

Appendix 2. Results of Laboratory Works

Appendix 2-1 List of Laboratory Works

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No.	Type of work	Karaotkel Regional Area	Bektimir Regional Area	Bektemir No.1 South	Bektemir No.3 South	Bektimir East	Total
1	Microscopic observation of the thin sections or polished thin sections	19	1	4		6	30
2	X-Ray diffraction analysis	2			4	6	12
	Whole rock analysis	14	1				15
	Minor element analysis	14	1				15
	Mode analysis	6					6
	EDX analysis	96		14		47	157
	EPMA analysis	3		1		2	6
	K-Ar age dating	2	3				5
3	Preparation of drill core for analysis			261	96	185	542
4	Quantity mineralogical analysis for ilmenite, rutile and zircon of usual and check samples			199	68	185	452
5	Inside (same laboratory) geological check of mineralogical analysis (III classes of content - select 90 samples each)			62	28		90
6	Outside (another laboratory) geological check of mineralogical analysis (III classes of content - select 90 samples each)			62	28		90
7	Chemical analysis of check samples for TiO ₂ and ZrO ₂				10	4	14
8	Separation of monomineral ilmenite and zircon fractions from group samples			13	2	1	16
8.1	Grainmetric analysis of monomineral fraction(Ilmenite)			13	2	1	16
	Grainmetric analysis of monomineral fraction(Zircon)			13	2	1	16
8.2	Chemical and spectral quantity analysis of monomineral fraction Ilmenite assay; TiO ₂ , Sc ₂ O ₃ , Nb ₂ O ₅ , Ta ₂ O ₅ , TR, V ₂ O ₅ , Cr ₂ O ₃ , Al ₂ O ₃ , SiO ₂ , FeO, Fe ₂ O ₃			13	2	1	16
	Zircon assay; ZrO ₂ , Sc ₂ O ₃ , Hf, TR, Y, Th			13	2	1	16
8.3	Determination of zircon radioactivity			13	2	1	16
	Total of laboratory works	156		681	246	441	1524

**Appendix 2-2 Microscopic Observations of
the Thin Sections**

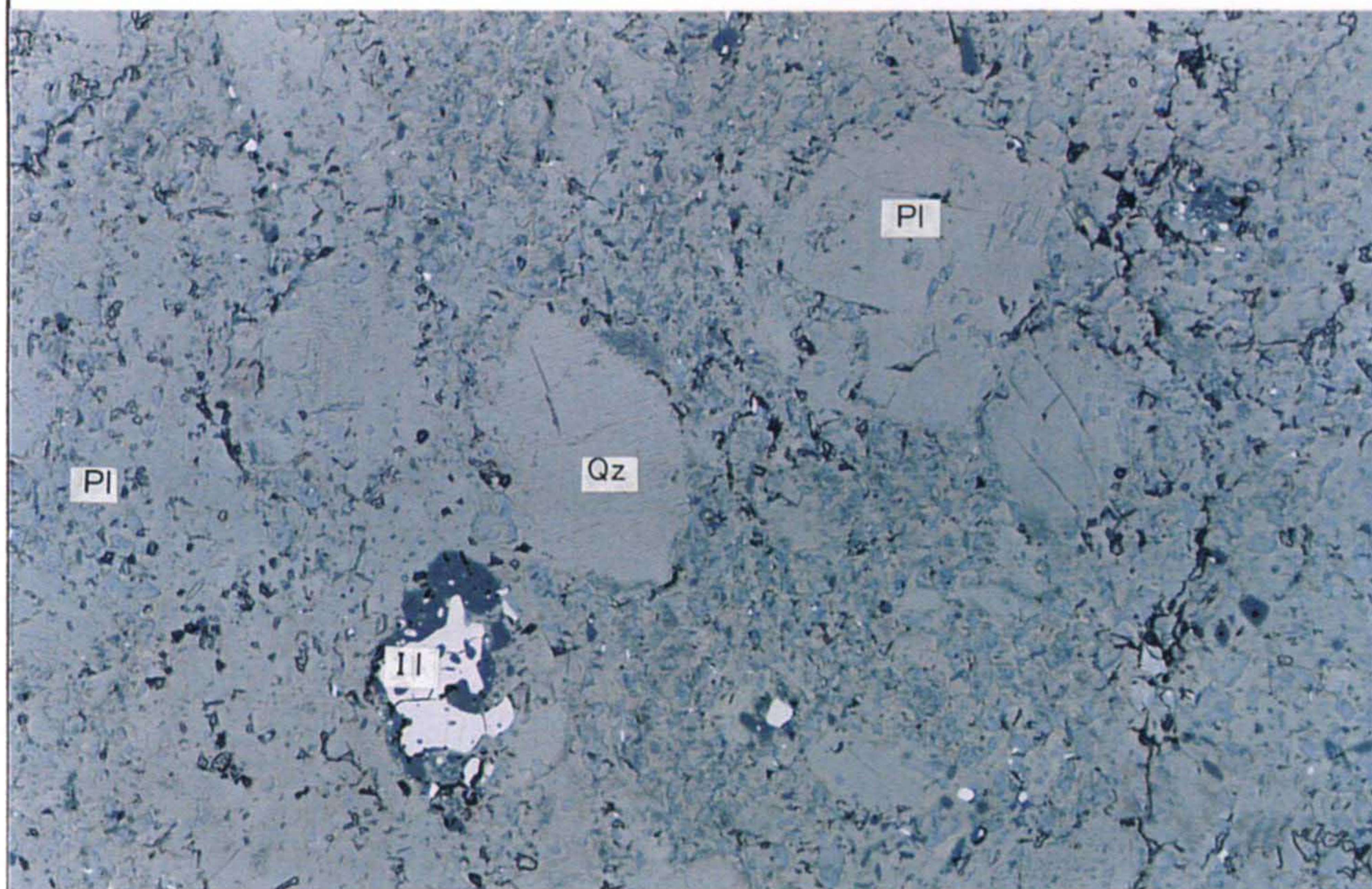
Appendix 2-2 Microscopic Observations of the thin Sections

SAMPLE NUMBER	PETROGRAPHIC NAME	Quartz (Qz)	K-feldspar (Kf)	Plagioclase (Pl)	Biotite (Bio)	Hornblende (Hb)	Augite (Px)	Olivine (Ol)	Zircon (Zr)	Apatite (Ap)	Allanite (All)	Tourmaline	Chlorite (Chl)	Calcite (Cal)	Sericite (Ser)	Clay minerals (Kaoline, Smectite, Illite)	Ilmenite (Il), Alterilmenite	Pseudorutile (Psr)	Magnetite (Mb)/Ti-magnetite (Ti-Mt)	Rutil, Anatase (Ana), Sphene (Sp)	Hematite (Hm), Goethite (Geo)	Opaque mineral mode (%)
1	G365	Siliceous tuff hornfels	○	○	◎	·	△		·	·							·		·	·		
2	G370	Hornblende-augite granite	◎	◎	○		△	·	·	·	·						·		·	·		0.4
3	G378	Augite-hornblende syenite	△	◎	○	·	△	·	·								·				·	
4	G387	Augite porphyrite hornfels	△		◎	△		○	·									△		·	·	
5	G395	Siltstone hornfels	◎			○							·					△				
6	G396	Hornblende quartz syenite	○	◎	◎		△		·								·					0.3
7	G416	Hornblende granite	◎	◎	△	·			·								·					
8	G423	Hornblende-olivine monzonite	△	◎	△		△	○	·									△		·	·	
9	G433	Hornblende granite	○	◎		·			·								·		·	·	·	0.7
10	G442	Hornblende-augite granite porphyry	◎	◎		·	△	·	·									△				
11	G445	Sandstone hornfels	◎		△	○												△		△		
12	G449	Biotite granite porphyry	◎	◎	○	△			·				·		·		·					
13	G450	Augite quartz syenite	△	◎	◎	△		○	·	·					·		△			·	·	1.5
14	I 162	Augite-biotite granite	◎	◎	△	·	·		·	·			·	·			·			·	·	
15	I 173	Biotite-hornblende granite	◎	◎	△	·	·	△	·	·			·				·		·	·	·	1.0
16	I 178	Biotite-augite granite	◎	◎	△	·	·	△	·								·		·	·	·	
17	I 190	Hornblende-biotite quartz syenite	○	◎	○	·	△	·	·								·		·	·	·	
18	I 212	Biotite quartz syenite	◎	◎	△	·			·								·			·	·	
19	I 232	Biotite granite	◎	◎	△	△			·						·		·		·	·	·	0.3
20	MJBKE-12 29.0m	Porphyritic diorite	△													◎						
21	MJBKE-25 24.5m	clayey sand	◎	△					·									△		·	·	
22	MJBKE-36 17.8m	clayey sand	◎			·	·		·						△		△	·		·	·	
23	MJBKE-38 6.0m	Conglomerate	○											◎			·				·	
24	KARAOTKEL PIT2	Ilmenite concentrate	○	·	·				○									△	◎		·	
25	MJBKE-33 13.3m	Ilmenite-bearing clayey sand	◎	·	·				·							○	△	△				△
26	MJBKE-29 14.18m	Ilmenite-bearing clayey sand	◎						·						·	○	○	·		·	·	
27	MJBK-54 54.7m	Ilmenite-bearing clayey sand	◎						·						△	○	○	·				△
28	MJBK-54 57.5m	Ilmenite-bearing clayey sand	◎	△					·							○	○	○		·	·	
29	MJBK-44 50.2m	Ilmenite concentrate	○						△									◎	△		·	
30	MJBK-54 56.5m	Ilmenite-bearing clayey sand	◎	△	△				△						△	○	○	◎		·	·	

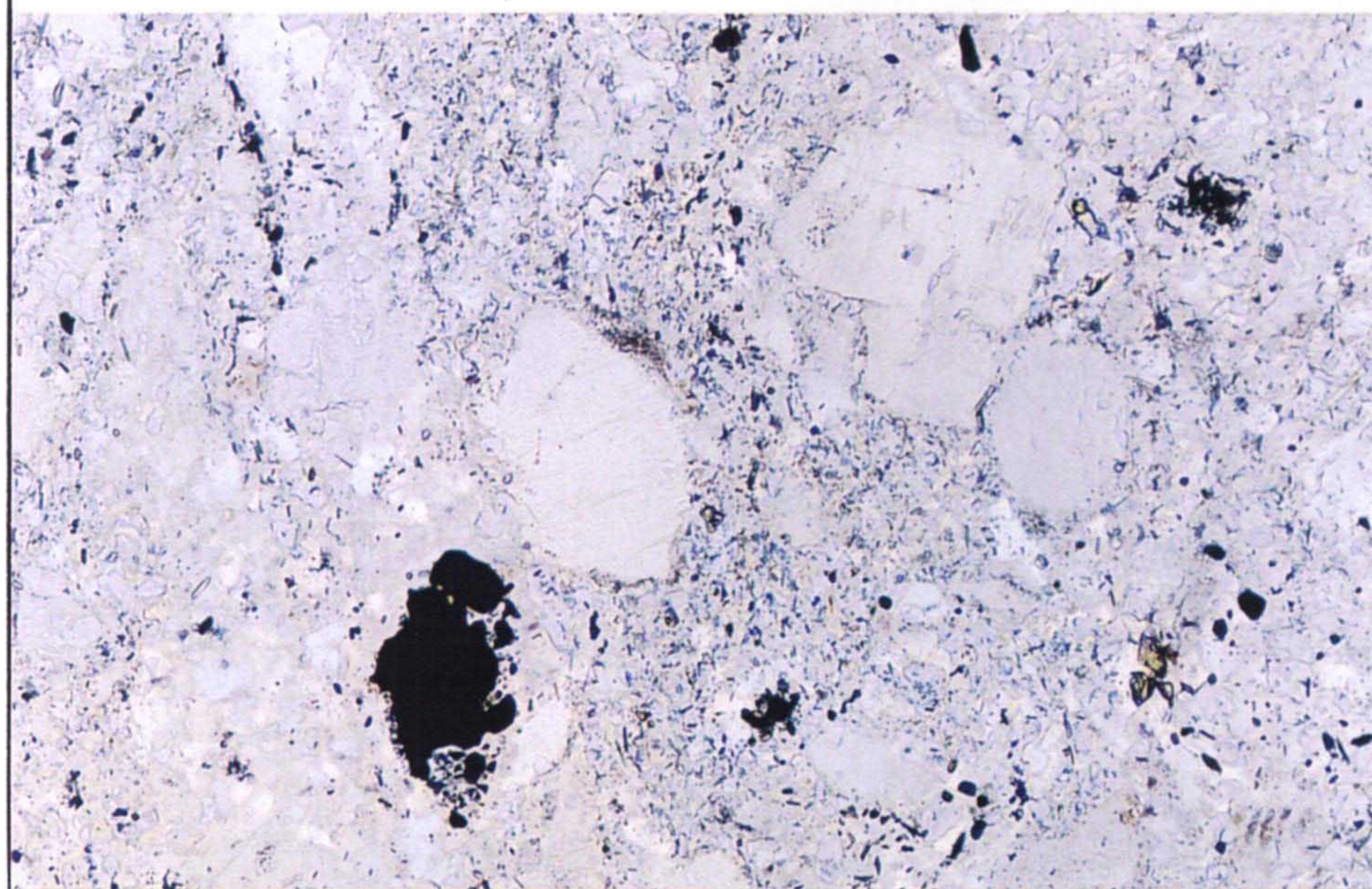
[Abundance]

◎: Abundant, ○: Common, △: Poor, ·: Rare

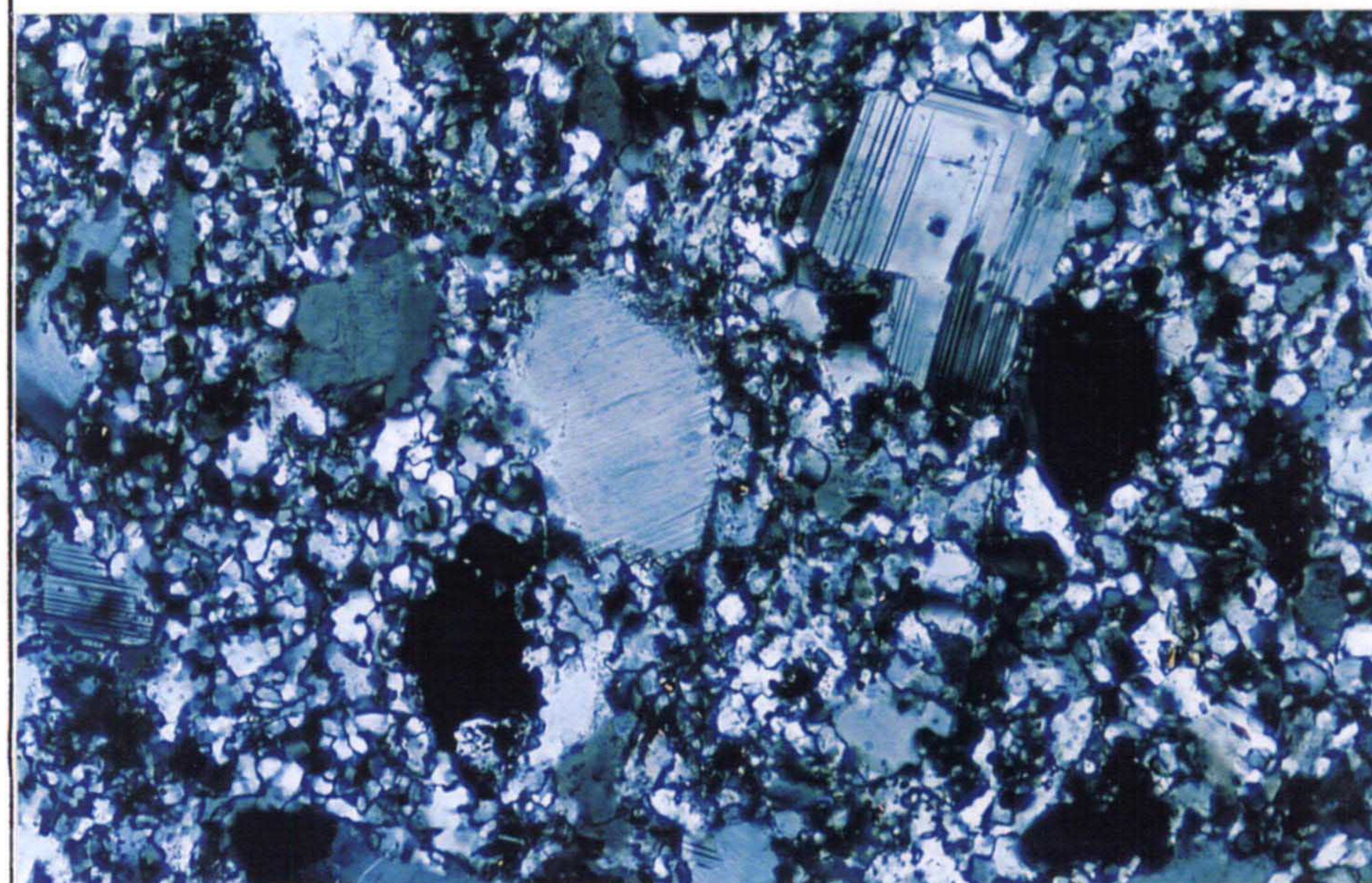
Appendix 2-3 Photomicrographs of the Thin Sections



Reflected light



Transmitted light



Transmitted light
Crossed polarized light

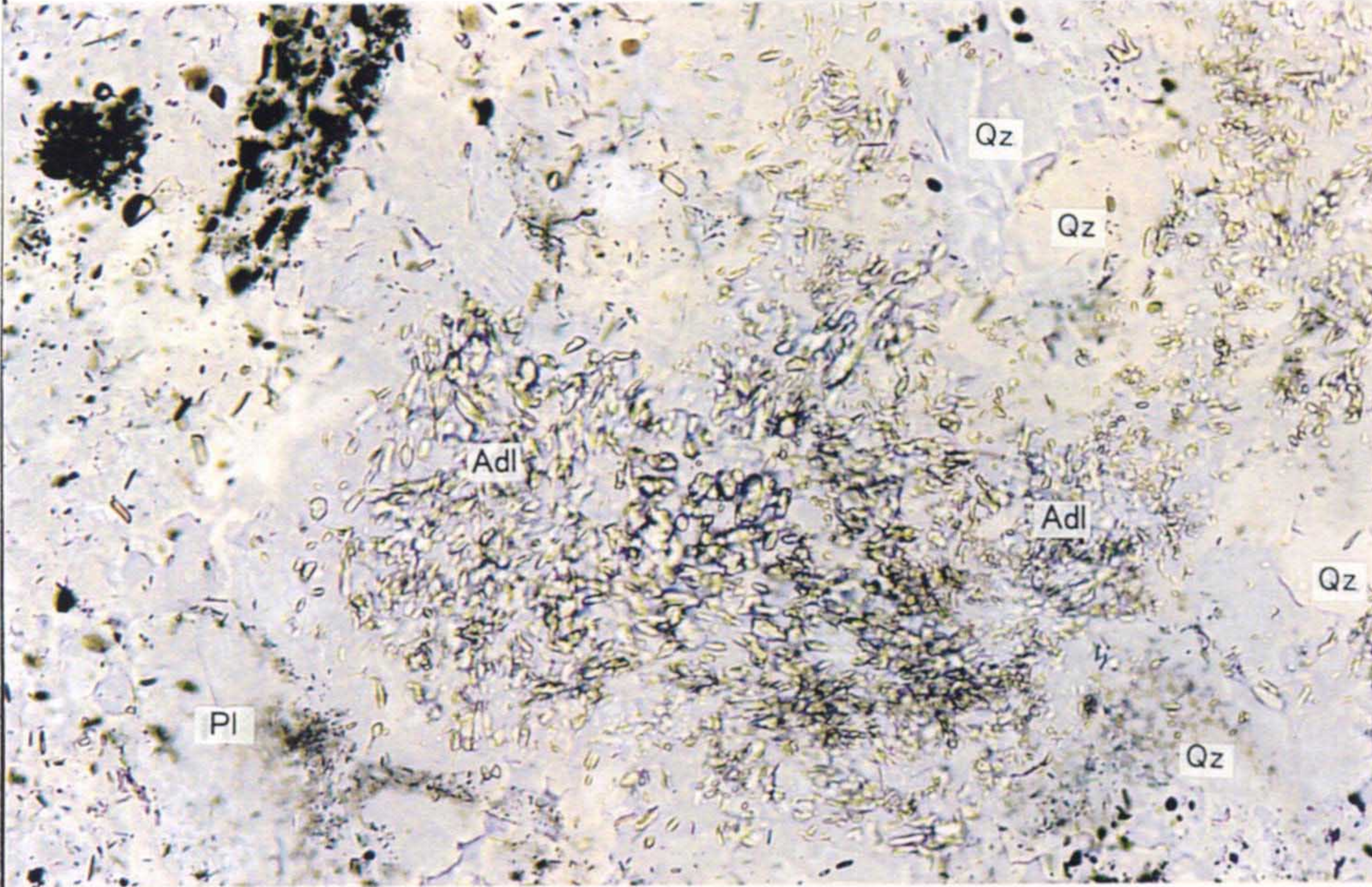
0 0.2mm

Film No. 3410-1-2-3

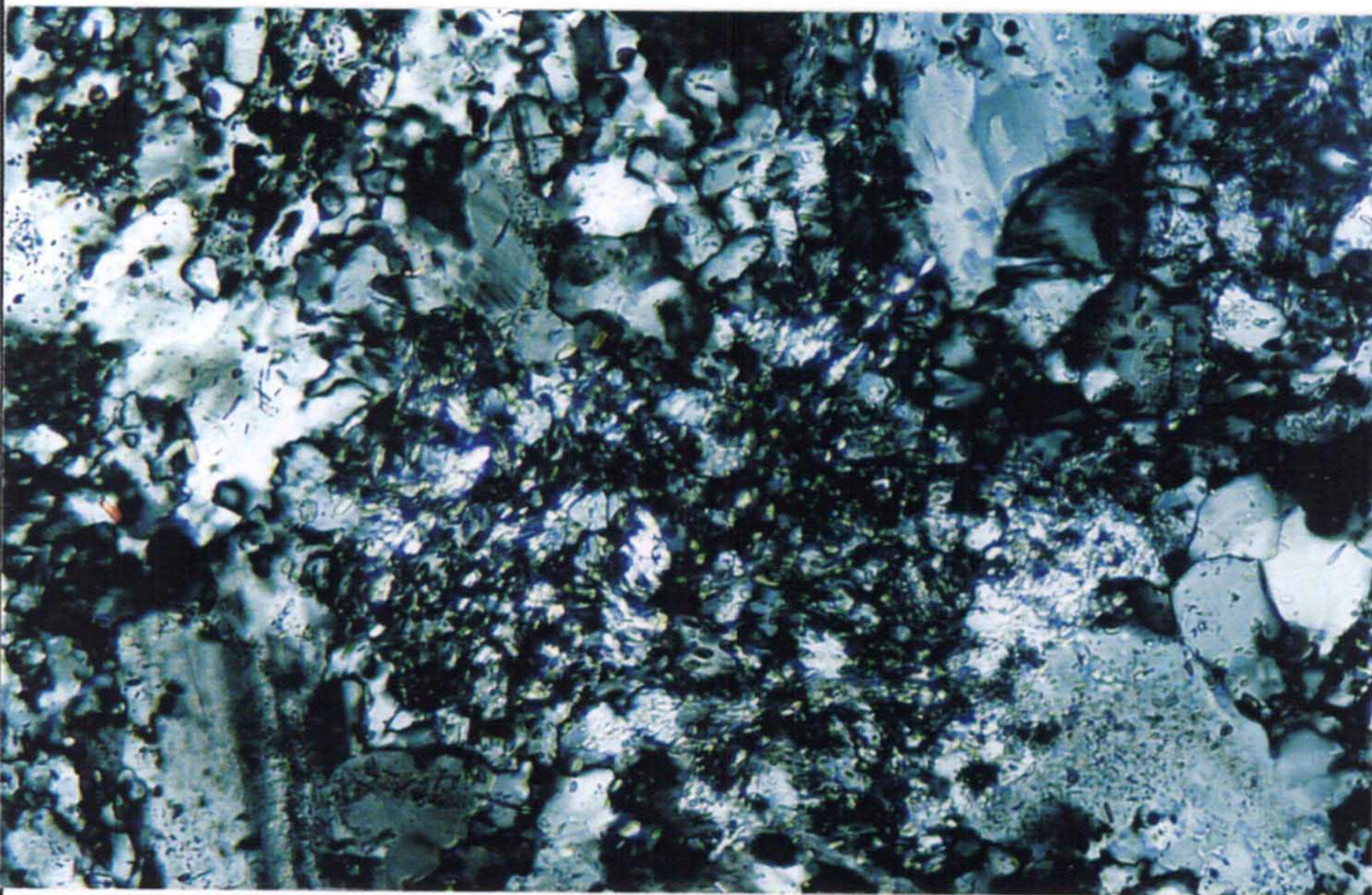
G365 Photomicrograph

Siliceous tuff hornfels

PL-2



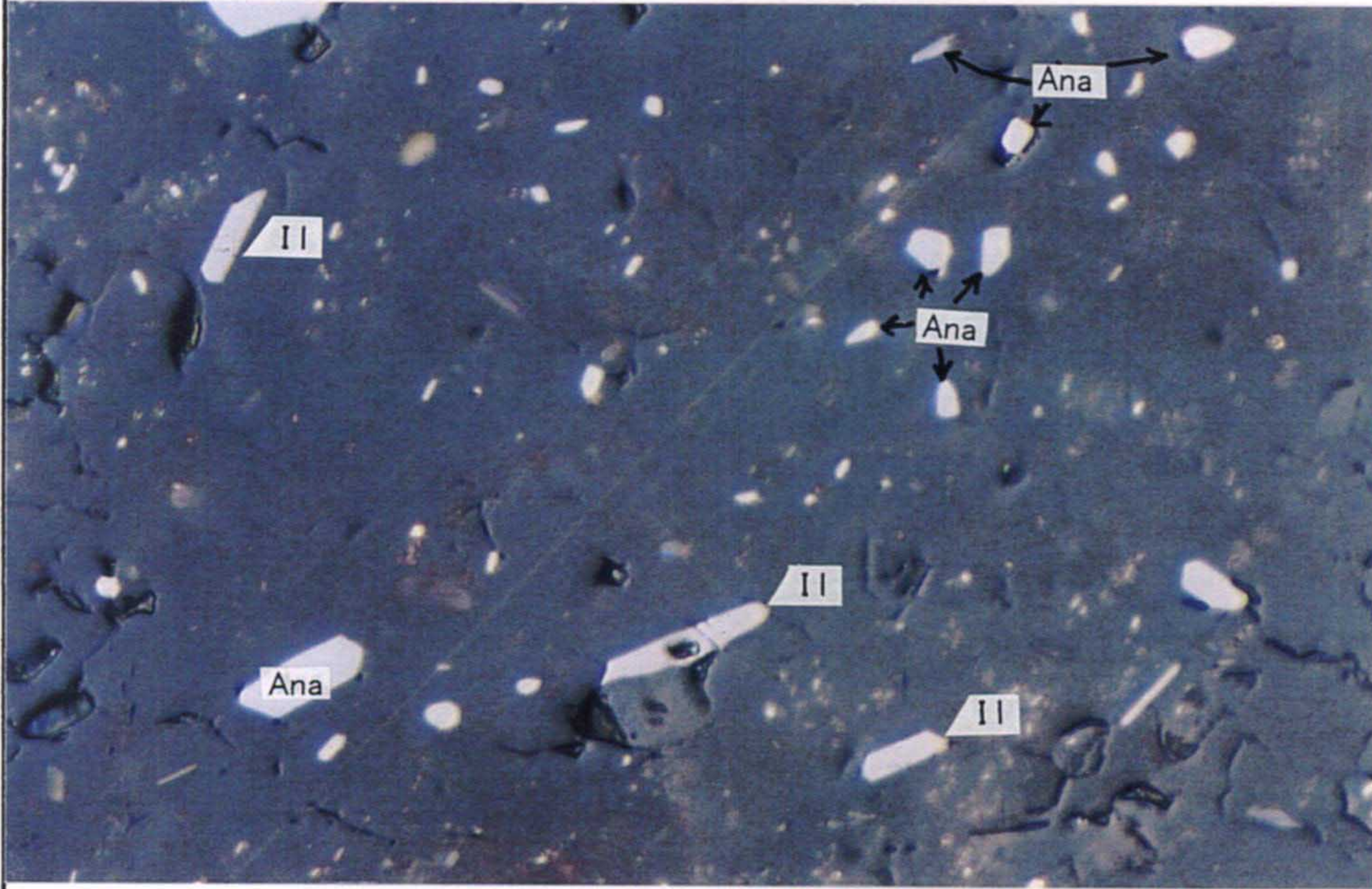
Transmitted light



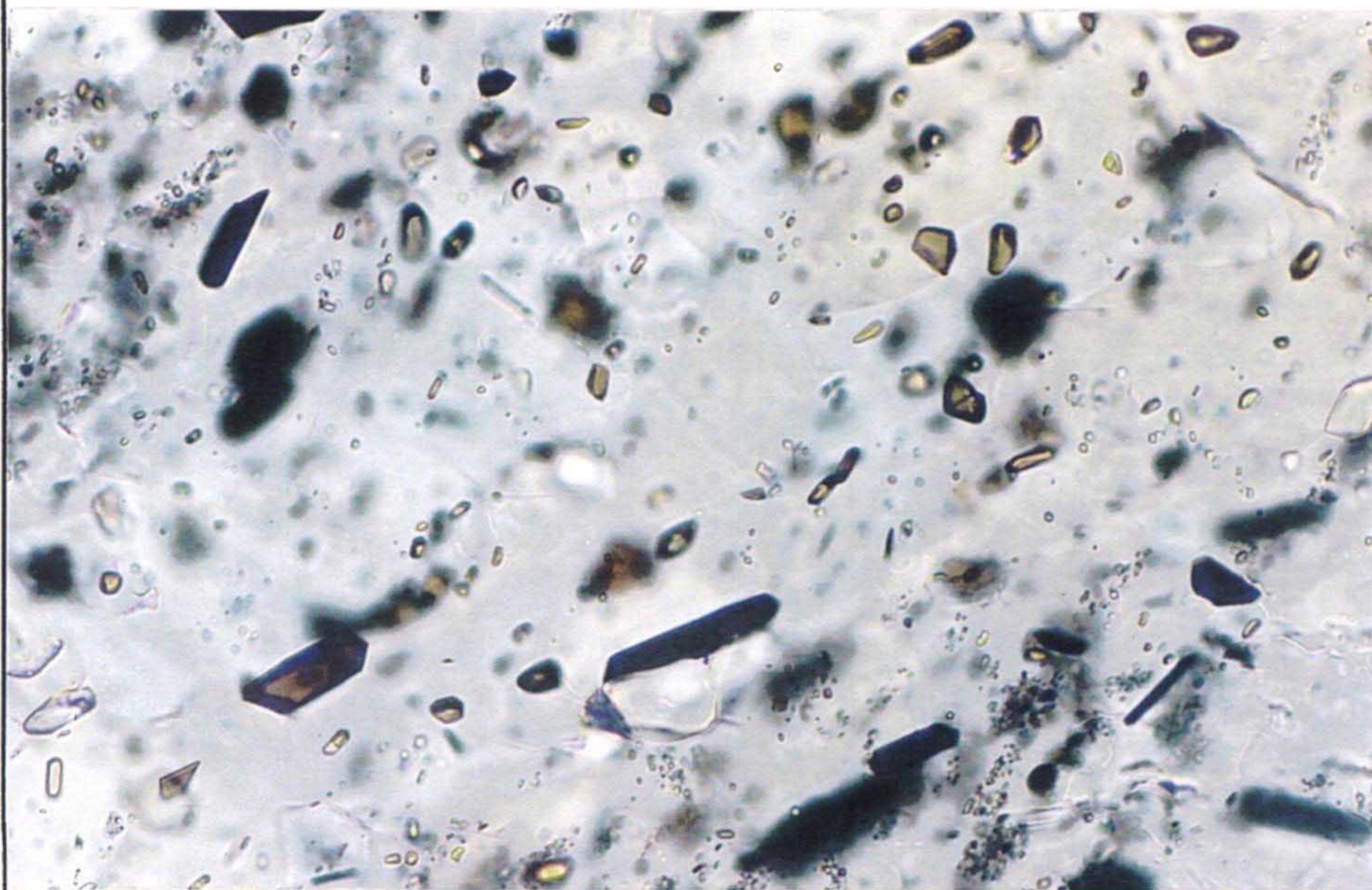
Transmitted light
Crossed polarized light

0 0.1mm

Film No. 3410-6.7



Reflected light



Transmitted light

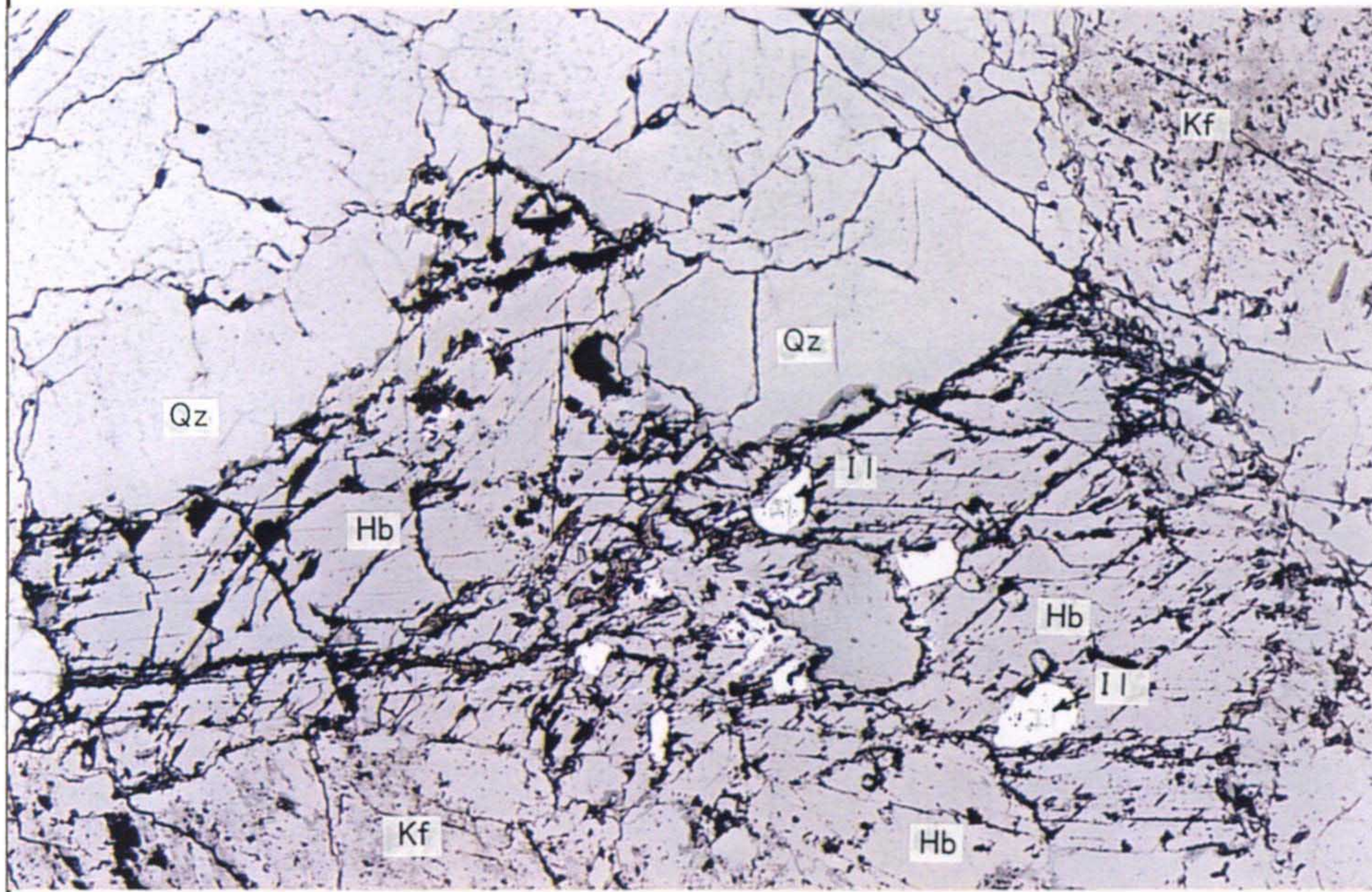
0 0.04mm

Film No. 3410- 4.5

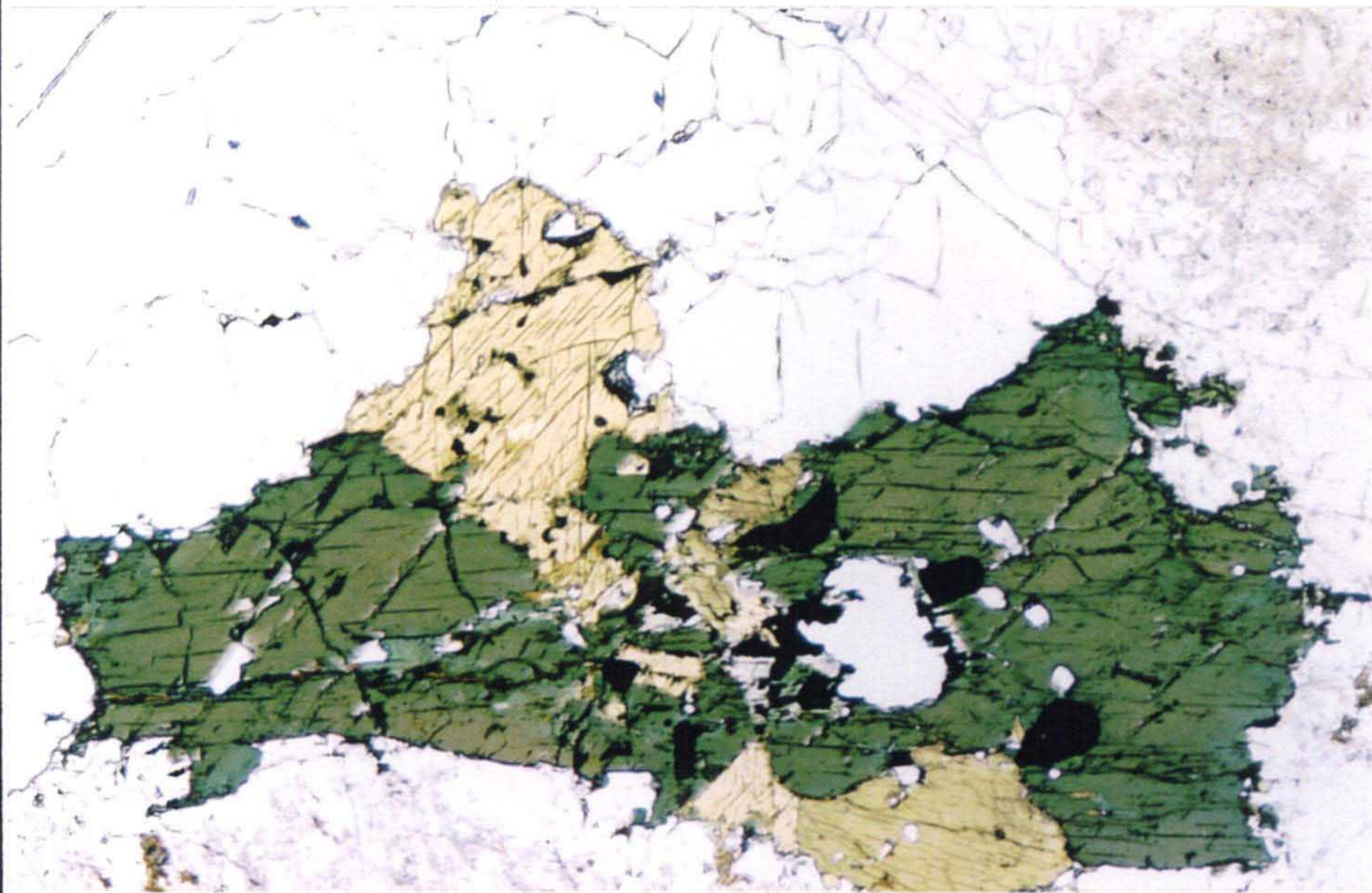
G370 Photomicrograph

Hornblende-augite granite

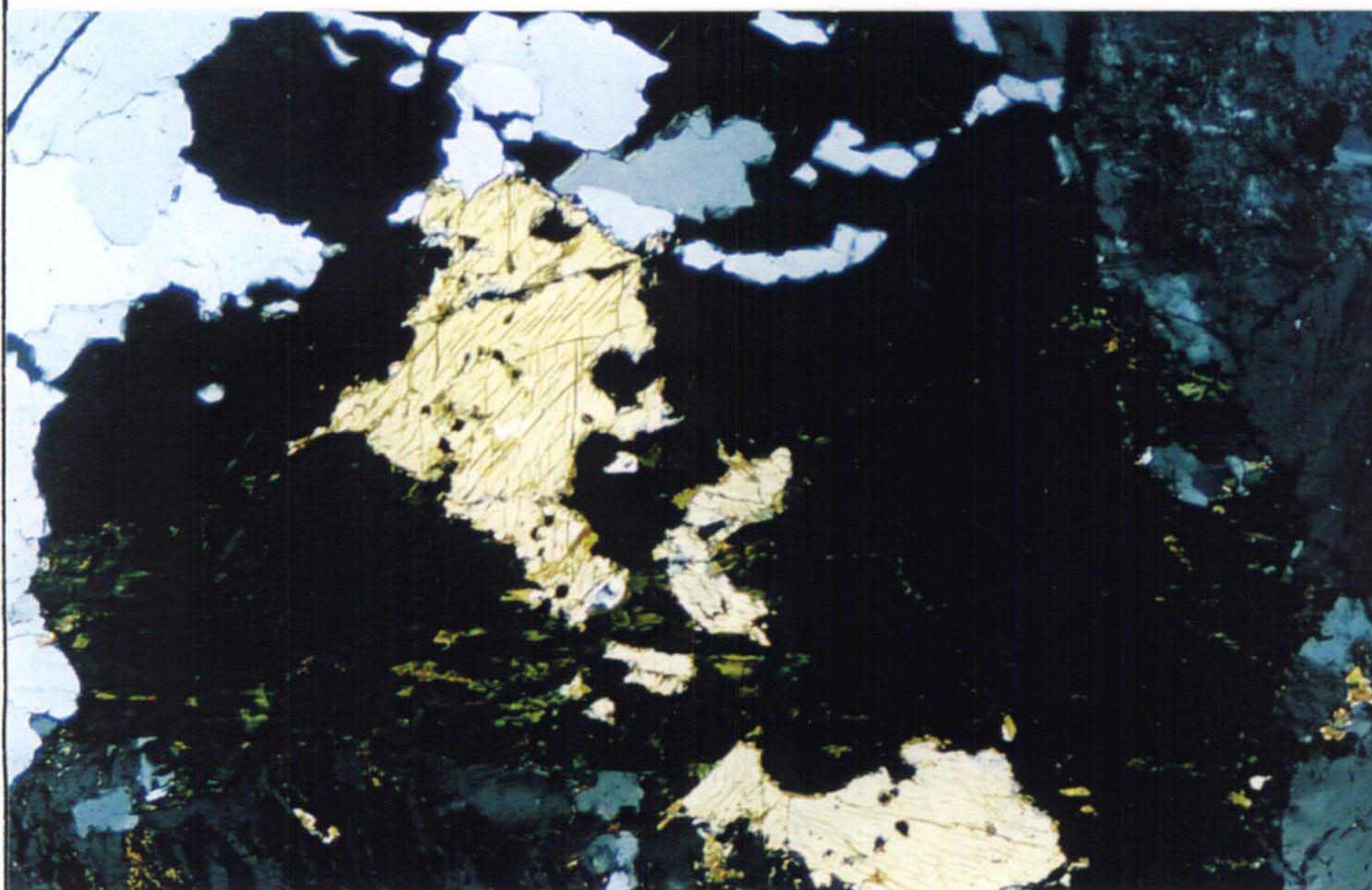
PL-4



Reflected light



Transmitted light



Transmitted light
Crossed polarized light

0 0.4mm

Film No. 3410 - 8-9-10