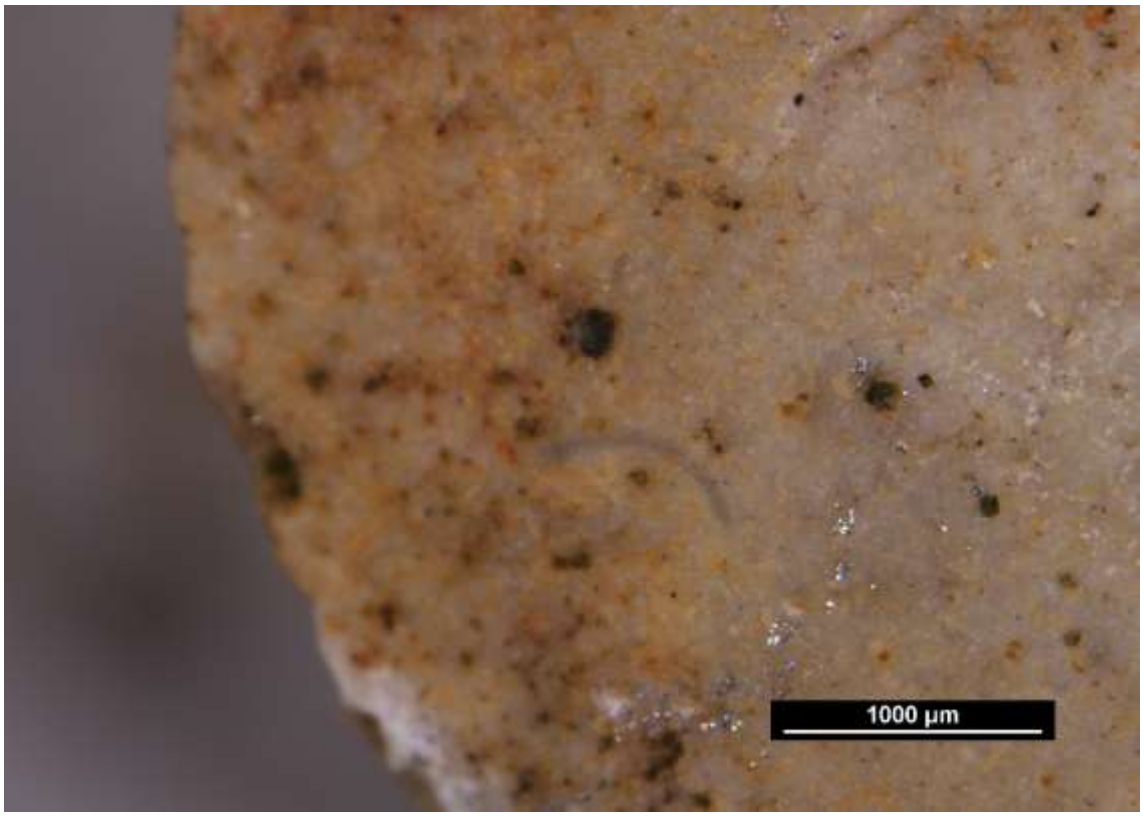
Macroscopic photos

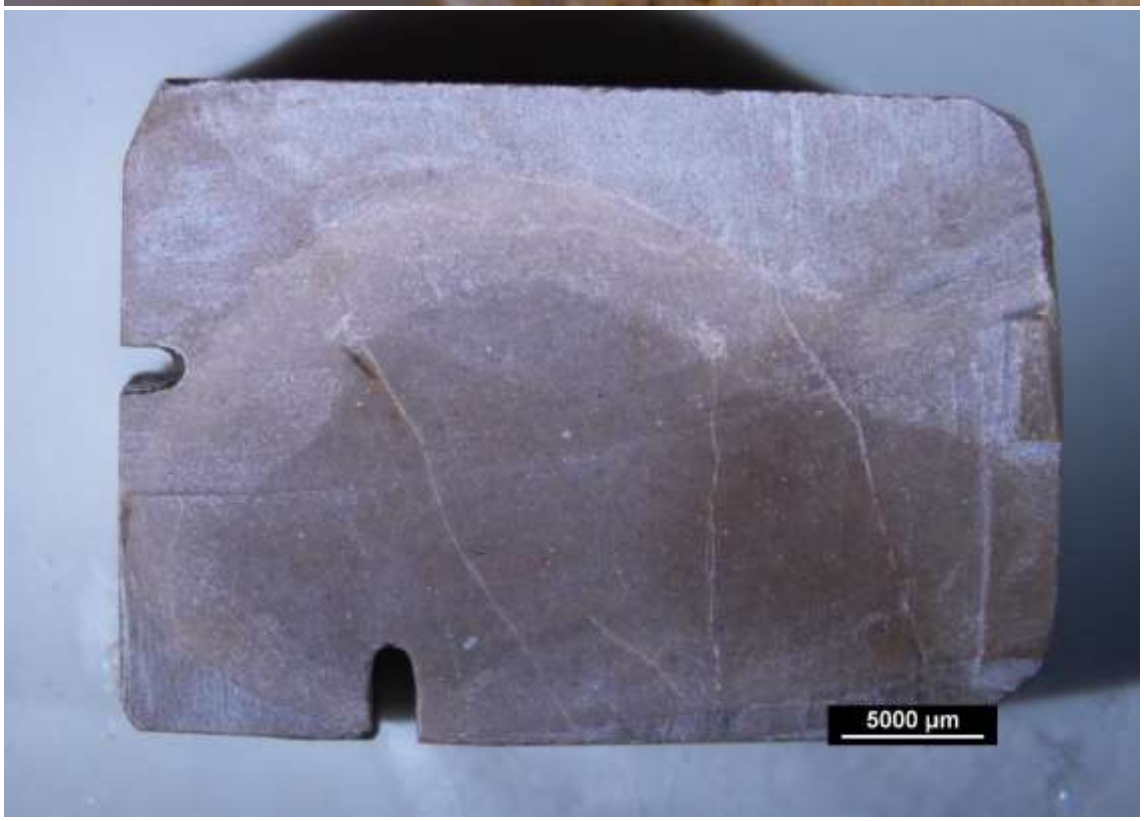

1000 µm


1000 µm

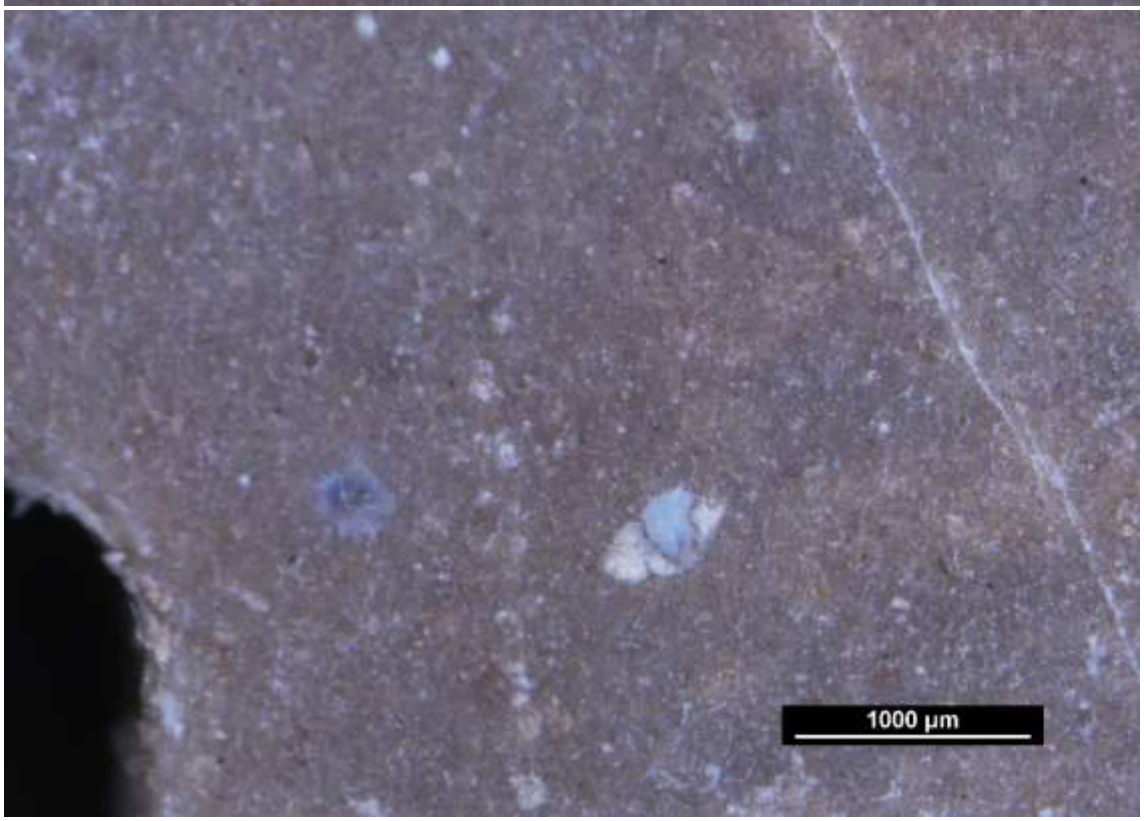

1000 µm


1000 µm


1000 µm


5000 µm


1000 µm


1000 µm


5 cm
5 cm