Sample ID and provenance

Sample ID: SP52_CdC

Outcrop: Casal da Colina

Lithology: Chert

Unit/facies: Middle Jurassic

Collection: LusoLit

Thinsection: Yes

Macroscopic description

- COLOR

Color distribution is Mix sharp. Main colors are dark gray (10YR 4/1), gray (10YR 5/1), pale brown (10YR 6/3) and brown (10YR 5/3).

- FABRIC

Luster ranges from shiny to dull. In general, the interior part of the nodule is shiny to medium, and the external part of the nodule is medium to dull. The feel is smooth to semi-smooth and the grain is fine. The interior part of the nodule is predominantly smooth with semi-smooth areas, while the exterior of the nodule is exclusively semi-smooth. The structure is Uneven with a Gradual and Abrupt variation. The patterns are a mix of Spots (50-99%) and Lines (1-49%). The spots are Broad mottling (several shades of gray), Splotched (lighter and commonly with a semi-smooth feel) and Speckling (white). The Lines are Banded and Horizontal (lighter shade of gray), located in the outer areas of the nodule, between the cortex and the interior.

- INCLUSIONS AND FOSSIL CONTENT

There presence of speckling is due to the fossil content. The fossil content ranges from white to orange, but it is not identifiable through the stereomicroscope.

Concentrations of Oxides are present, although uncommon.

- CORTEX

Cortex is Thin to Medium, with a Sharp to Gradual transition. The Cortex seems to be due to chemical alterations, possibly explained by the secondary deposition

context. When tested with dilute hydrochloric acid (HCL 10%), the reaction was Strong, hinting that it may have a high content of Calcite.

- QUALITY

  The fracture is Conchoidal and the surface is Homogeneous. It has a Good knapping quality.

- OBSERVATION

  Patination may occur naturally as yellowish colorations and changes in gloss, and seems to be due to alterations.

Outcrop description

- OUTCROP CHARACTERISTICS

Type of outcrop: Secondary

Visibility: Bad

Accessibility: Easy

State of site: Bad

- CHERT NODULES/BEDS DESCRIPTION

Type of chert nodule: Nodule

Sample variability: Homogeneous

Frequency: Rare

Nodule description: Irregular and blocky, around 5 to 10cm width

- SHORT DESCRIPTION

The chert nodules can be found at the base of a slope, embedded in a displaced parent rock. This hints at a possible outcrop dismantlement with the displacement of rock chunks down the slope. The nodules are irregular and blocky, between 5 to 10cm width.

Petrography analysis form

❖ TEXTURAL COMPOSITION

Texture: Wackestone

Microstructure: Massive

❖ COMPOSITION

ORTHOCHEM	Type	%	Description
MiC quartz (gr)	SE	85	-
Dolomite	SE	10	Large grains, scattered through the sample, filling fractures and voids/porosities.
Chalcedony (fb)	SE	5	Replacing fossils.
MG quartz (gr)	AC	<1	Crystals within the sample or filling fossils (uncommon).

ALLOCHEM	Freq	Description
Oxide grains	Very frequent	Large or small, they are scattered on all the sample but there are some areas with larger concentrations.
Oxide patina	Very frequent	Common on the whole sample but there is an area with a large concentration, altering the color and "texture" of that area (?).

BIOCLASTS	Freq	Description
Unidentifiable fossils (ghosts)	Common	Have no preserved structure or shape.
Radiolarians (?)	Uncommon	Although the identification is not certain, the shape is similar to a radiolarian. Can also be cross sections of a sponge spicule.
Sponge spicules (?)	Common	Classified due to general shape, but are poorly preserved. Possibly Monaxon spicule pointed at one end. There is a concentration of spicules, oriented towards the same direction.

- OTHER TEXTURAL CHARACTERISTICS

  Total porosity (%): <1

  Porosity type: -

  Other sedimentary structures: Burrows, other

Observations

- The wackestone texture zone might be a spiculite predominantly composed of monaxone megascleres. According to Flugel (2010, pp. 494), concentrations of spicules may be caused due to: 1) in-place deposition of spicules due to the disintegration of soft-bodied demosponges, or an accumulations of spicules from decaying soft sponges within organic mats. The parallel alignment of the spicules indicates some current transport.
- The fossils identified in photo SP52_CdC_008 might be an Ostracod.

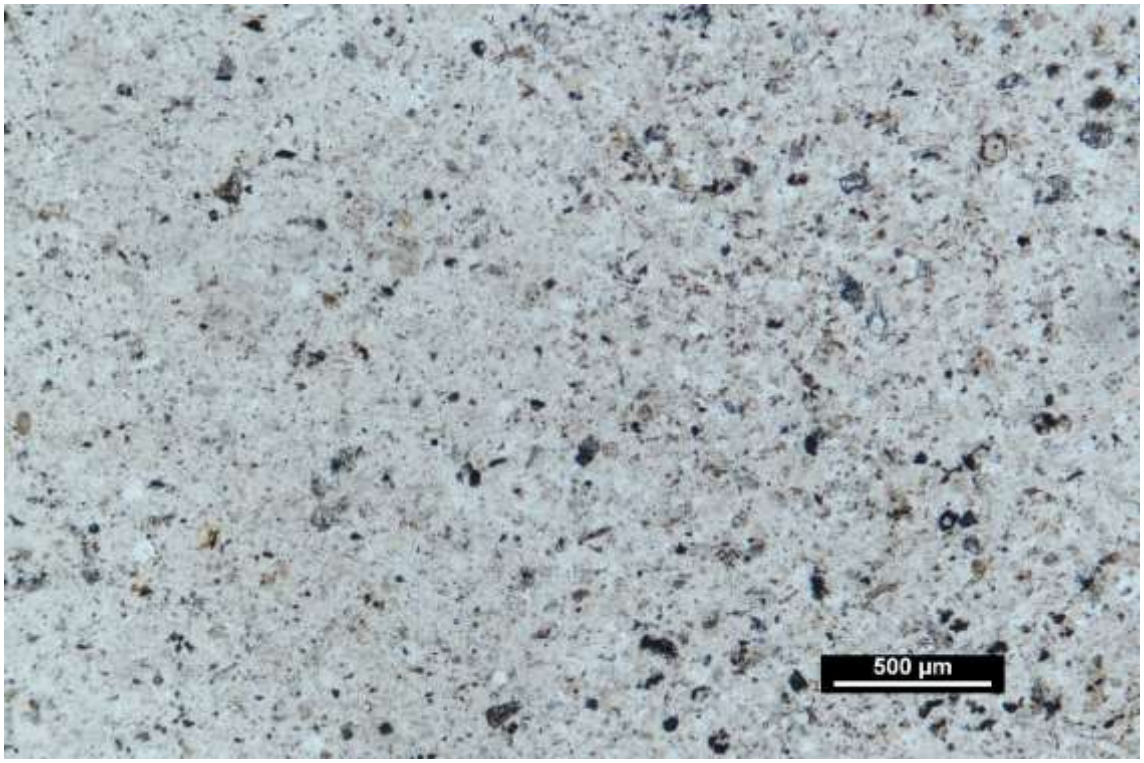
Analysis information

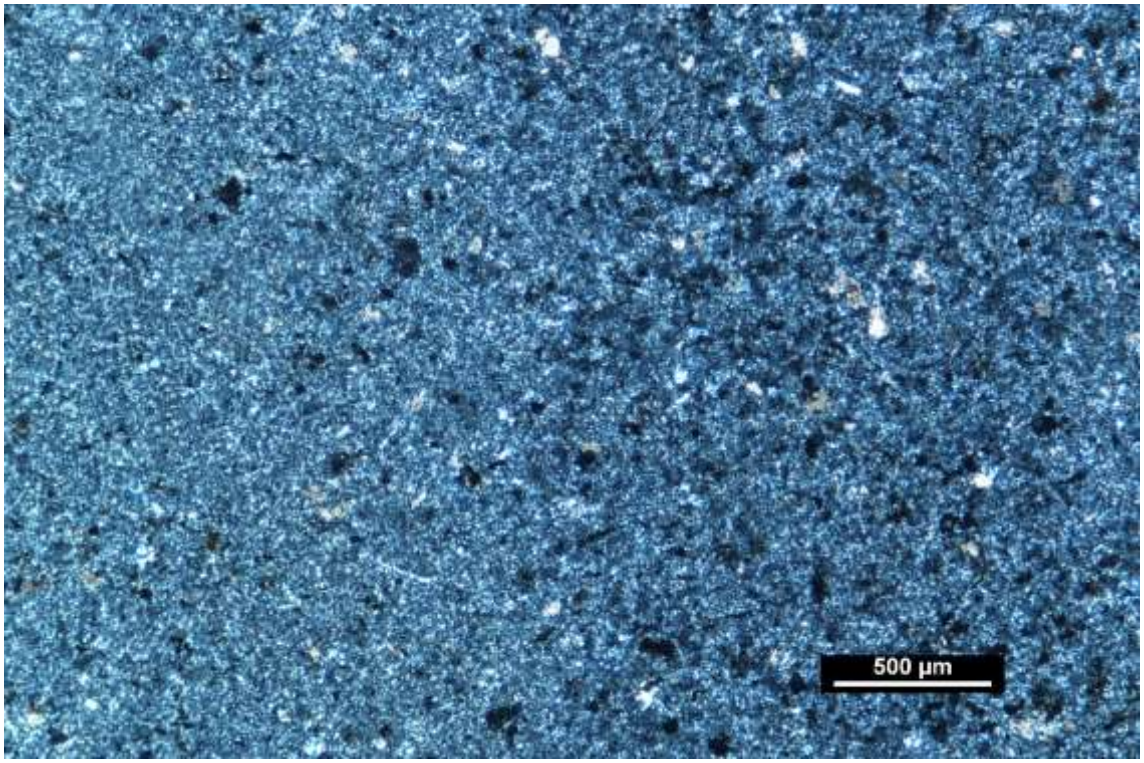
- ANALYST: JB
- DATE: 06.23.2022
- EQUIPMENT: Nikon DS-Ri2

Photos

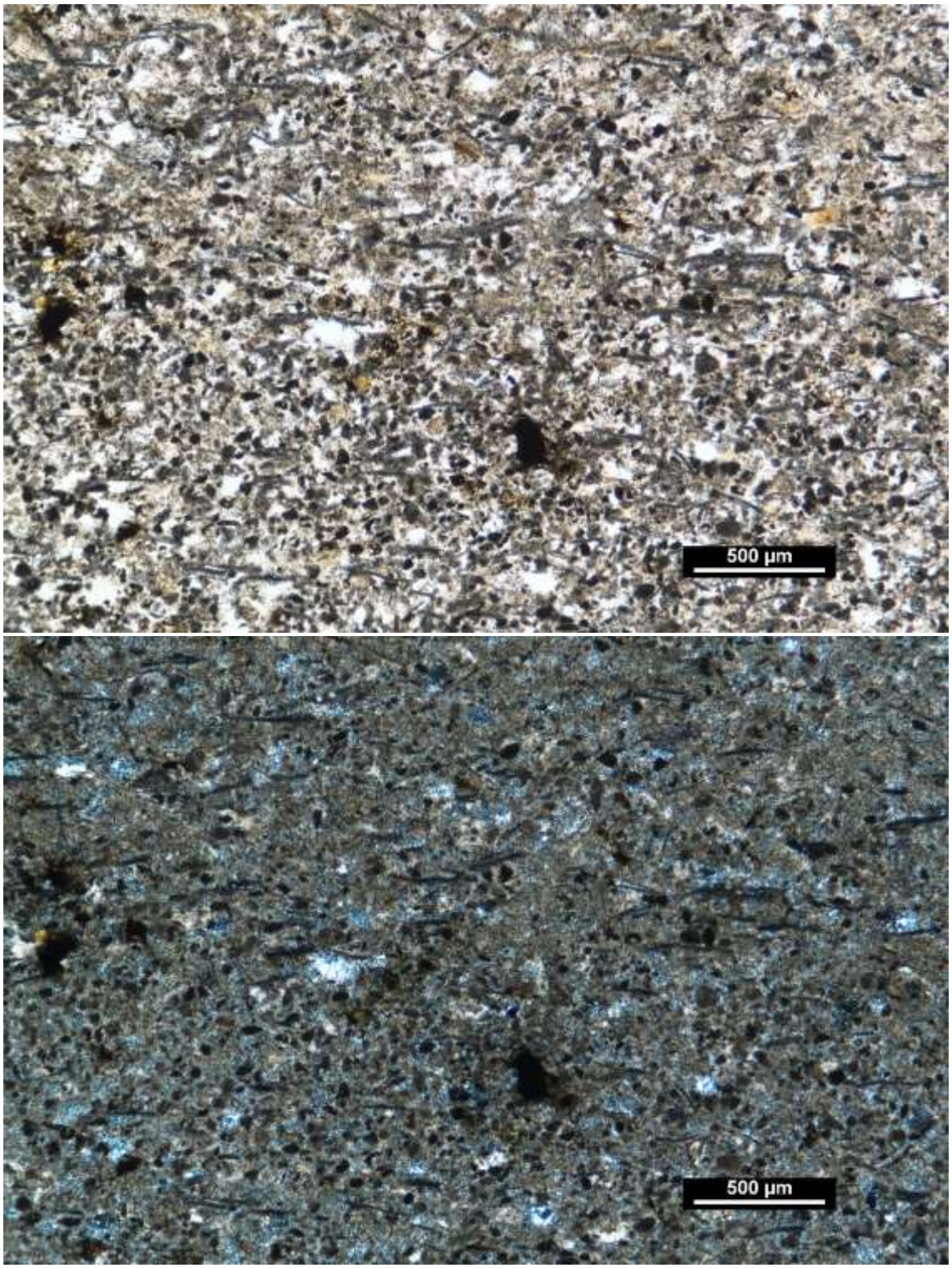
Photo ID	Aug.	Description
SP52_001	4x	General view of thin section (mudstone texture).
SP52_002	4x	General view of zonation (packstone texture) with fossils and concentration of oxides.
SP52_003	2x	View of packstone zonation with a burrow-like structure filled with mudstone structure chert.
SP52_004	2x	View of packstone zonation with a burrow-like structure filled with mudstone structure chert.
SP52_005	4x	View of fracture/porosity filled with megacrystalline granular quartz.
SP52_006	10x	Dolomite crystals within the microcrystalline quartz and oxide grains.
SP52_007	10x	Detailed view of the wackestone texture. Oxide grains and patina are very frequent, intercalated with fossils (possibly sponge spicules).
SP52_008	10x	Detailed view of a fossil (possibly radiolarian) replaced by two generations of quartz: 1) outer generation of microcrystalline quartz or chalcedony; 2) interior filled with megacrystalline quartz.
SP52_009	10x	General view of the sample with the presence of oxide grains and patina, and circular fossils replaced by fibrous chalcedony.

Petrography photos

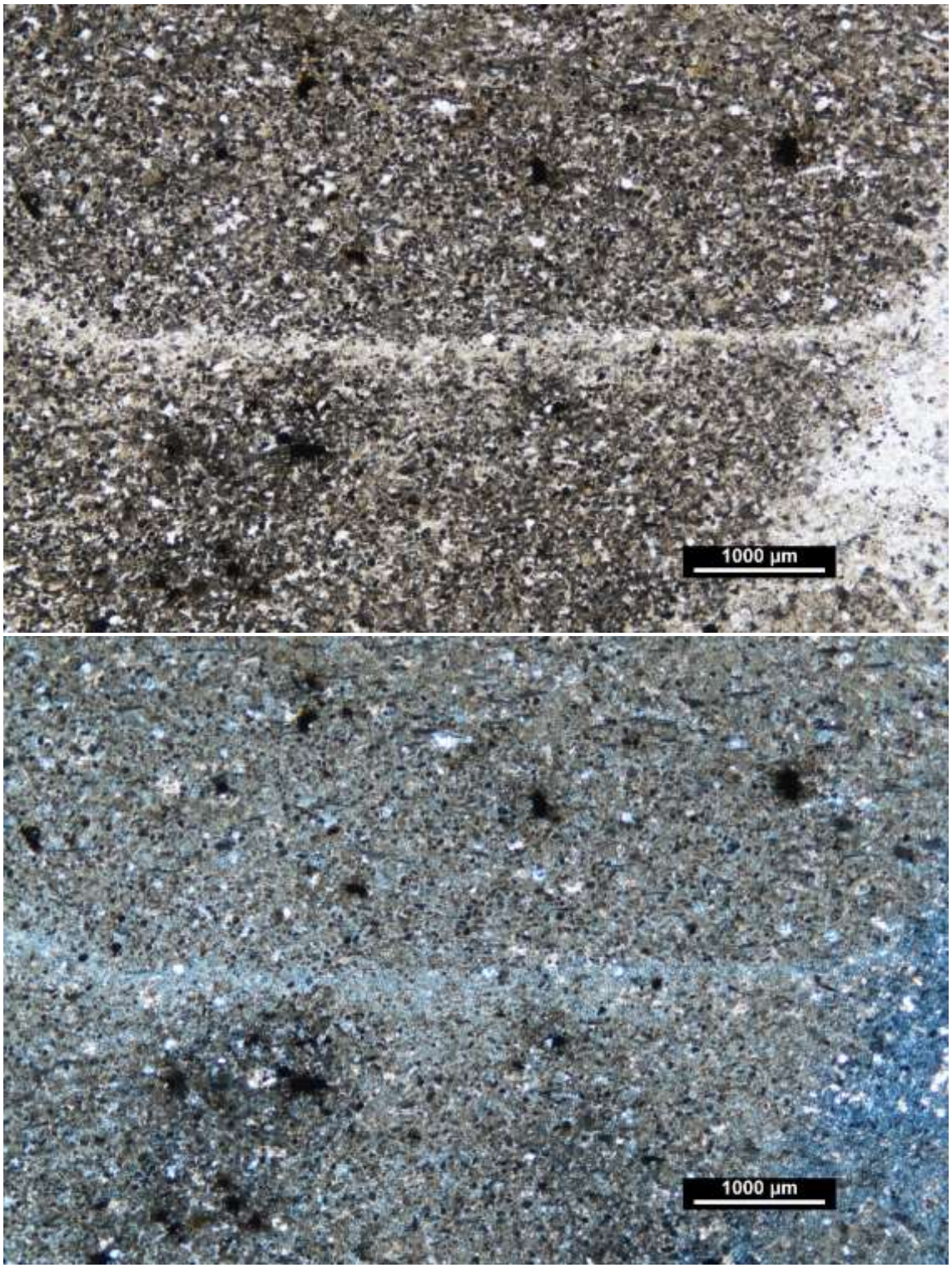




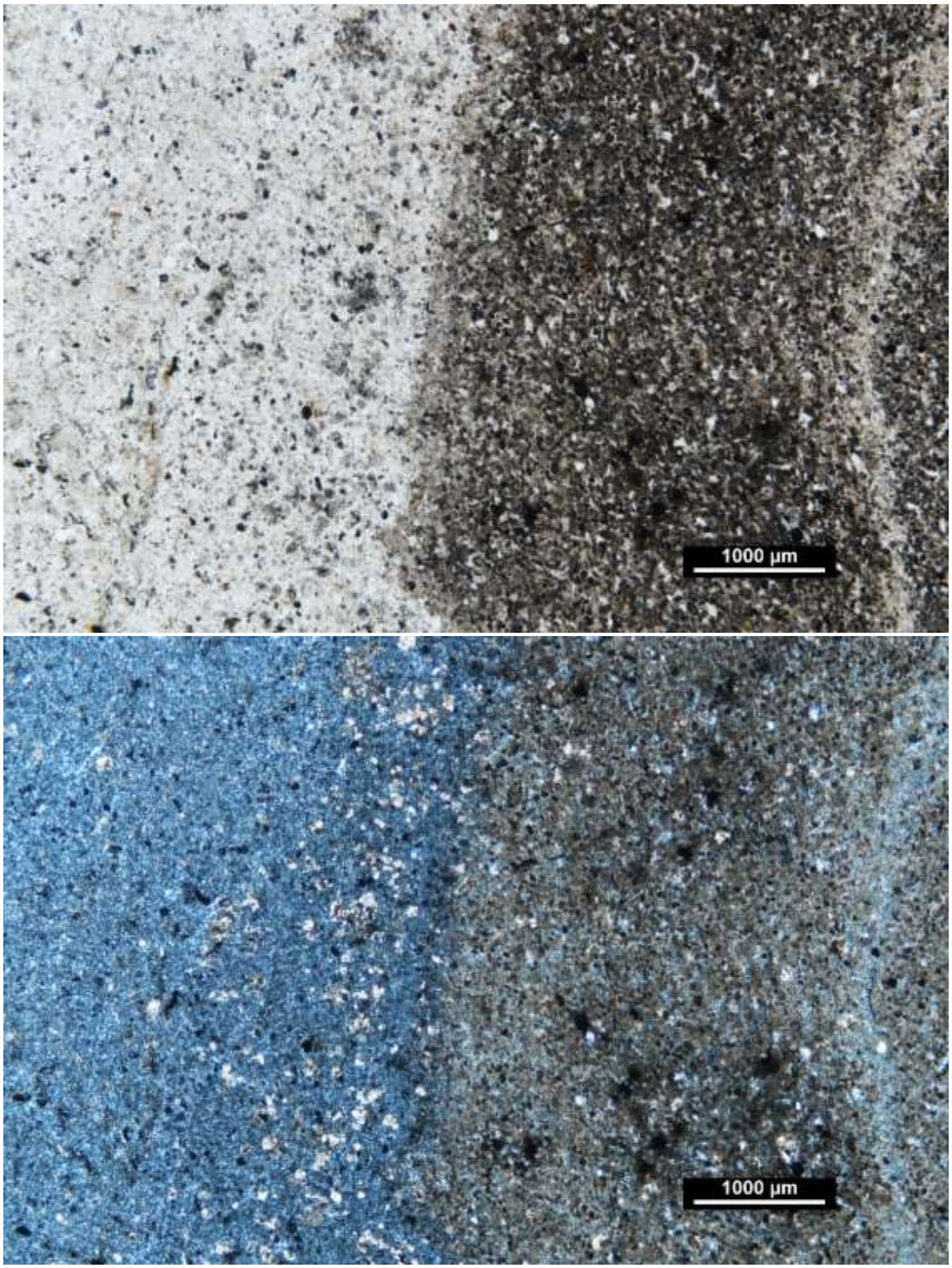
SP52_CdC_001 (PPL and XPL)



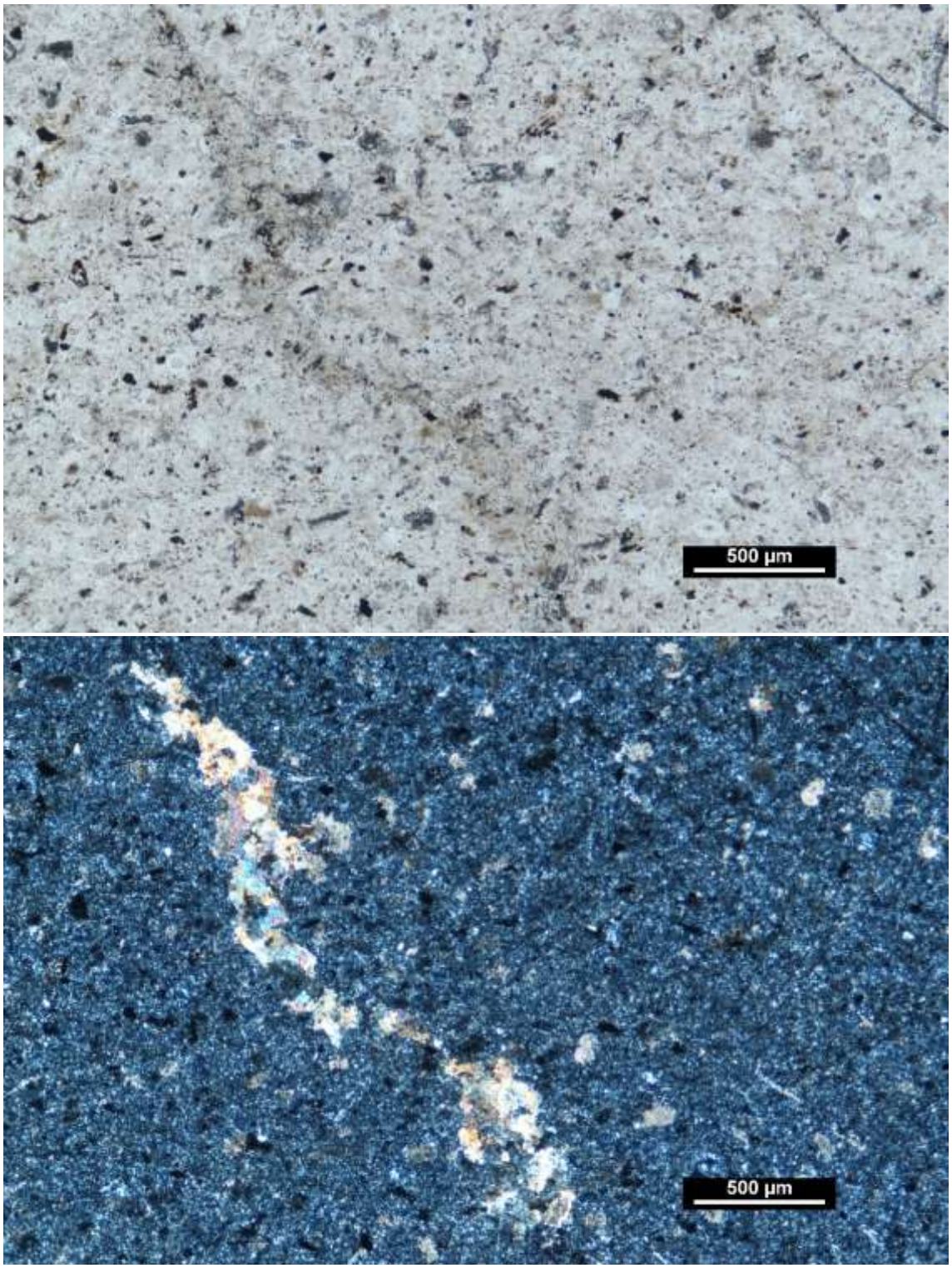
SP52_CdC_002 (PPL and XPL)



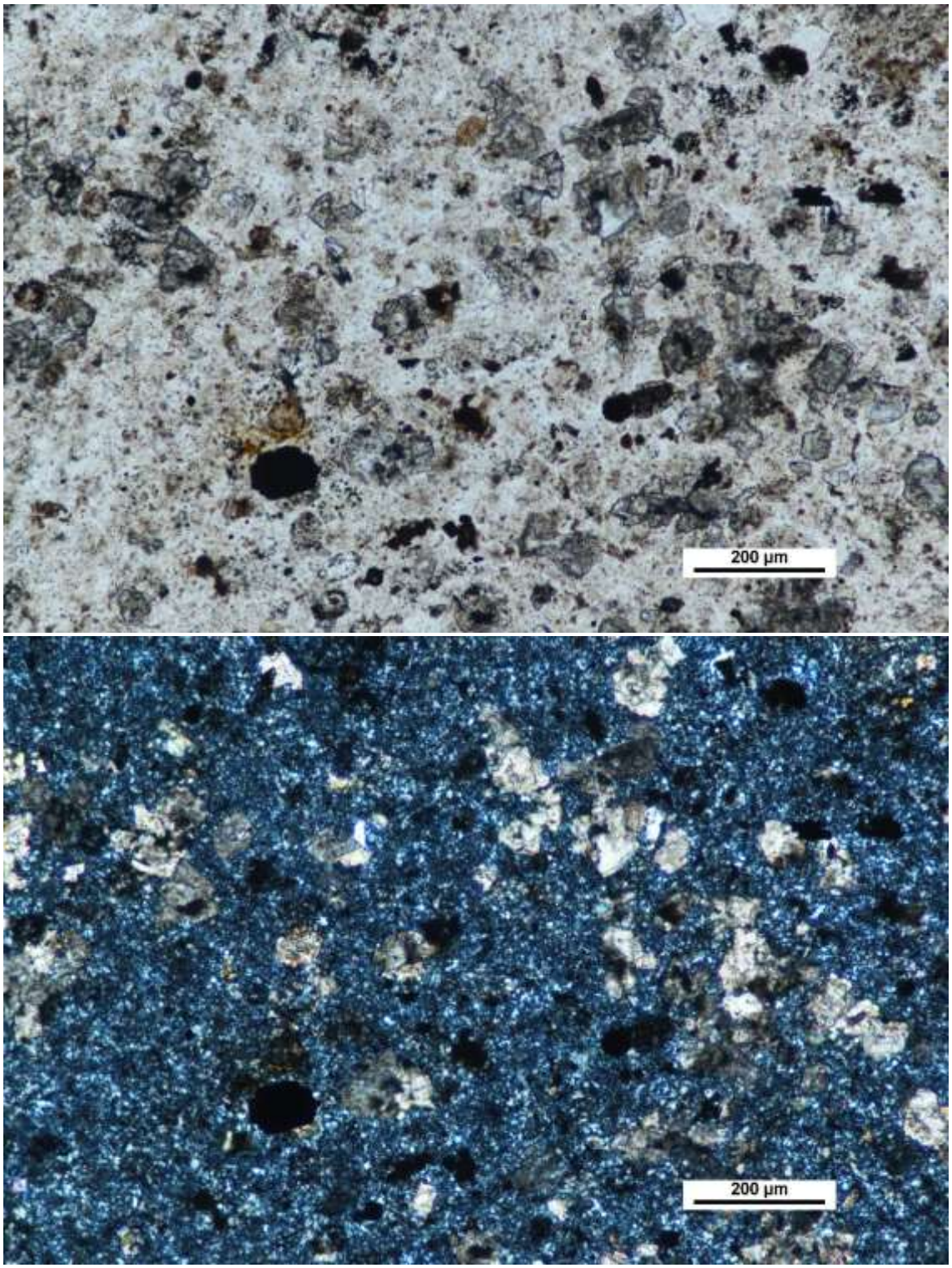
SP52_CdC_003 (PPL and XPL)



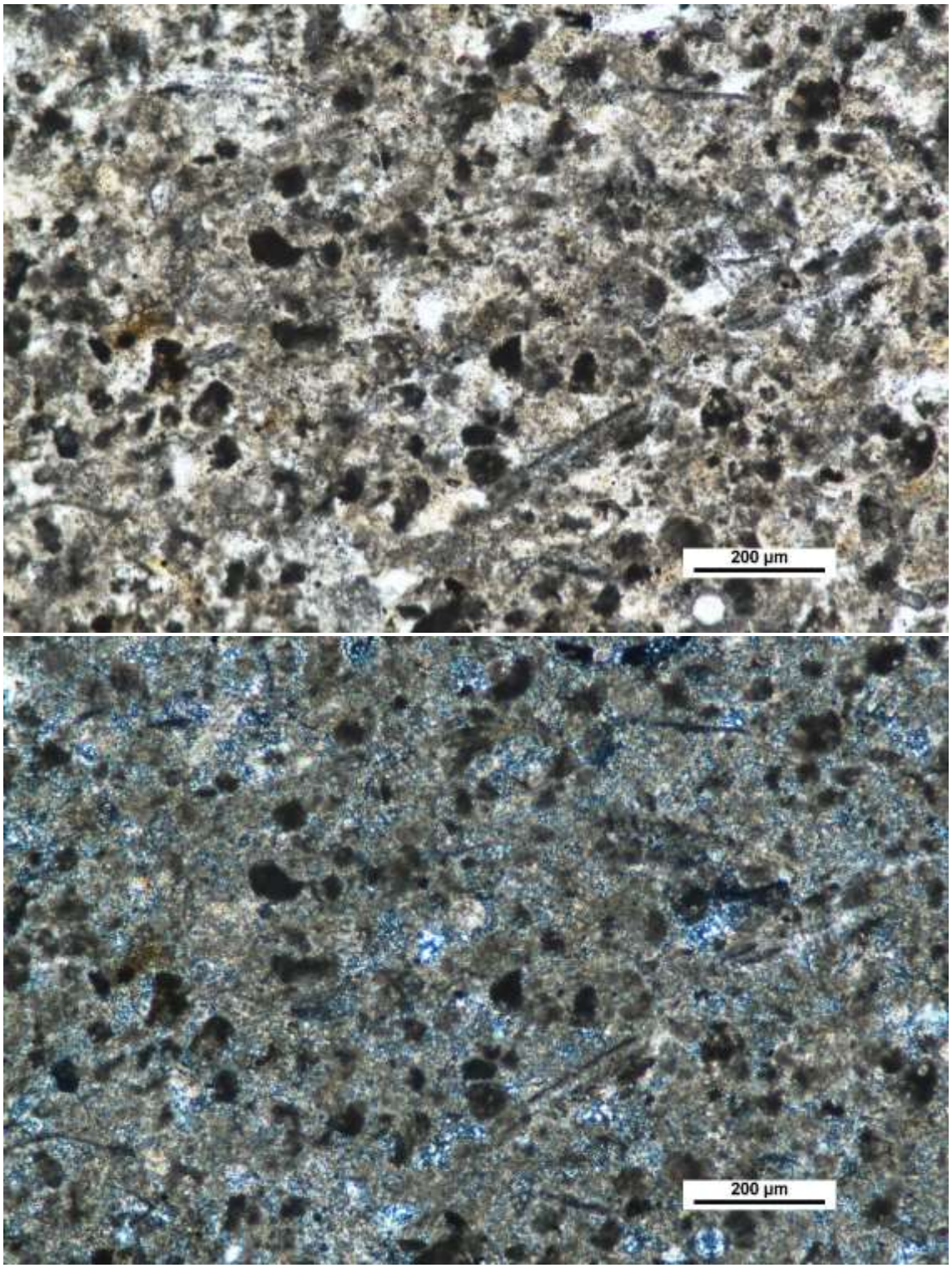
SP52_CdC_004 (PPL and XPL)



SP52_CdC_005 (PPL and XPL)



SP52_CdC_006 (PPL and XPL)



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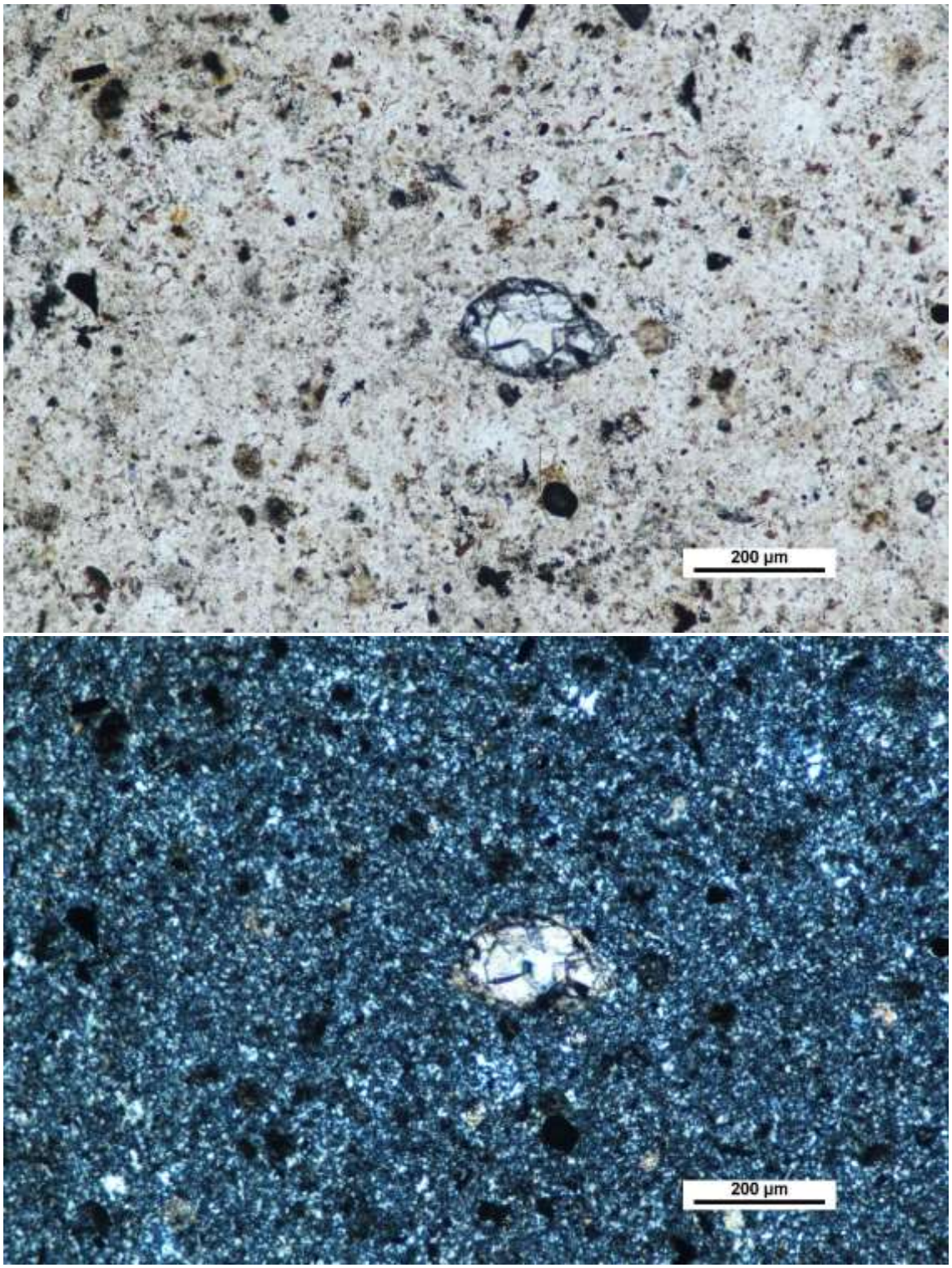

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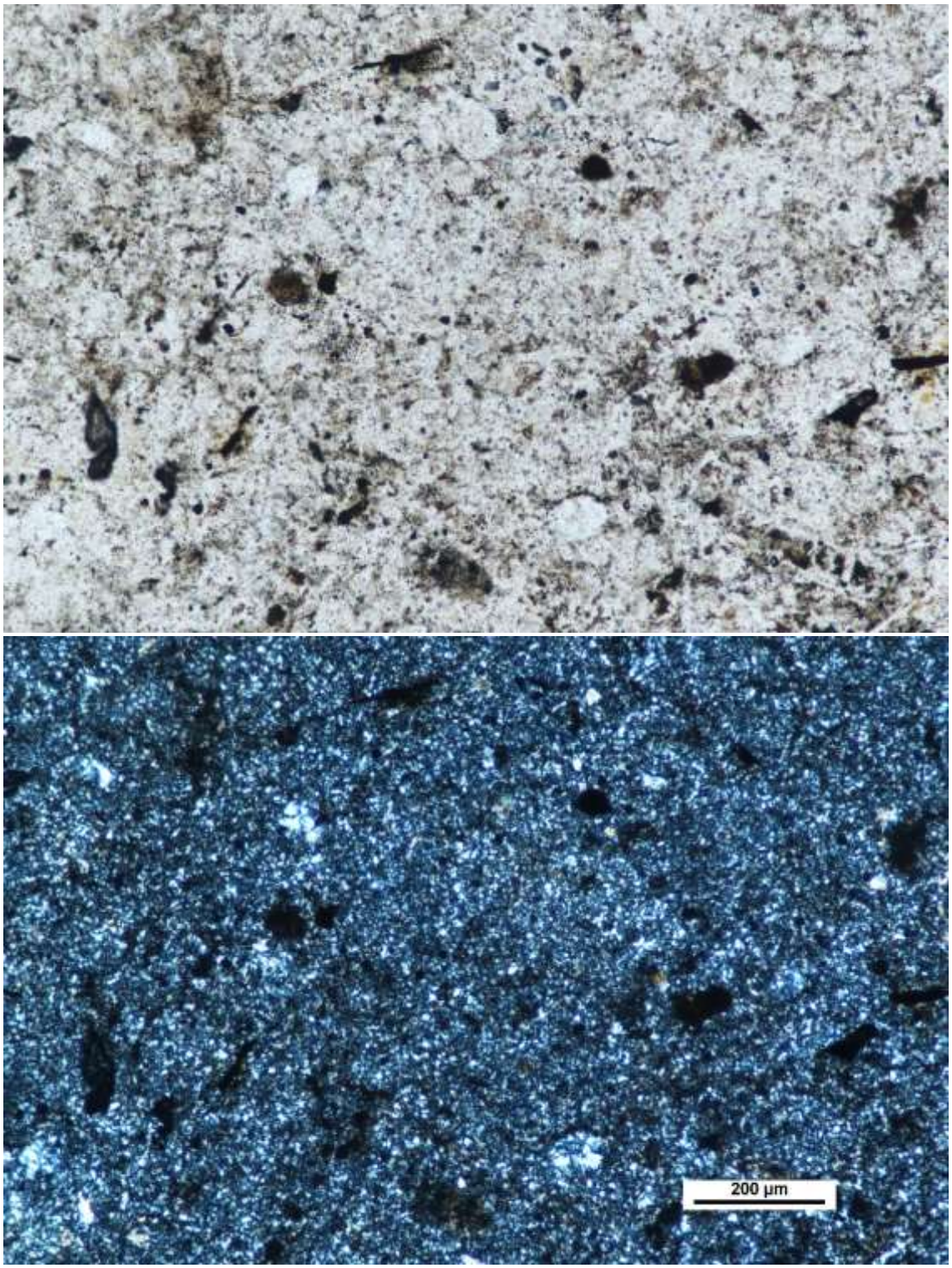
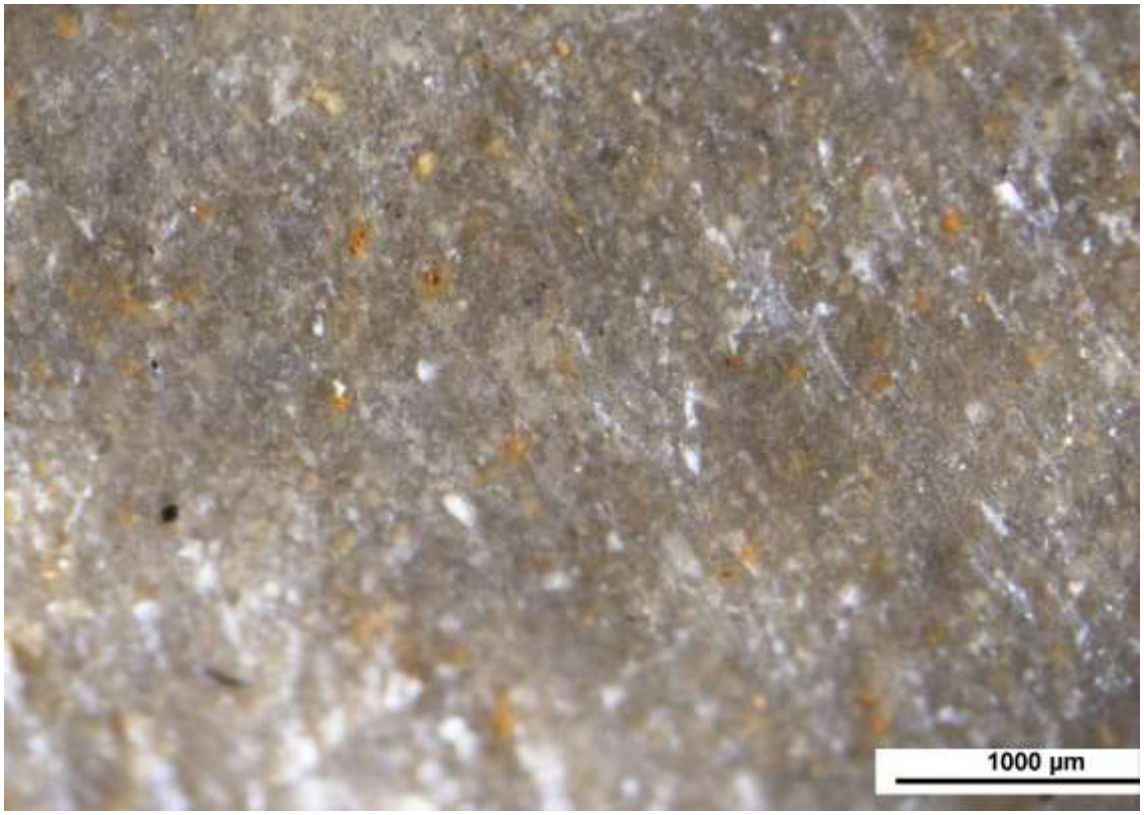
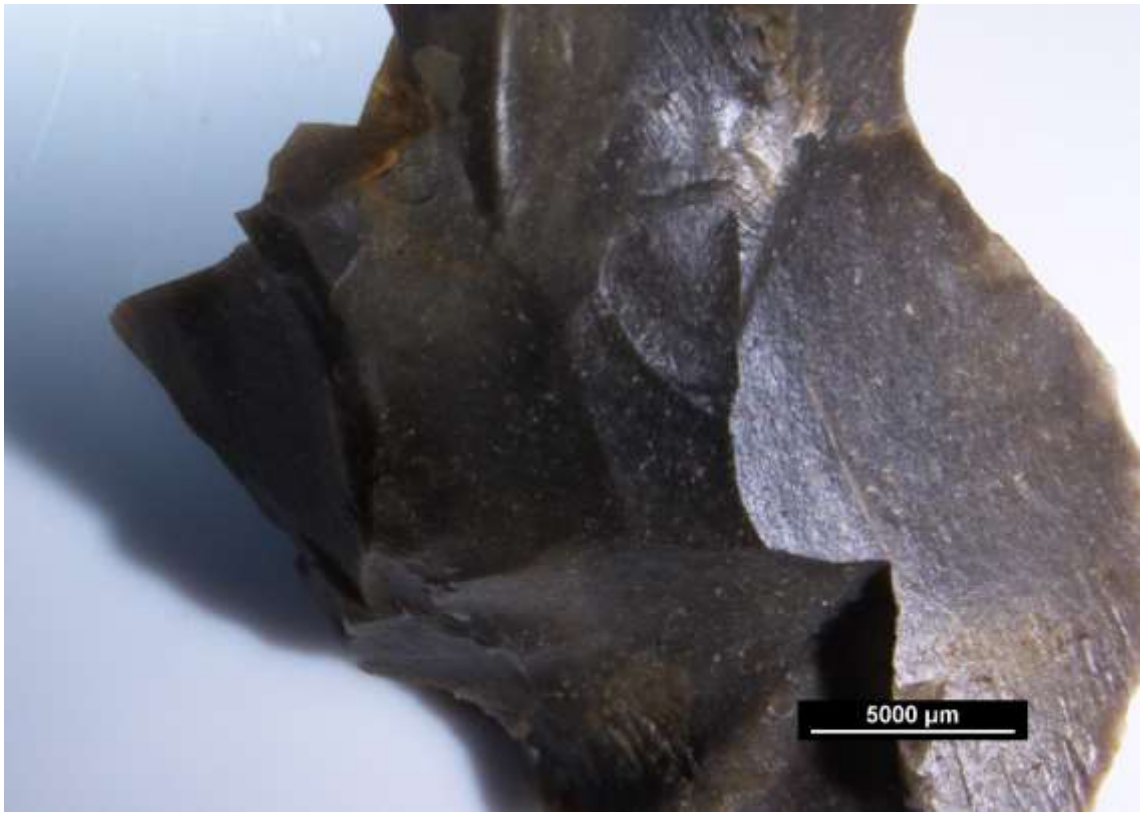


SP52_CdC_009 (PPL and XPL)

Macroscopic photos



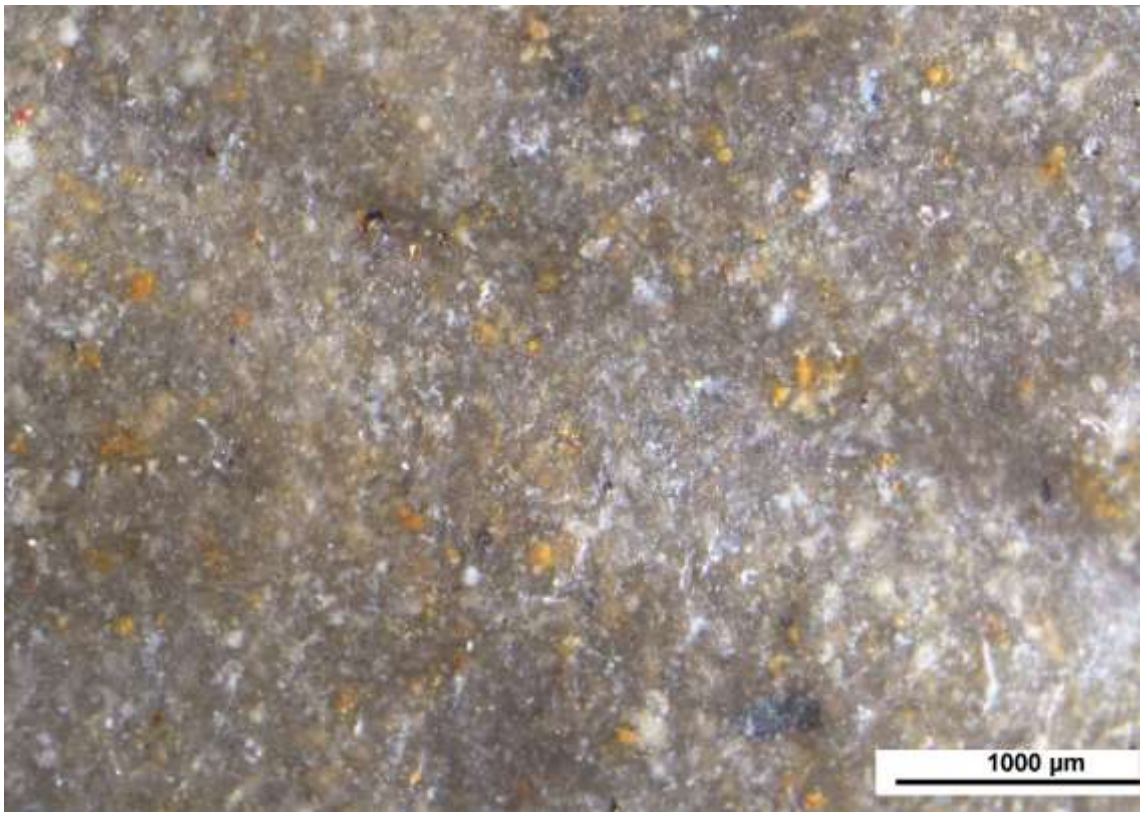


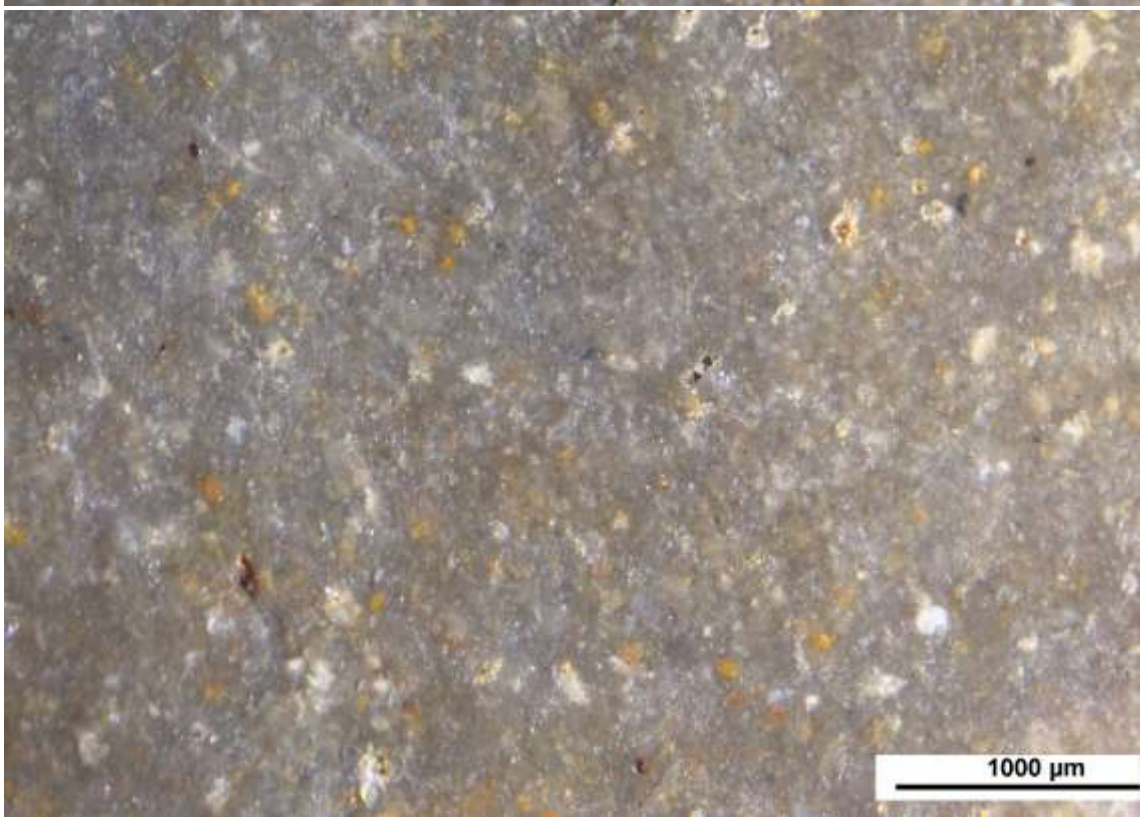

5000 µm


5000 µm


5000 µm


5000 µm


1000 µm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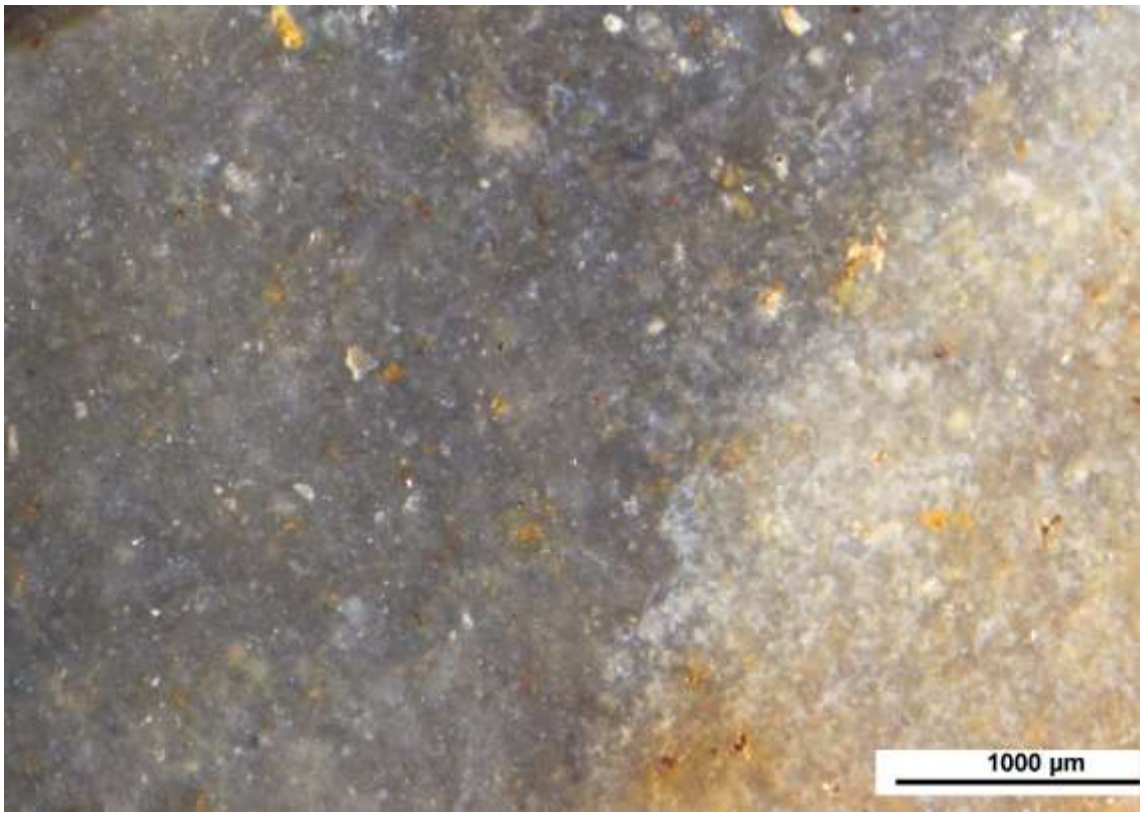
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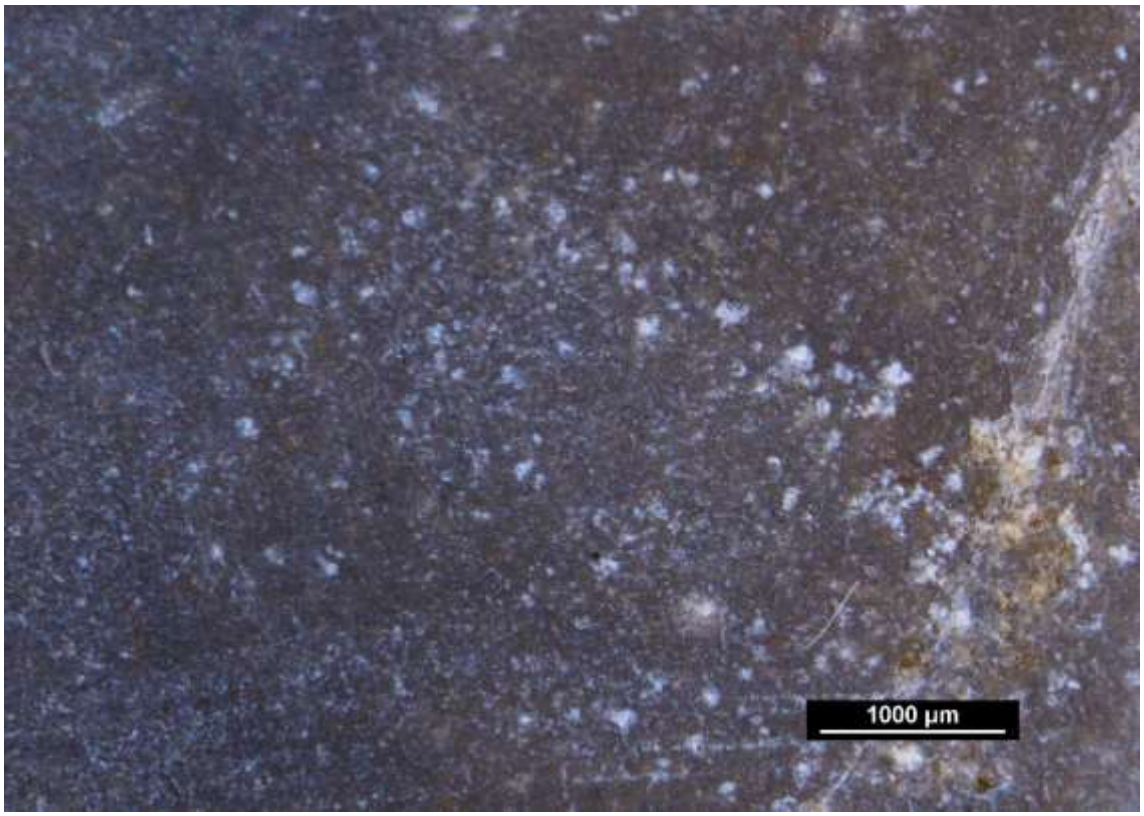
5000 µm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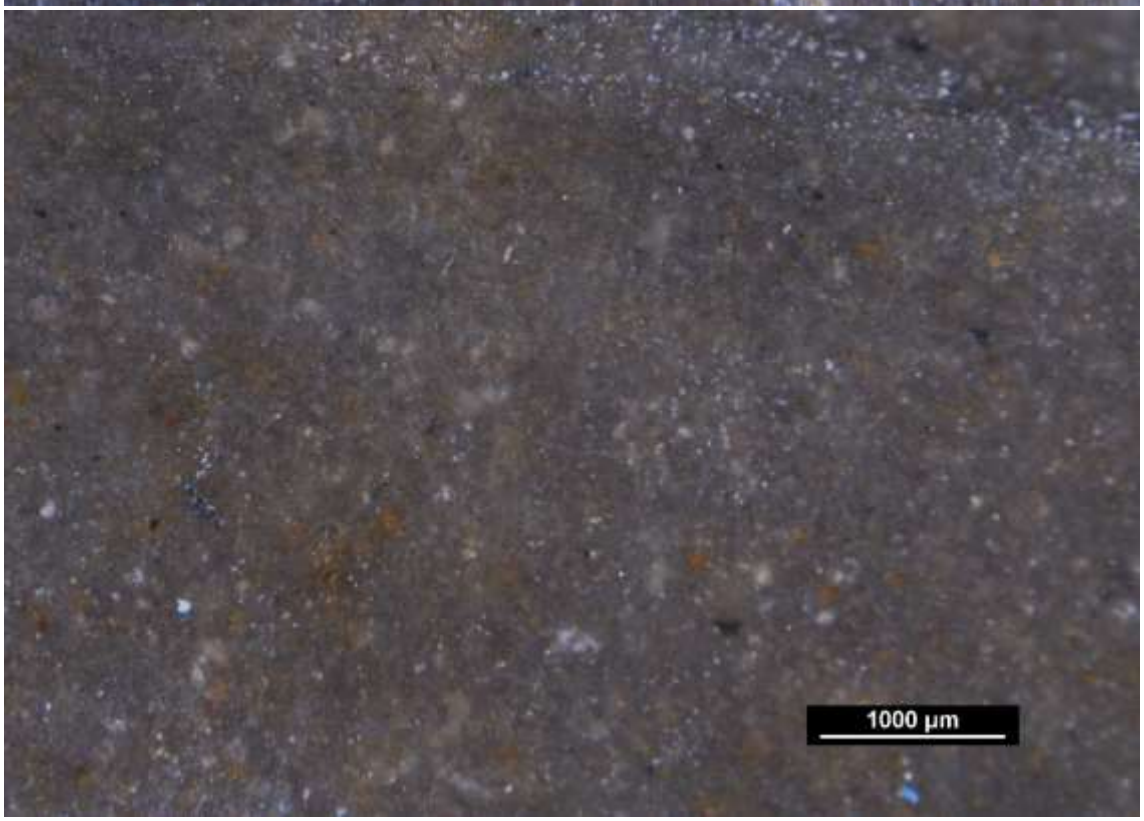
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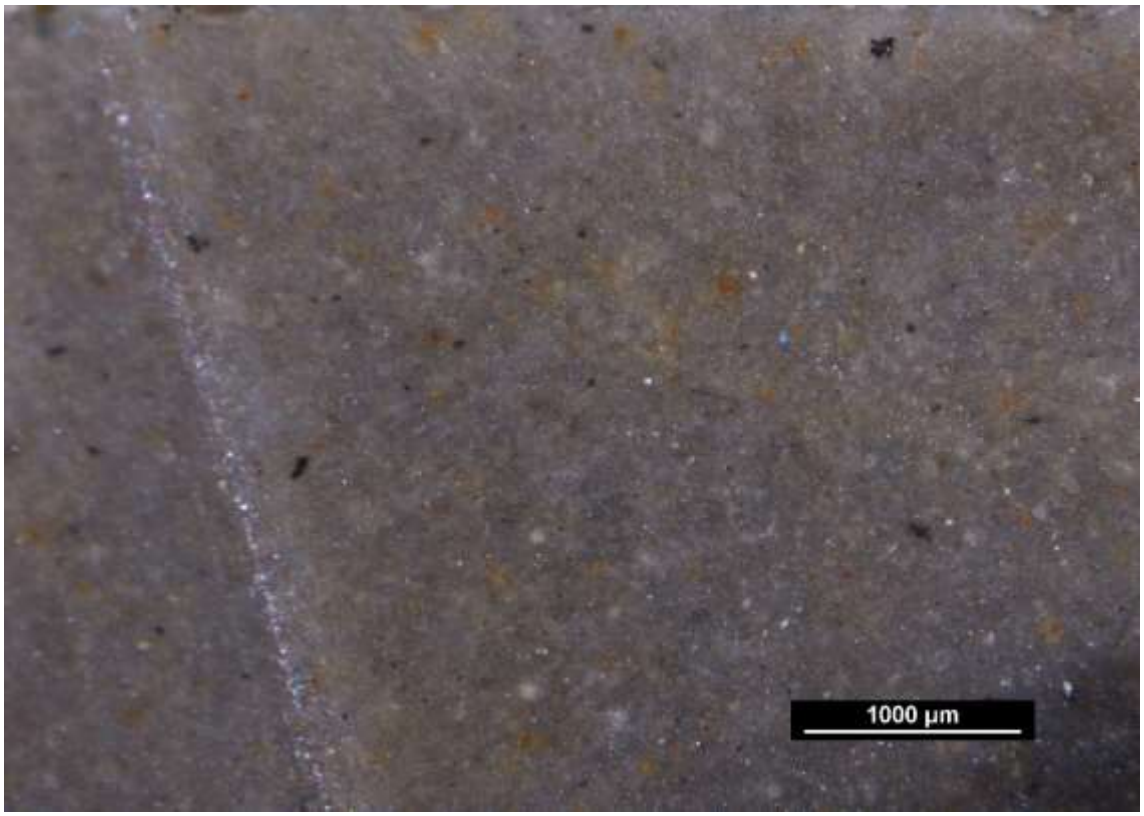
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