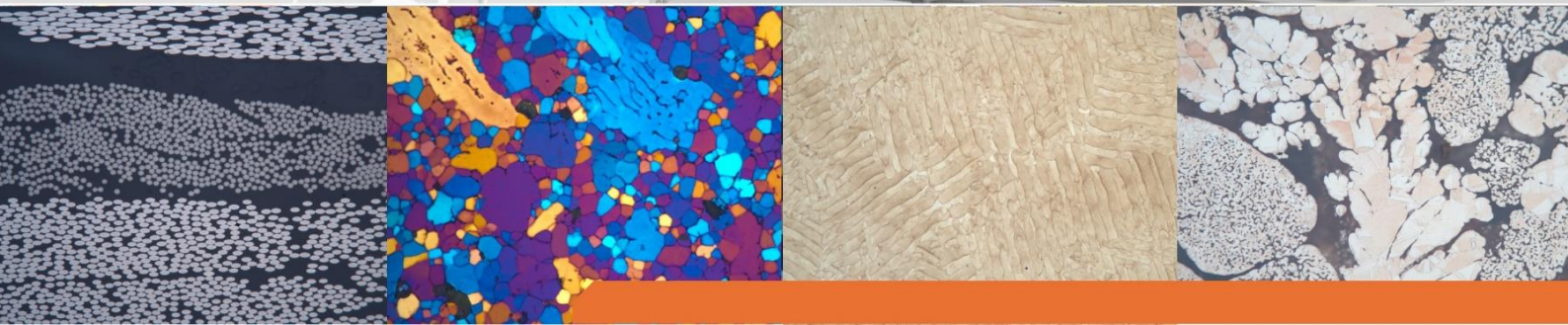


Application lab. report

Preparation of Tungsten carbide




QATM-Preparation method

Objective:











The aim is to prepare Tungsten carbide samples without any deformation, break outs or scratches. The samples should be mounted and prepared for light microscopic examination.

Hot mounting

 Mounting					
Device	Consumable	Heating time	Temperature	Pressure	Cooling time
QPress 50	EPO BLACK	6:00 min.	180°C	250 bar	4:00 min.
Filler or additional consumables	Heating power	Pressure mode	Cooling power		
-	100%	From the beginning	100%		
Notes					
<ul style="list-style-type: none"> - The samples were dismounted and remounted in Epo-black to obtain the most consistent hot mounting material for grinding and polishing of these hard samples. 					

QATM-Preparation method

Grinding/Polishing

Device	Samples holder	Pressure mode				
Qpol 250 BOT	6x 40 mm Z5445025	Single				
Step	MEDIUM		 RPM		 N	 min
 Planar grinding	VEGA 125 µm	H ₂ O	200	120 ◀ ▶	40	Till plan Approx. 4:00
 Grinding	VEGA 54 µm	H ₂ O	200	120 ▶ ▶	35	4:00
 Pre-polishing	BETA	Dia. suspension Poly wb, 9µm Lubricant blue	150	120 ◀ ▶	35	7:00
 Polishing	GAMMA	Dia. suspension Poly wb, 3µm Lubricant blue	150	120 ▶ ▶	30	7:00
 Etching	Murakami Etchant					1:00

Notes

- Dosing interval and dosing duration for Dia. Suspension 3 and 9 µm:
Every 30 s for 1.3 s
- Dosing interval and dosing duration for lubricant:
Every 60 s for 1.3 s

QATM-Preparation method

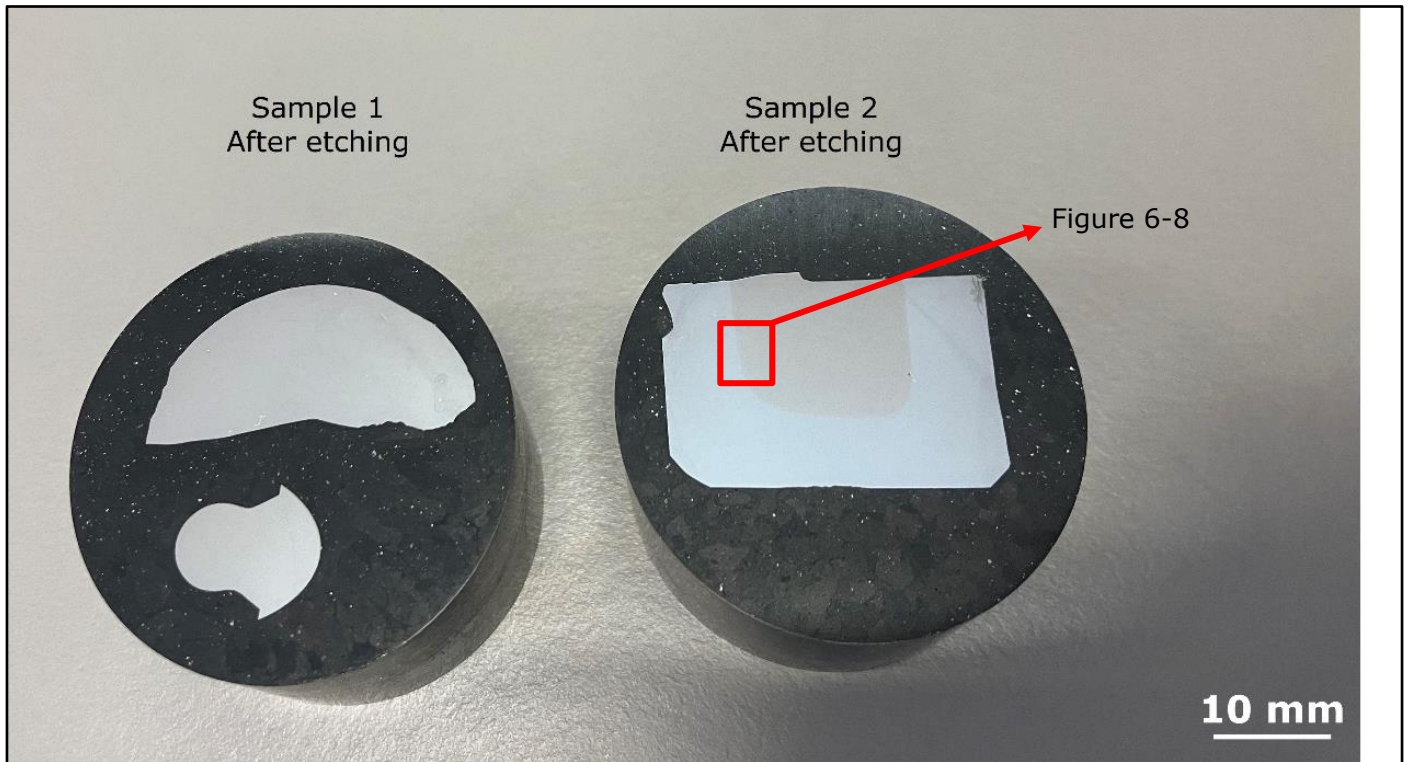


Figure 1: Overview of the prepared samples.

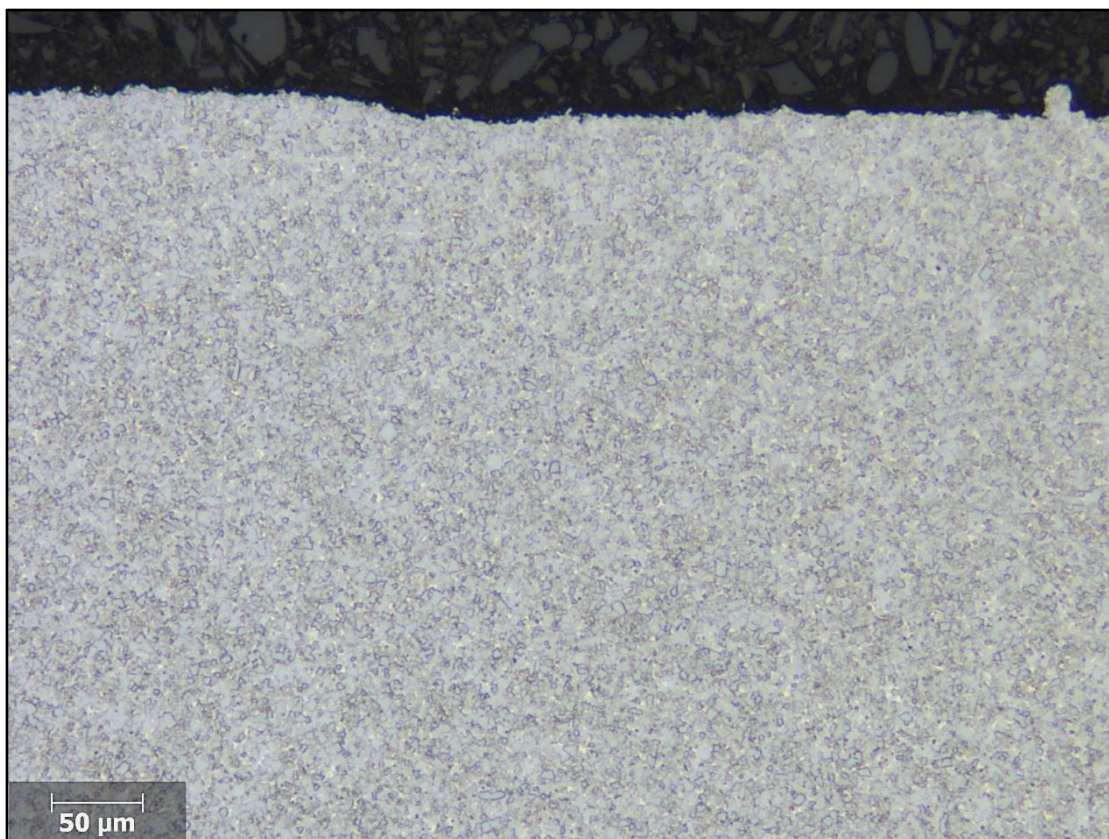


Figure 2: Microstructure of sample 1 after etching with Murakami etchant – 100 x.

QATM-Preparation method

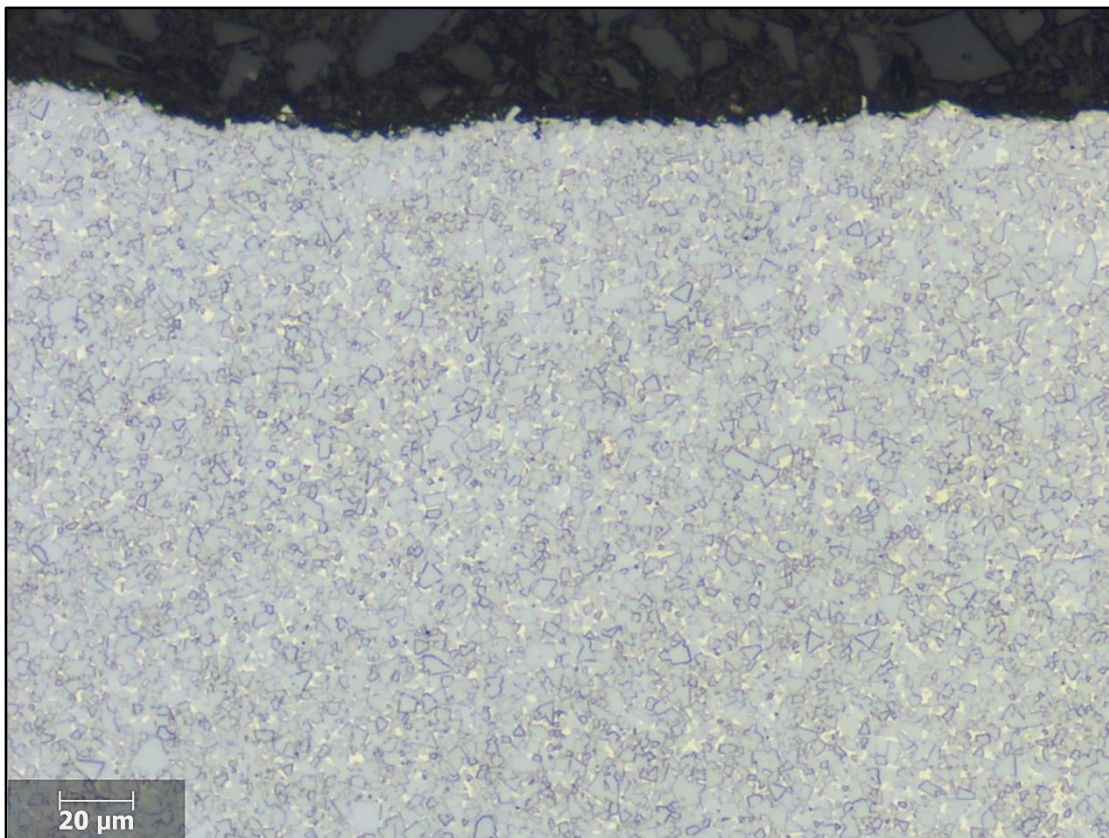


Figure 3: Figure 2 with higher magnification – 200 x.

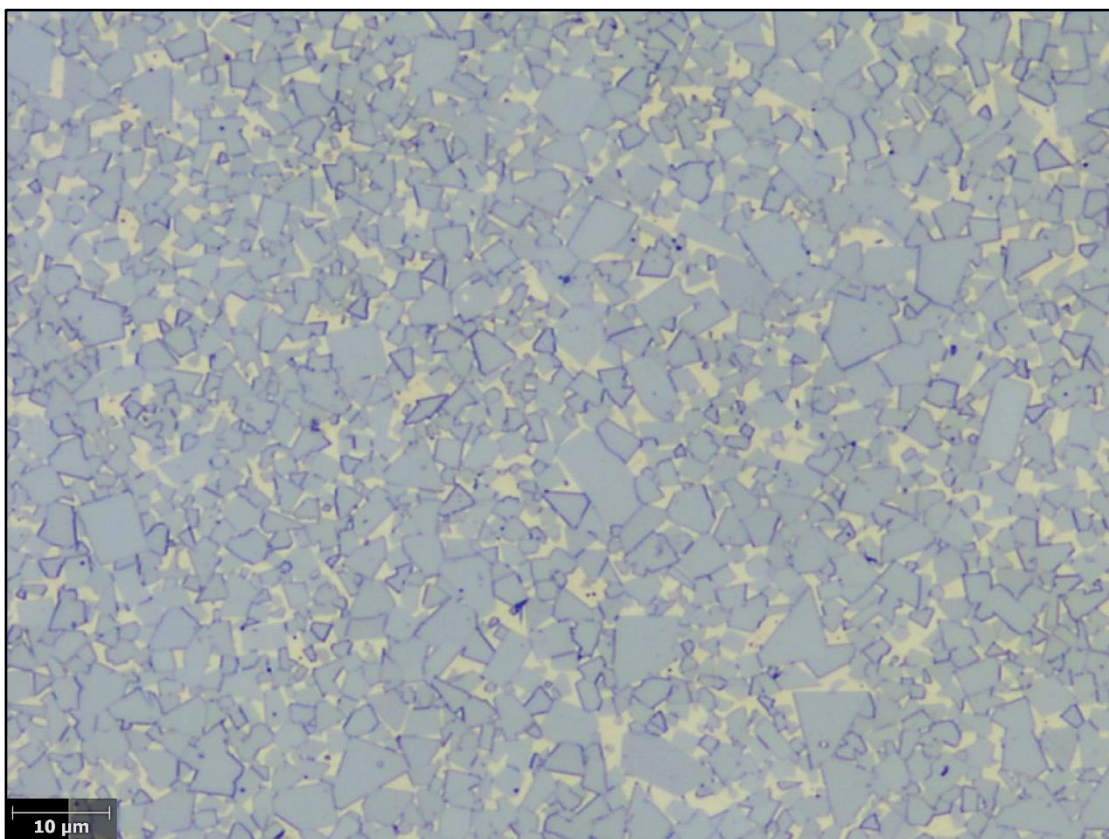


Figure 4: Microstructure of sample 1 after etching with Murakami etchant – 500 x.

QATM-Preparation method

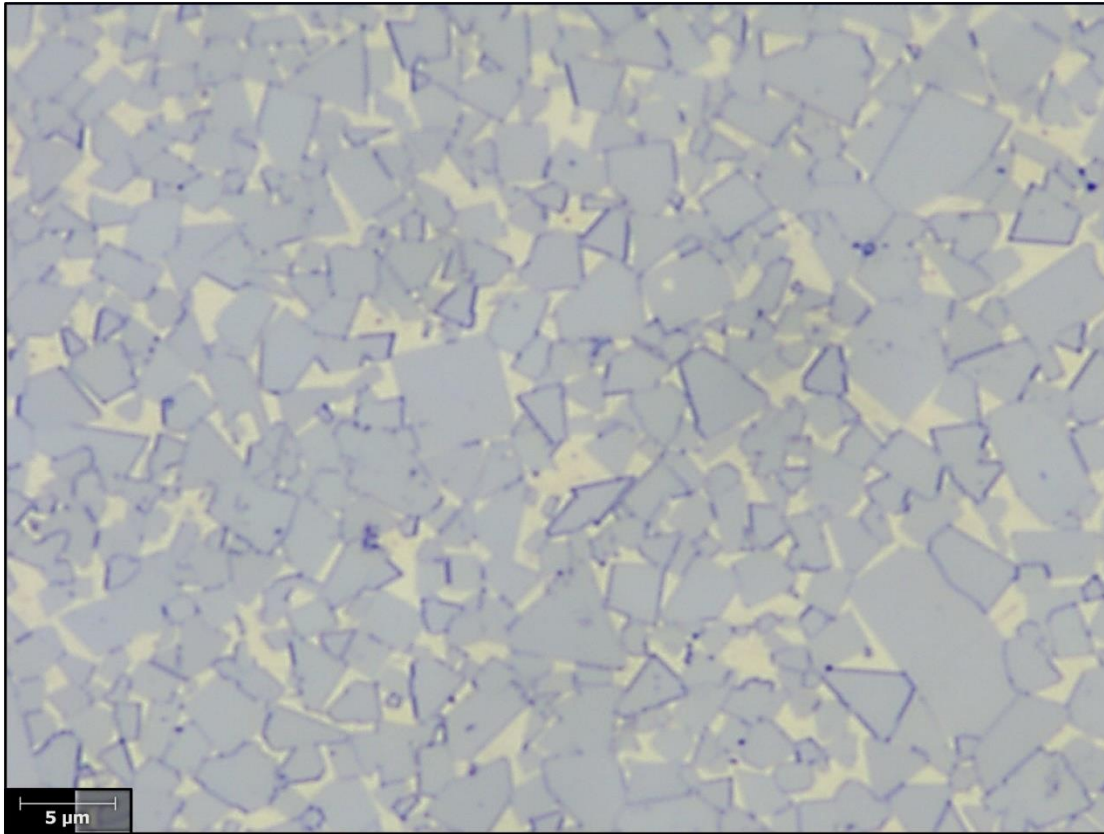


Figure 5: Figure 4 with higher magnification – 1000 x.

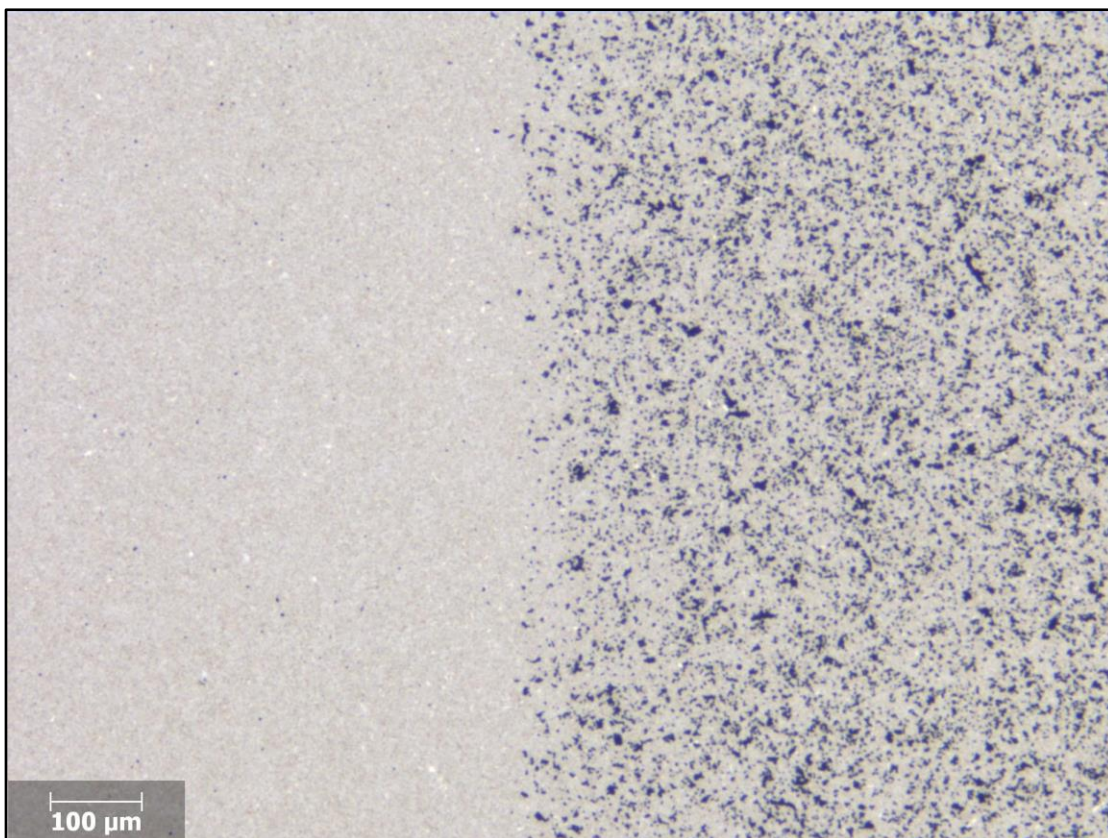


Figure 6: Microstructure of the marked region of sample 2 in figure 1 – 50 x.

QATM-Preparation method

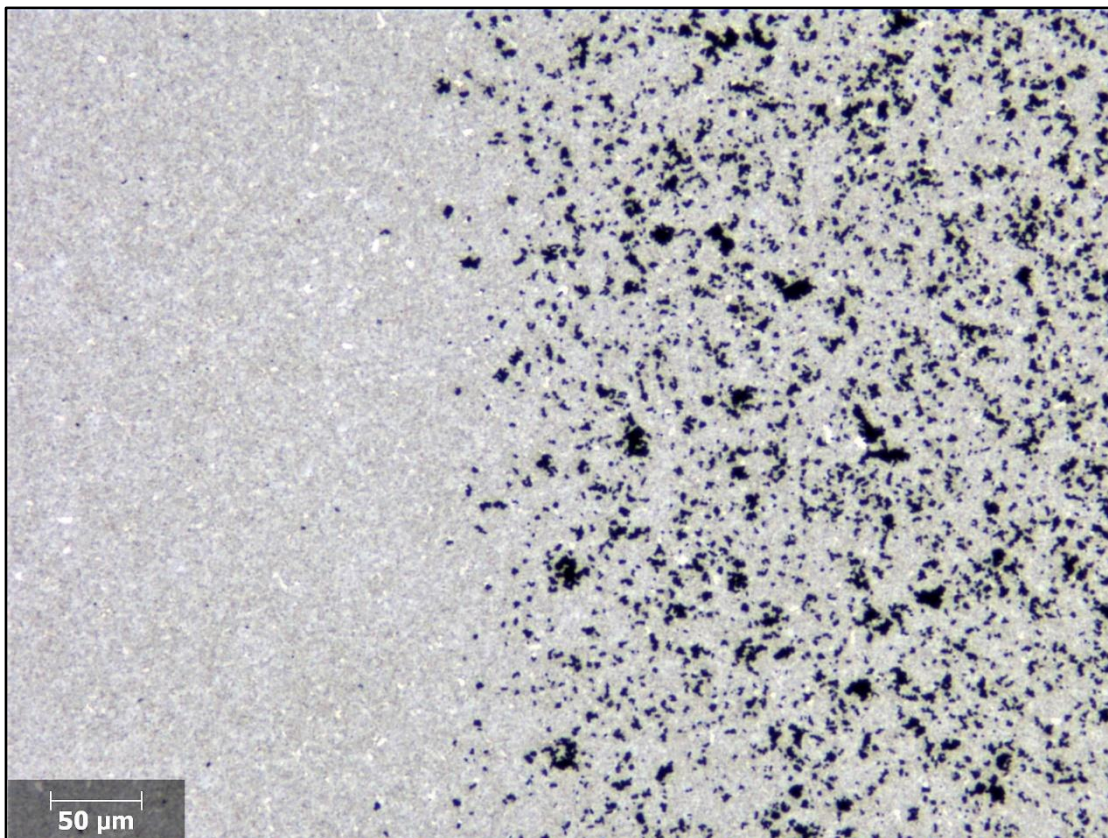


Figure 7: Figure 6 with higher magnification – 100 x.

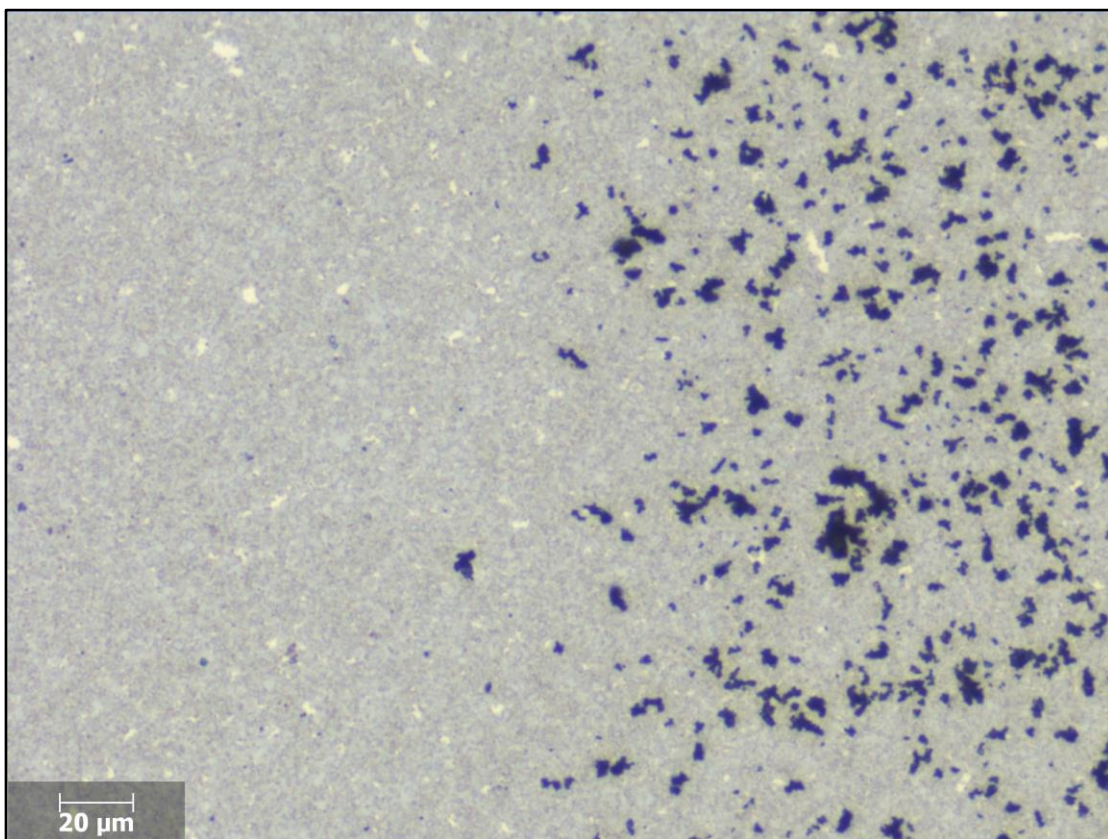


Figure 8: Marked region of sample 2 in figure 1 – 200 x.

QATM-Preparation method

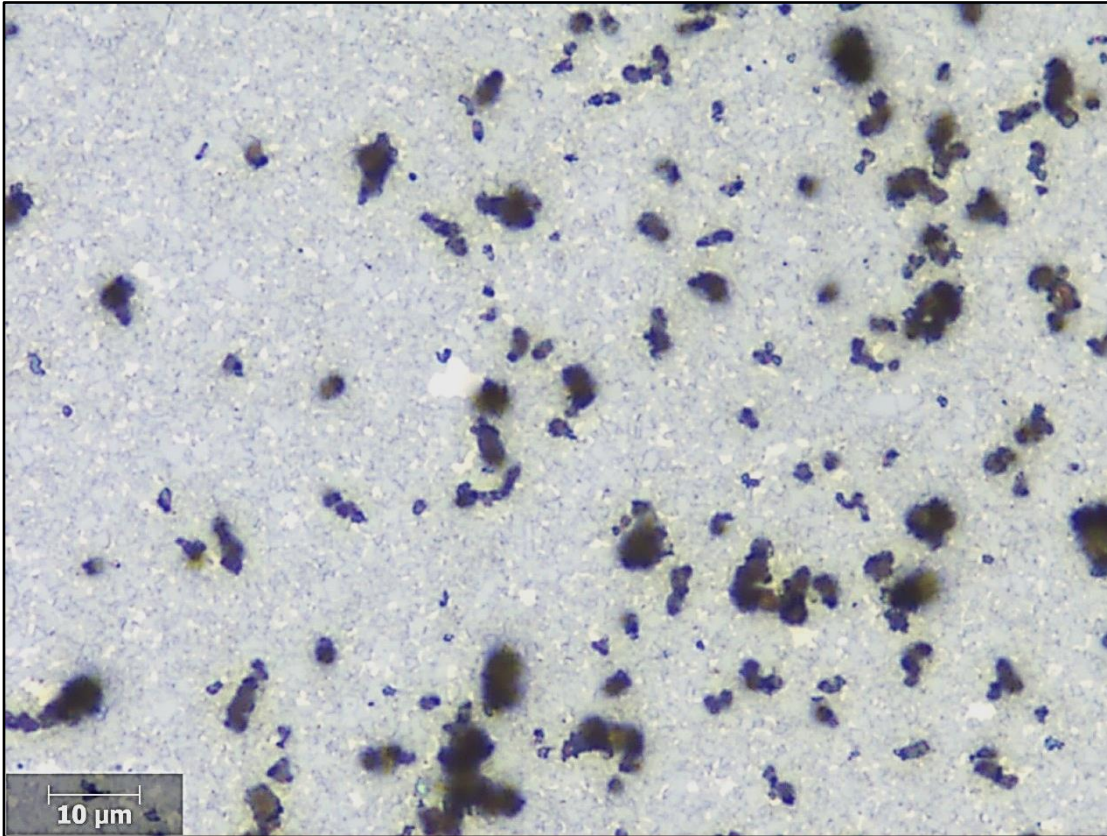


Figure 9: The right part of figure 8 in higher magnification – 500 x.