MINERAL SEPARATES

NOPAL 1

PHOTOGRAPHY

Photographer: Pgh

Microscope:

Type of photography:

Camera: Nikon

Date: 1/28/93

Film: Ektachrome 100

Photo No.	Sample No. and description	Obj.	FOV	Light
	NOPI-ECP-19.0/5.0 - Opal crust			
1.	Shows 2 layers of opal. One that is massive ~~an~~ clear, and botryoidal and one that is thin, ~~and~~ milky with iron oxide inclusions			
2.	Another view of #1			
3.	Stalactitic texture of 2nd generation opal			
4.	Several samples of opal with Uranophane inclusions (bright yellow)			
5.	Iron oxide substrate			
6.	2nd generation opal,			
7.	Bulk rock with crust. Shows botryoidal texture of substrate			
8.	Stalactitic texture			
9.	Lower magnification of #8			
10.	?			

PHOTOGRAPHY

Photographer: pgh

Microscope:

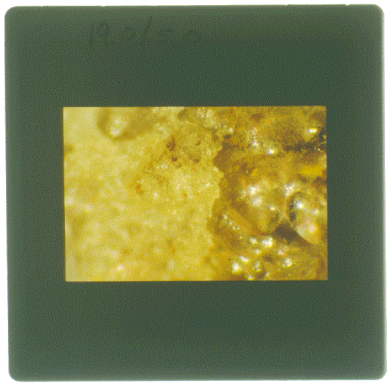
Type of photography:

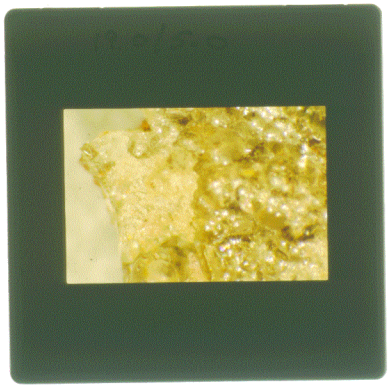
Camera: Nikon

Date: 1/28/93

Film: Ektachrome 100

Photo No.	Sample No. and description	Obj.	FOV	Light
	NOPI-ECP-37 · Sep 3			
11.	Shows substrate, uraniniferous opal and clear opal layering.			
12.	Nopl-ECP-19/5 Nikon microscope Uranophane inclusion	10x	1.3mm	XN
13.	Another grain with Uranophane inclusion	10x	1.3mm	XN
14.	Same as 13	10x	1.3mm	PL
15.	Close up of Stalactitic texture	10x	1.3mm	PL
16.	~~[illegible]~~ Uranophane inclusions in opal on bulk rock			
17.	Same as 16 - lower Mag			


19.0/5.0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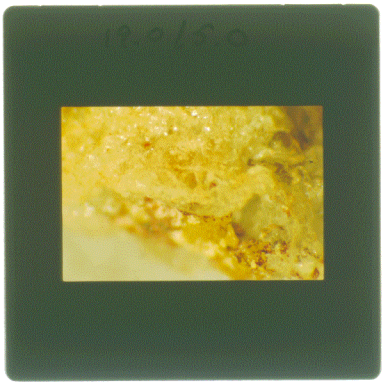
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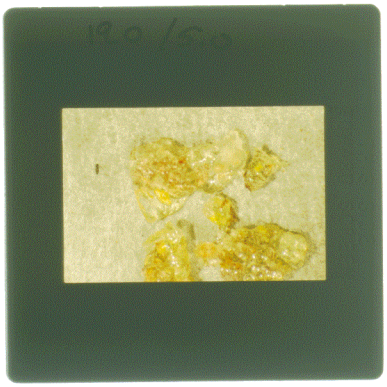
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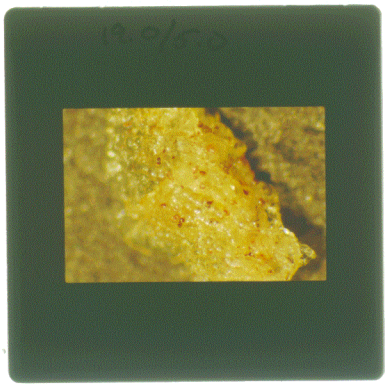
19.0/5.0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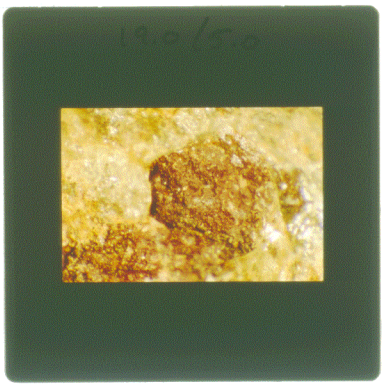
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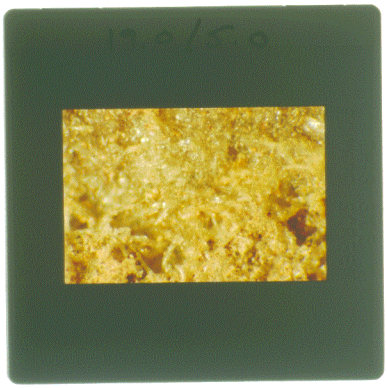
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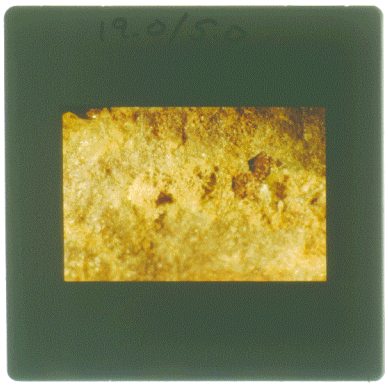
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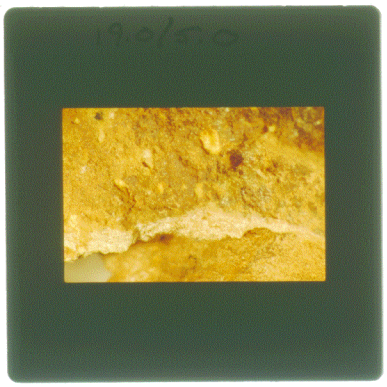
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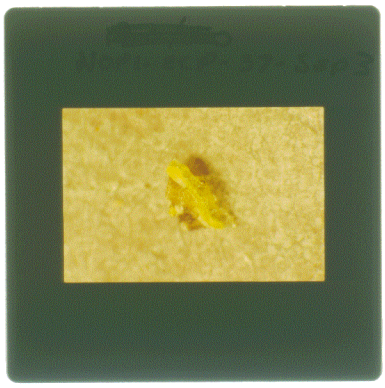

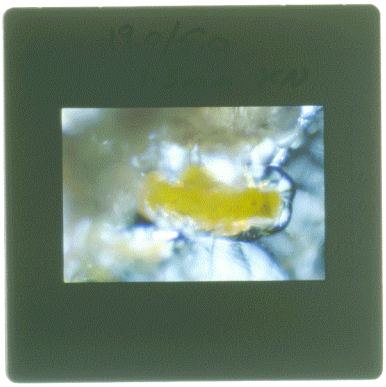
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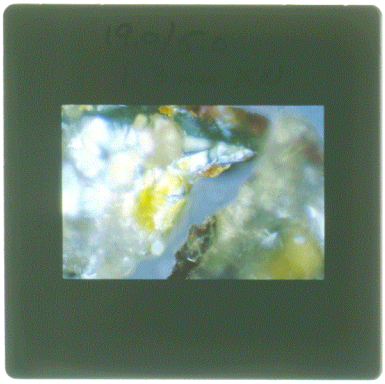
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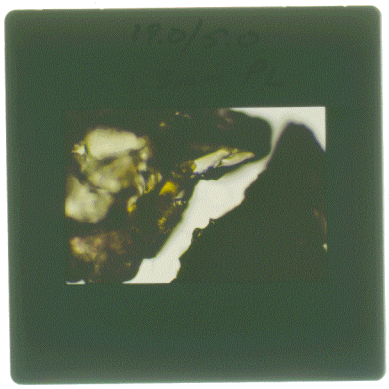
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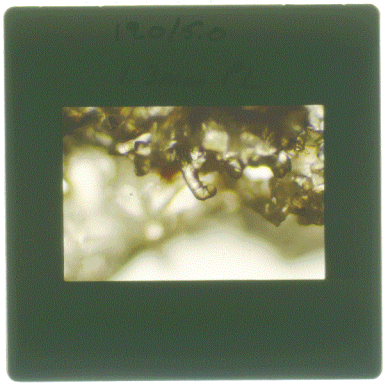
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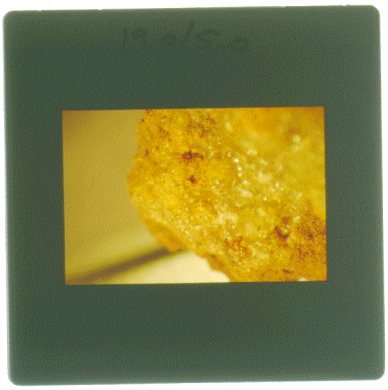
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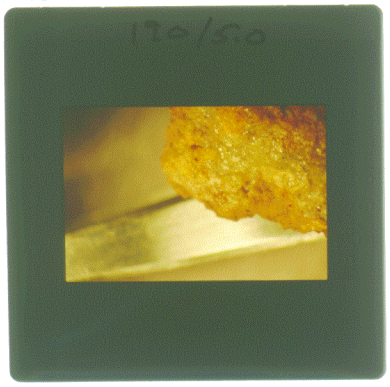
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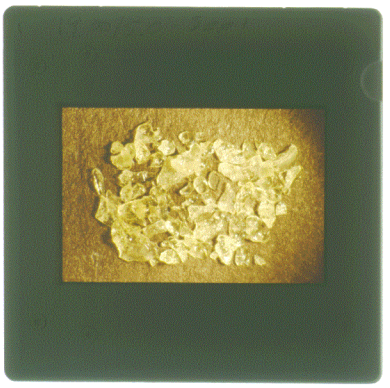
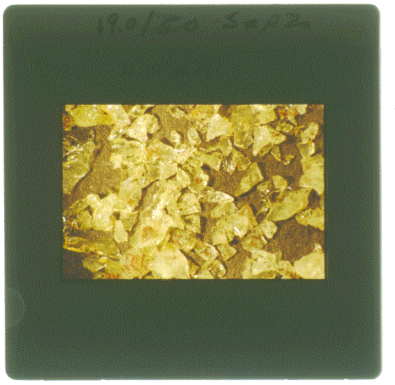
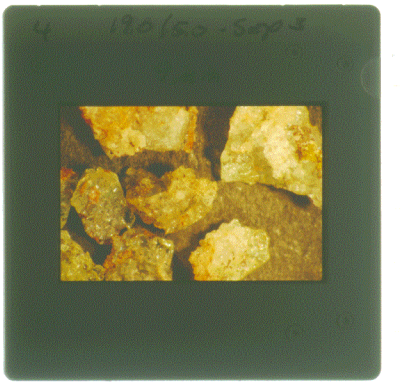
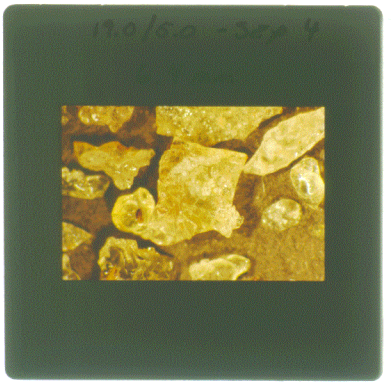



19.0/5.0 Sep2

3 19.0/5.0 -Sep3


4 19.0/5.0 -Sep4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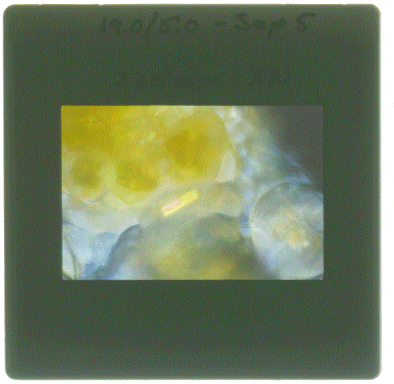
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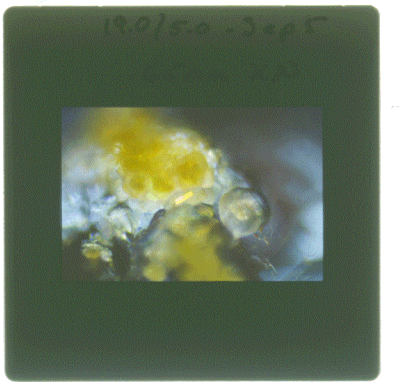
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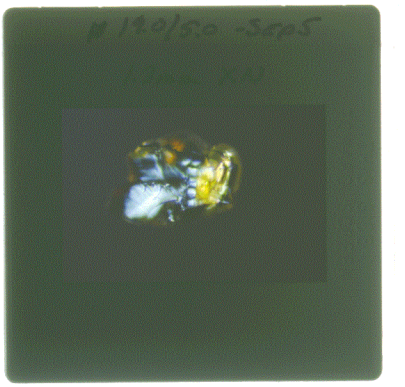
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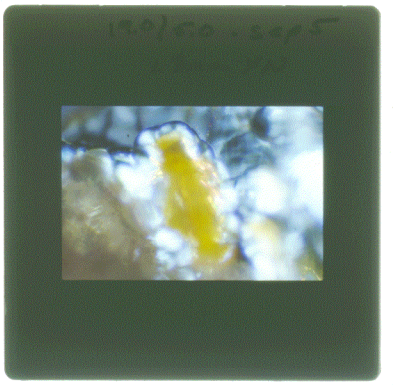
19.0/5.0 -Sep5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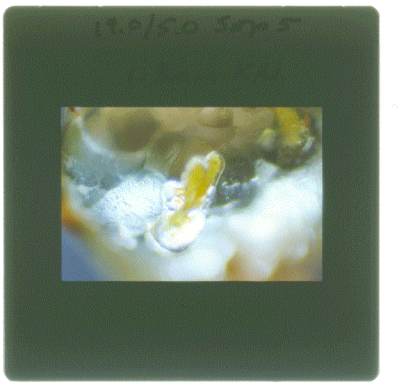
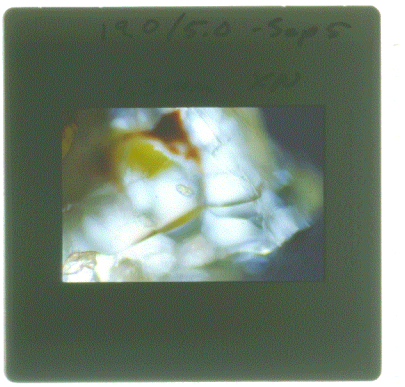

19.0/5.0 Sep5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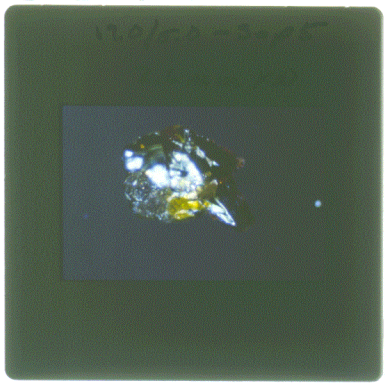
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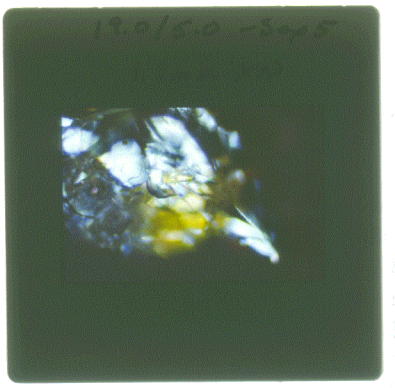
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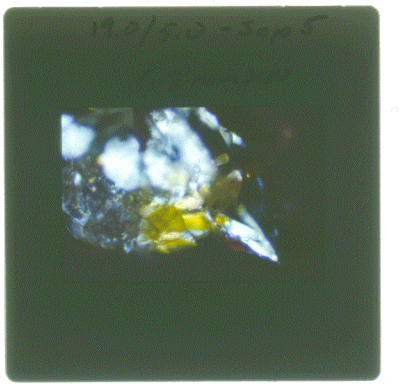
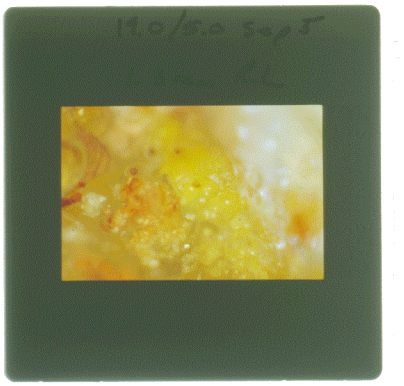
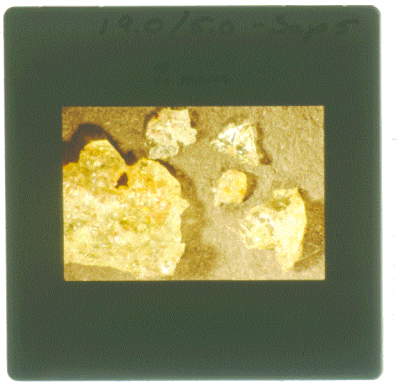
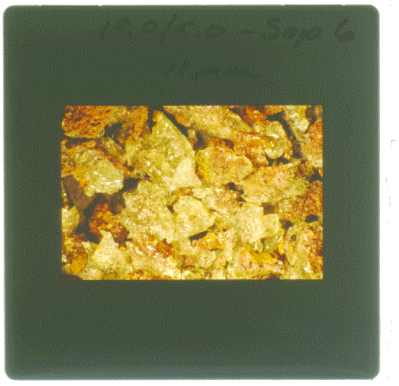

19.0/5.0 -Sep5


19.0/5.0 Sep5

19.0/5.0 Sep5


19.0/5.0 -Sep5


19.0/5.0 -Sep6

PHOTOGRAPHY

Photographer: PSL

Microscope: Nikon

Type of photography: Binocular

Camera: Nikon

Date: 2/18/93

Film: Ektachrome 100

Photo No.	Sample No. and description	Obj.	FOV	Light
1.)	19.00/5.0 - Sep 1 - Pure Opal	1.0X	11.0mm	
2)	19.0/5.0 - Sep 2 - Slightly Stained	1.0X	11.0mm	
3)	19.0/5.0 - Sep 3 - Fe inclusions	1.5X	≈ 9.mm	
4)	Repeat of 3 - brighter light	1.5	≈ 9.mm	
5)	Sep 4 - White inclusions	2.0X = 6.4mm		
6)	Sep 5 - Uranophane inclusions - Petrographic scope	40X	.325mm	NX
7)	Same as 6	20X	.65mm	XN
8)	Sep 5 - another Uranophane inclusion clearly shows uranophane inside the opal	10X	1.3mm	XN
9)	Sep 5 - uranophane inclusion	10X	1.3mm	XN
10)	Same as 9 but focus on uranophane inside opal	10X	1.3mm	XN
11)	Sep 5 - "	10X	1.3mm	XN
12)	Same grain as 11 - different area	10X	1.3mm	XN

PHOTOGRAPHY

Photographer: pgf

Microscope: Nikon

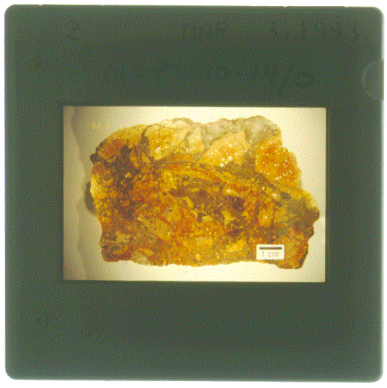
Type of photography: Binocular

Camera: Nikon

Date: 2/18/93

Film: Ectachrome

Photo No.	Sample No. and description	Obj.	FOV	Light
13	Sep 5 -	5X	2.6mm	XN
14	same as 13 - different focus	10X	1.3mm	XN
15	same as 13 - different focus	10X	1.3mm	XN
16	Sep 5 - Shows uranophane inside opal	10X	1.3mm	RL
17.	Sep 5 - binocular	?		
18	Sep 5 - another grouping of Uranophane inclusions	1.5X	≈ 9.mm	
19.	Sep 6 - lots of substrat	1X	11.0mm	
~~20~~	~~23.3/9.8 - TS1 Uranophane filling fracture cutting an elongate phenocryst~~	~~20X~~	~~0.65mm~~	~~XN~~
~~21~~	~~23.3/9.8 - TS2 Uranophane filling fracture in qtz/fld matrix. Replaced flds.~~	~~10X~~	~~1.3mm~~	~~XN~~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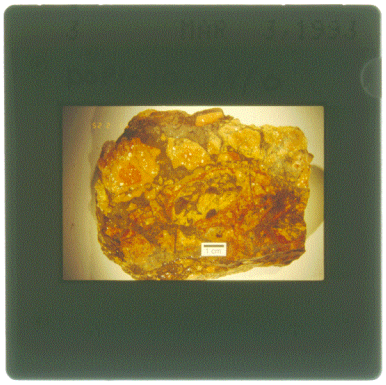
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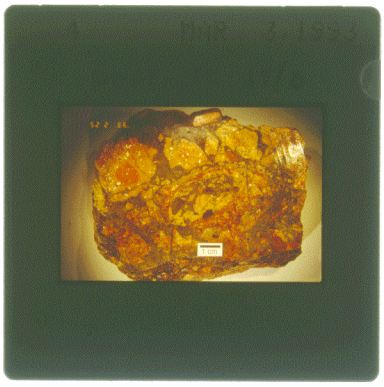
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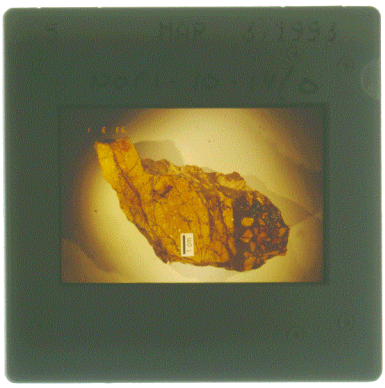
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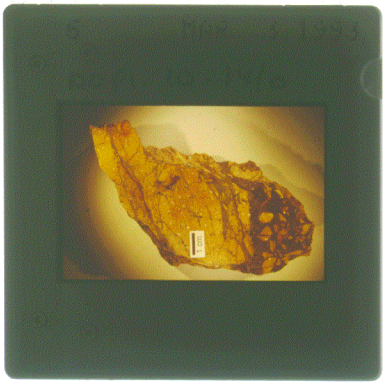
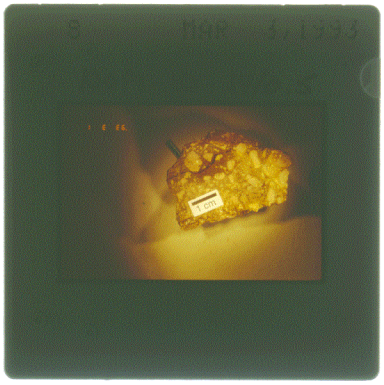

1 cm

1 cm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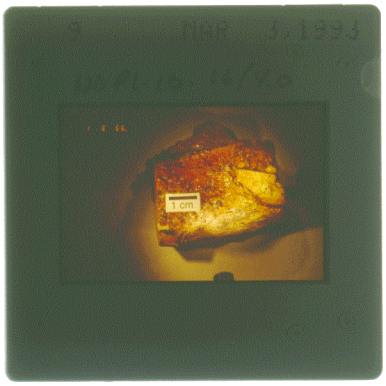
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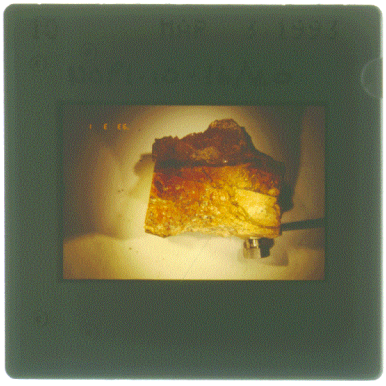

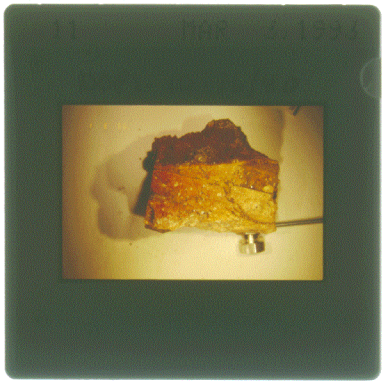

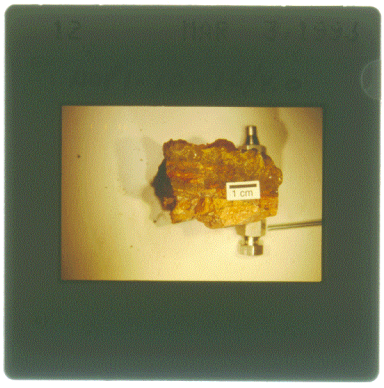
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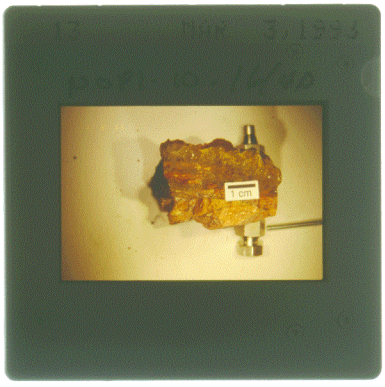
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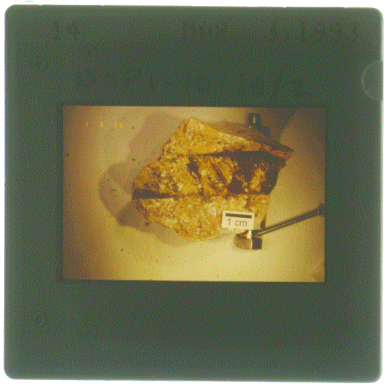
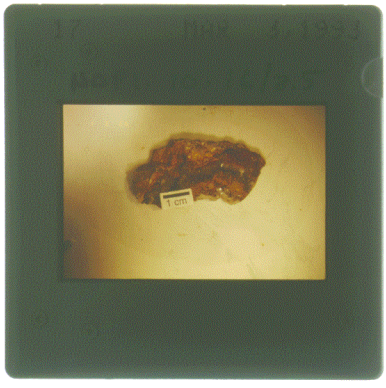

1 cm

1 cm

1 cm

1 cm


1 cm

1 cm

PHOTOGRAPHY

Photographer: gp/psh

Microscope: ~~PH~~

Type of photography: Rock (hand specimen)

Camera: Nikon

Date: 2/25/93

Film: 100 Ektachrome

Photo No.	Sample No. and description	Obj.	FOV	Light
	NOP1-10-14/0			
1	Calcite cemented breccia			no good
2	Calcite cemented breccia			
3	Calcite cemented "			
4	" " "			
5	Calcite filled fractures in Tuff. Some calcite cemented breccia.			
6	"			
	NOP1-10-14/0.5			
7	calcite cemented breccia			
8	calcite cemented breccia w/ fracture			
	NOP1-10-16/4.0			
9	Calcite fracture			no good
10	"			no good
11	"			finally
12	shows extent of calcite billing			no good
13	"			
	NOP1-10-19/2			
14	Calcite filled fracture			

PHOTOGRAPHY

Photographer:

Type of photography:

Date:

Microscope:

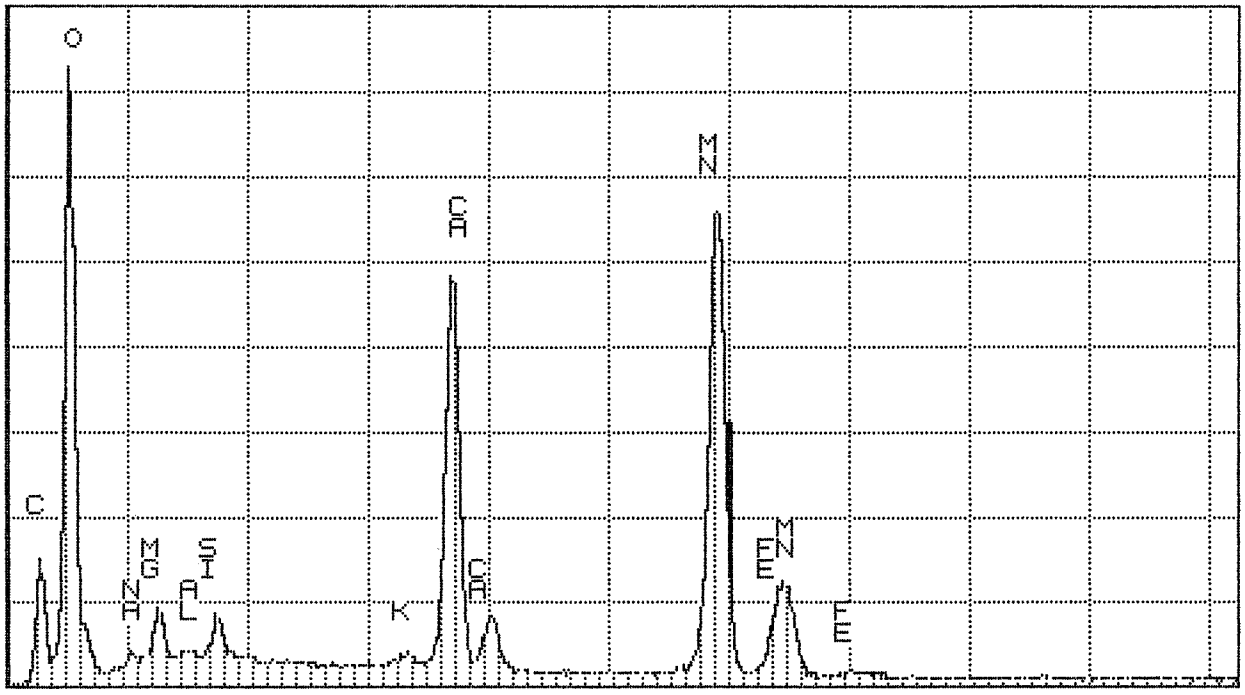
Camera:

Film:

Photo No.	Sample No. and description	Obj.	FOV	Light
	NOP1.20.26/1			
15.	Calcite filled fracture cementing breccia			
16	"			
	NOP1.10.16/3,5			
17	calcite / limonite fracture			
18.	"			
	NOP1.10.15/2			
19.	Same as 14			

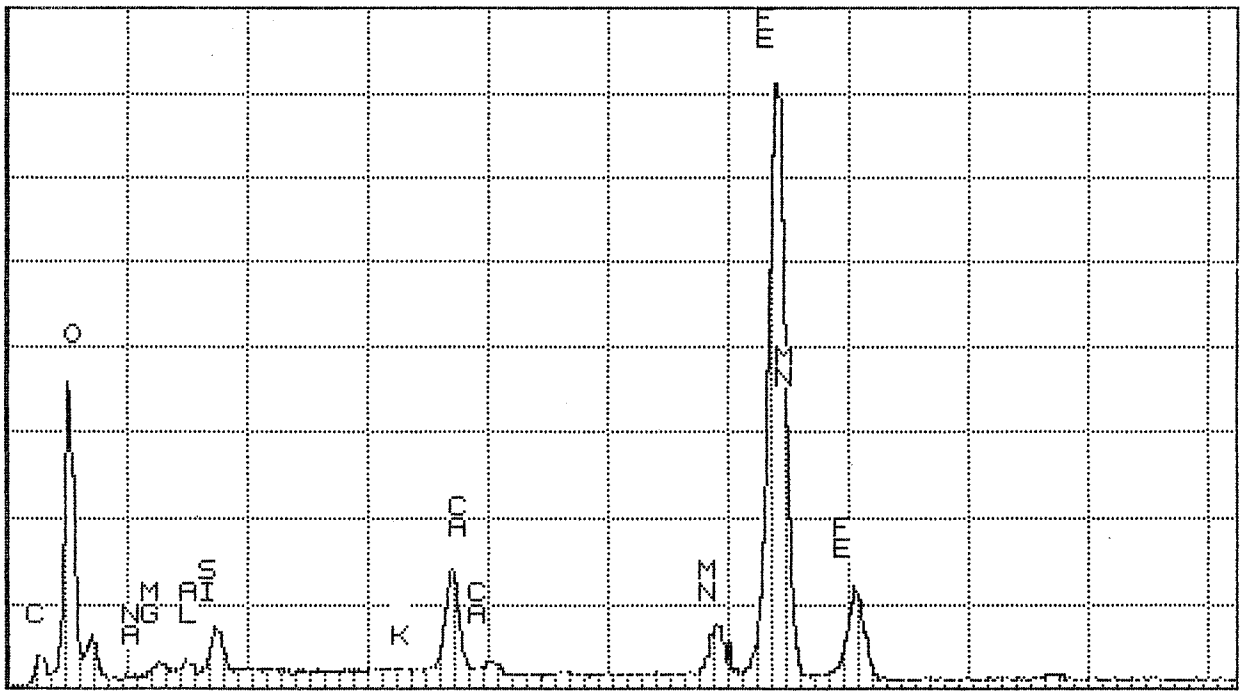
1.30
*E F

NORAN TN-5505 MON 21-JUN-93 09:53
Cursor: 0.000keV = 0



0.000 VFS = 2048 10.240
132 NOPI-ECP-10-16

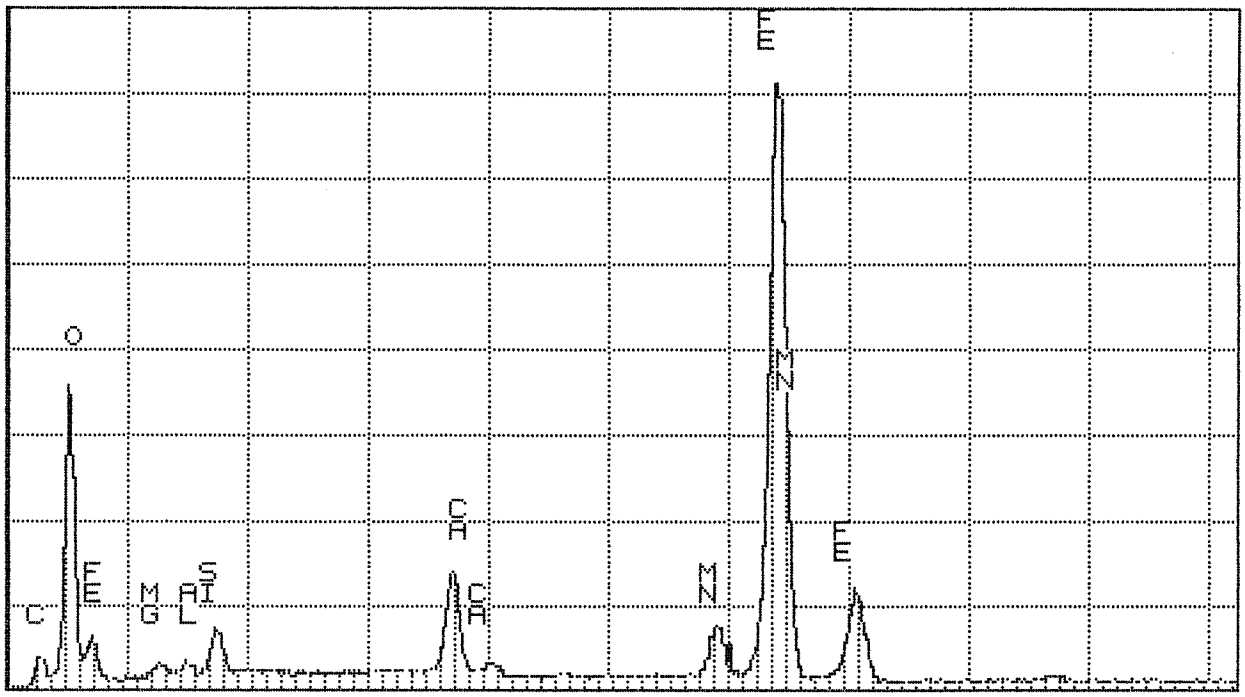
NORAN TN-5505 MON 21-JUN-93 10:18
Cursor: 0.000keV = 0



0.000 VFS = 2048 10.240
140 NOPI-ECP-10-16

NORAN TN-5505 MON 21-JUN-93 10:21

Cursor: 0.000keV = 0

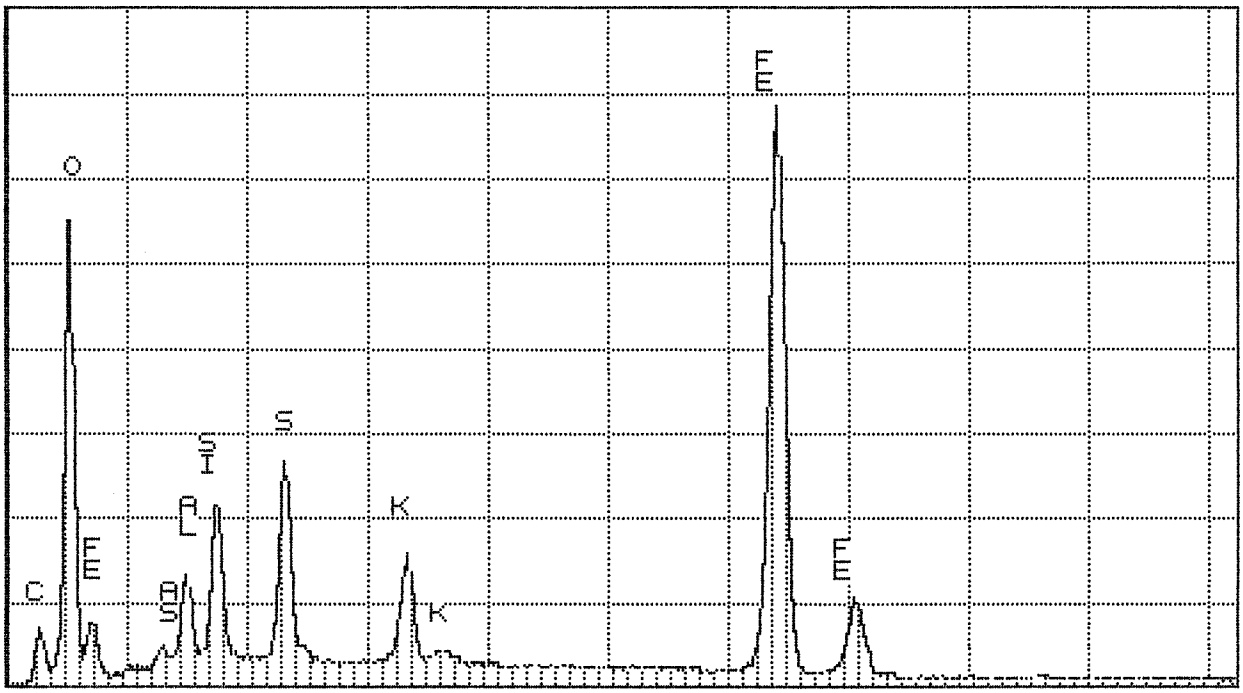


0.000 VFS = 2048 10.240

140 NOPI-ECP-10-16

NORAN TN-5505 MON 21-JUN-93 11:11

Cursor: 0.000keV = 0



0.000 VFS = 2048 10.240

354 NOPI-ECP-12.22/13.55

*'SQ@'SQC-3B/80

SQ: SETUP DEFINITIONS

SQ: QUANTIFY

NOPI-ECP-12.22/13.55
Standardless Analysis
20.0 kV 40.0 Degrees

Chi-sqd = 6.75

Element	Rel. K-ratio	Net Counts
As-L	0.00919 +/- 0.00373	473 +/- 192
Al-K	0.02575 +/- 0.00243	2919 +/- 276
Si-K	0.04350 +/- 0.00194	5264 +/- 235
S -K	0.08727 +/- 0.00213	8833 +/- 216
K -K	0.05295 +/- 0.00221	4474 +/- 187
Fe-K	0.78135 +/- 0.00837	30045 +/- 322

ZAF Correction 20.00 kV 40.00 deg
No.of Iterations = 4

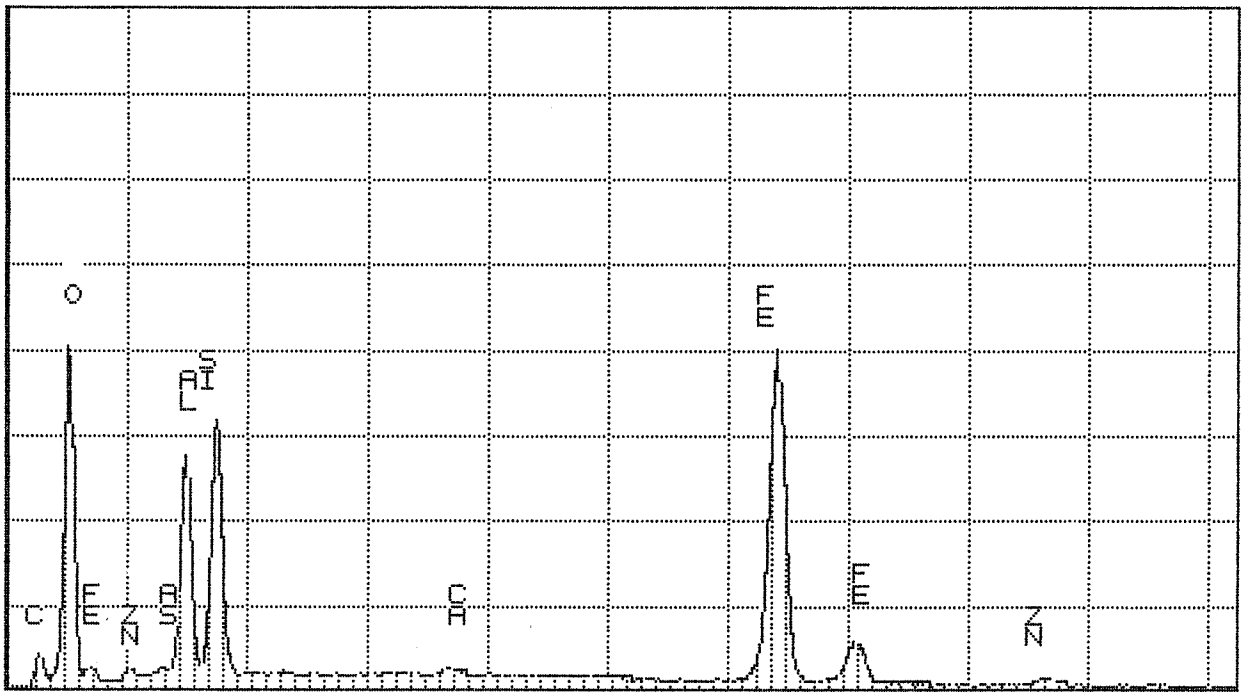
Element	K-ratio	Z	A	F	ZAF	Atom%	Wt%
As-L	0.008	1.086	2.172	0.998	2.354	1.17	1.90
Al-K	0.023	0.955	2.229	0.997	2.122	8.23	4.81
Si-K	0.038	0.927	1.855	0.996	1.713	10.79	6.56
S -K	0.077	0.933	1.419	0.995	1.318	14.58	10.12
K -K	0.047	0.967	1.172	0.984	1.115	6.14	5.19
Fe-K	0.687	1.027	1.012	0.999	1.039	59.09	71.42
						Total=	100.00%

SUBTRACT

1.30
*E F

NORAN TN-5505 MON 21-JUN-93 12:56

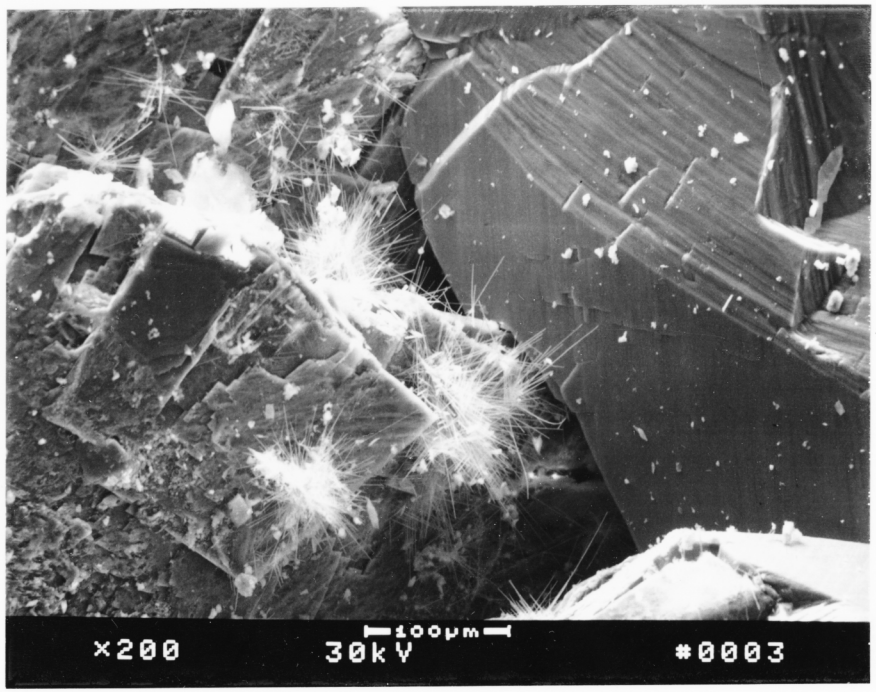
Cursor: 0.000keV = 0

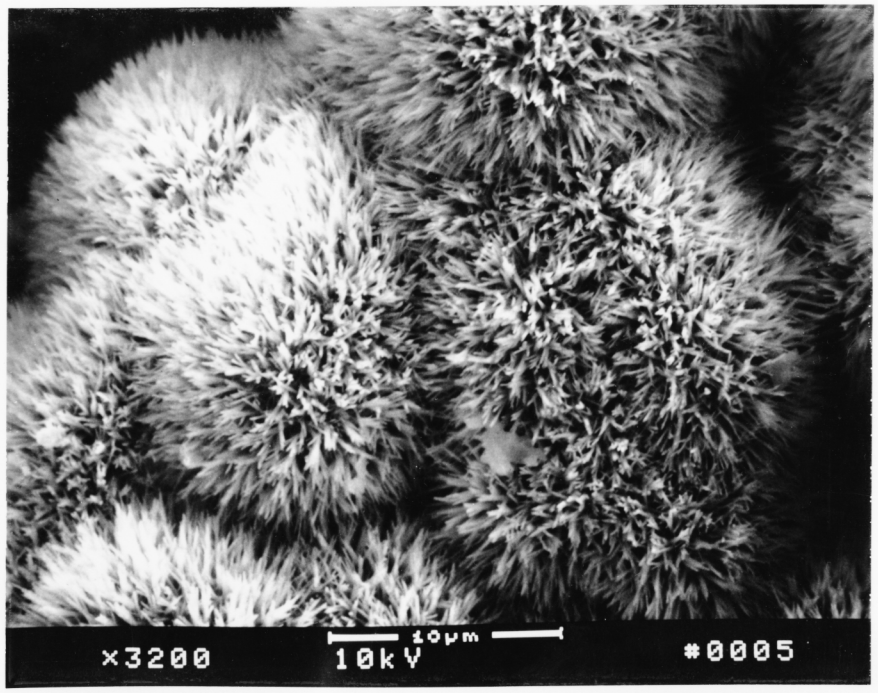


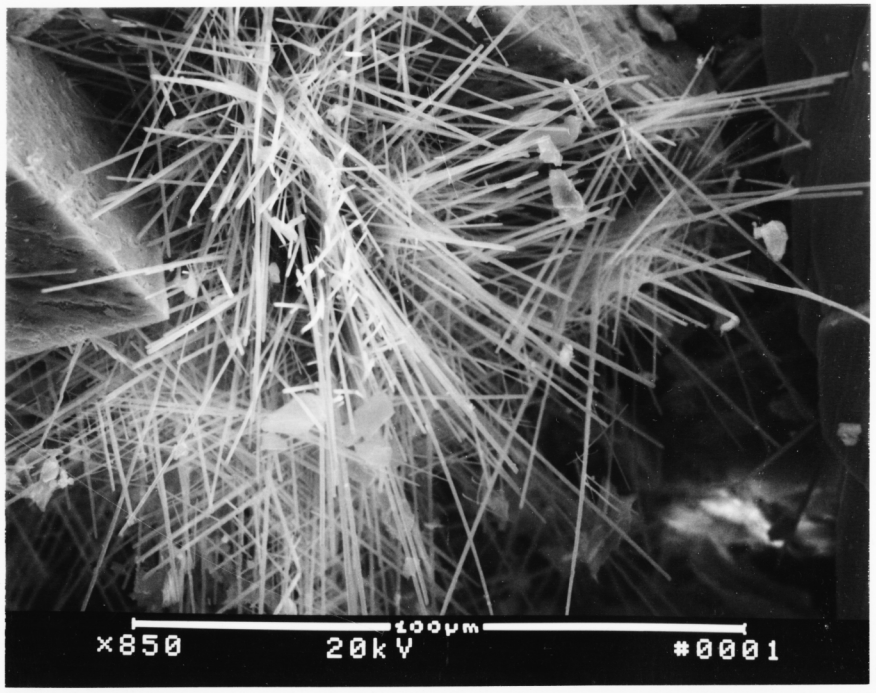
0.000 VFS = 8192 10.240

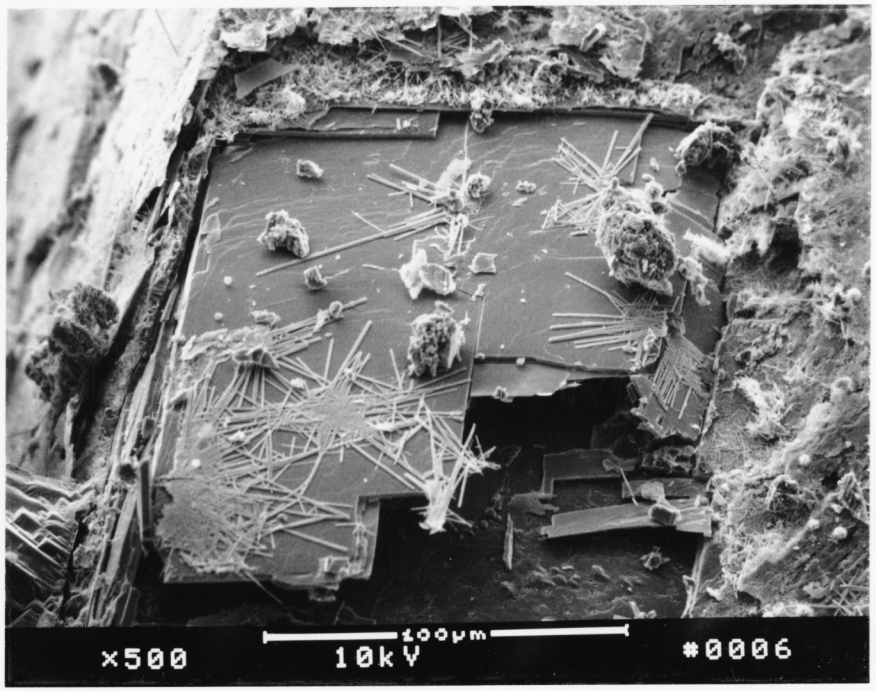
136 NOPI-ECP-3.78/13.70 20KEV

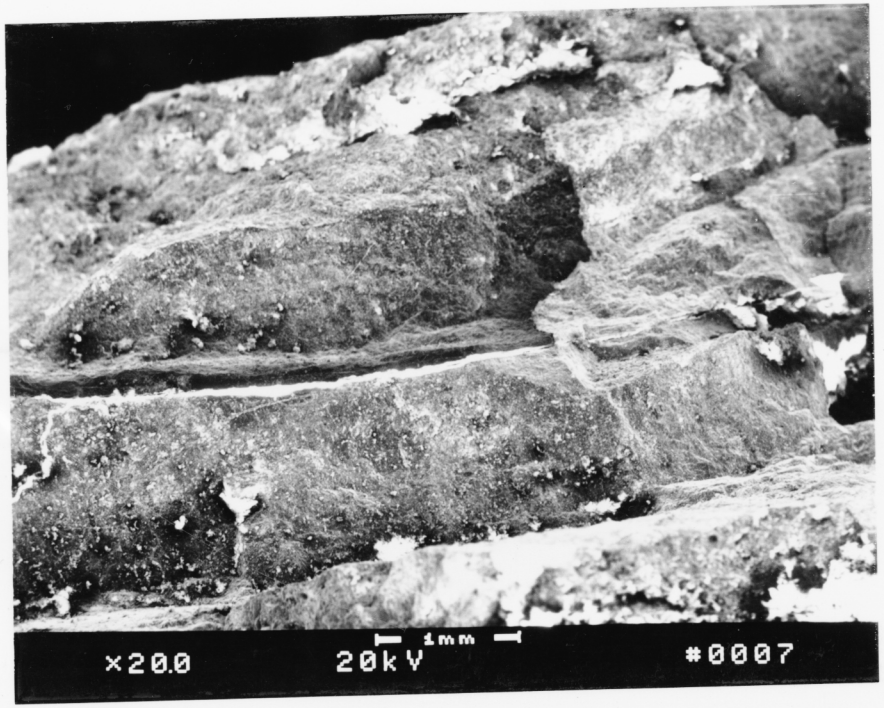
100μm
×250
10kV
#0004


100μm
×200
30kV
#0003


10μm
×3200
10kV
#0005


100μm
×850
20kV
#0001


100μm
×500
10kV
#0006


1mm
×20.0
20kV
#0007

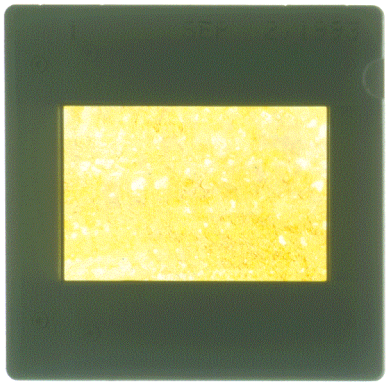
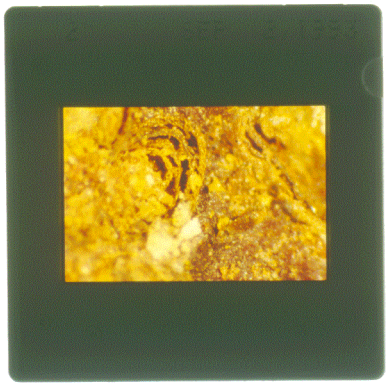
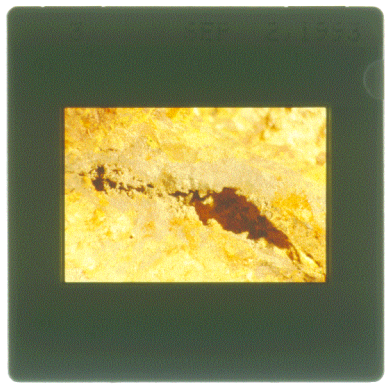
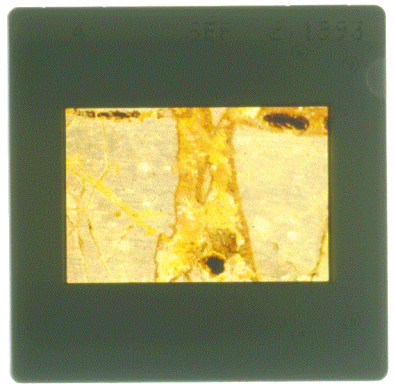
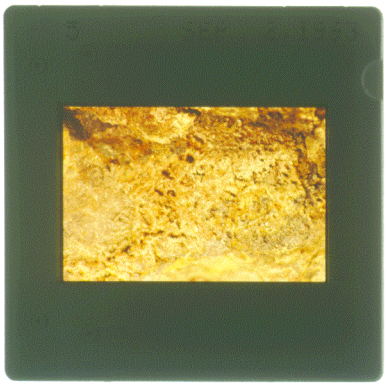
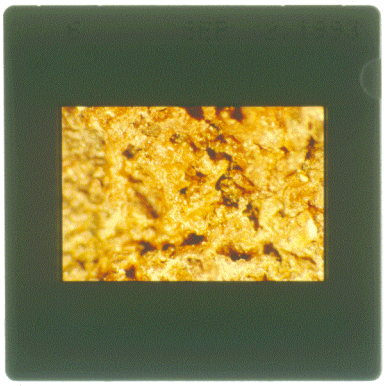
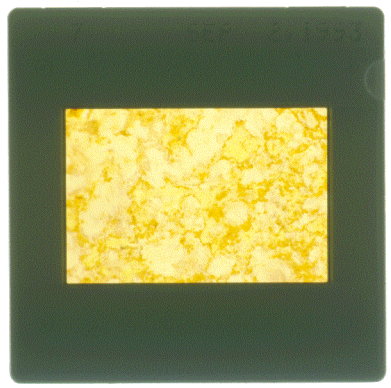
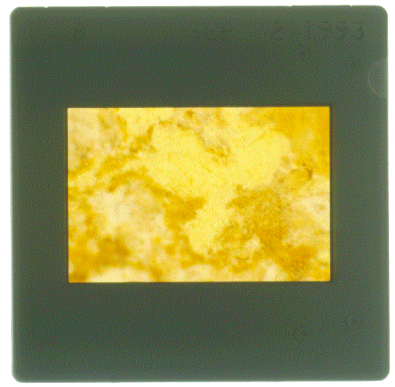
PHOTOGRAPHY

Photographer: Microscope:

Type of photography: Camera:

Date: Film:

Photo No.	Sample No. and description	Obj.	FOV	Light
1	(793) 28.75/2.7 Iron oxide alteration.	1.0	11.0mm	
2.	Same as above			
3.	close up of above	6.3	2.0mm	
3.	(793) 32.15/2.8 - Fracture	1.0	11.0mm	
4.	(793) 31.8/2.8/0 Fracture on cut surface	1.0	11.0mm	
5.	(793) 31.8/2.8/0 Iron oxide coating	1.0	11.0mm	
6.	close up	3.0x	4.2mm	
7.	(793) 27.0/2.6	1.0	11.0mm	
8.	close up			

PHOTOGRAPHY

Photographer: pgh

Microscope: —

Type of photography: 2mm slices

Camera: Minolta

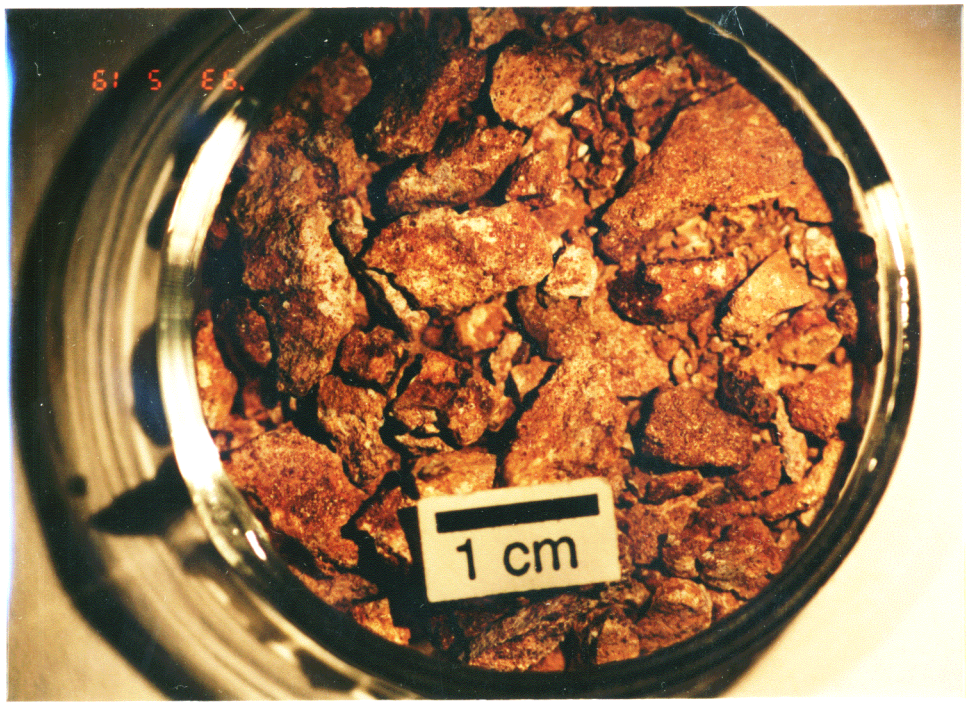
Date: 5/19/93

Film: Ektar 100

Photo No.	Sample No. and description	Obj.	FOV	Light
1	4.5/13.77 A cut 5 side 1			
2	" " 5 " 2			
3	" " 6 " 1			
4	" " 6 " 2			
5	~~[illegible]~~ ~~[illegible]~~ - 11.2/14.7/1.5			
6.	12.2/14.5/2.0			
7.	7.4/36.0/2.0			
8.	3.2/14.0/1.7			
9	"			
10.	(393) 11.6/30.0/1.7			
11.	(393) 5.2/35.7/1.0			
12	"			
13	393 - 7.5/33.8			
14	"			

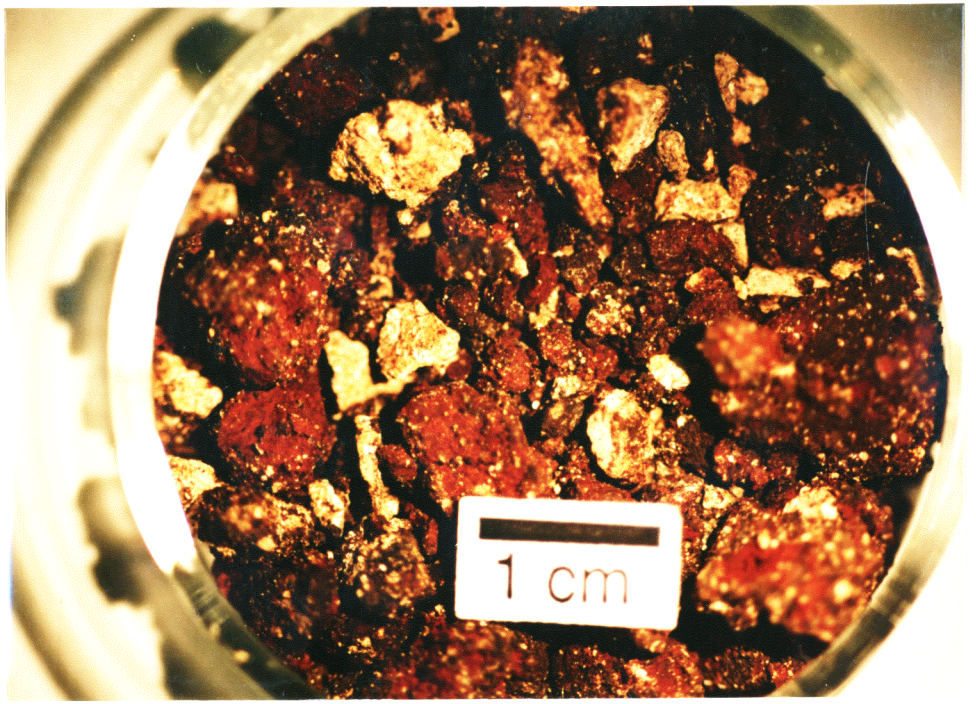
3503

1 cm

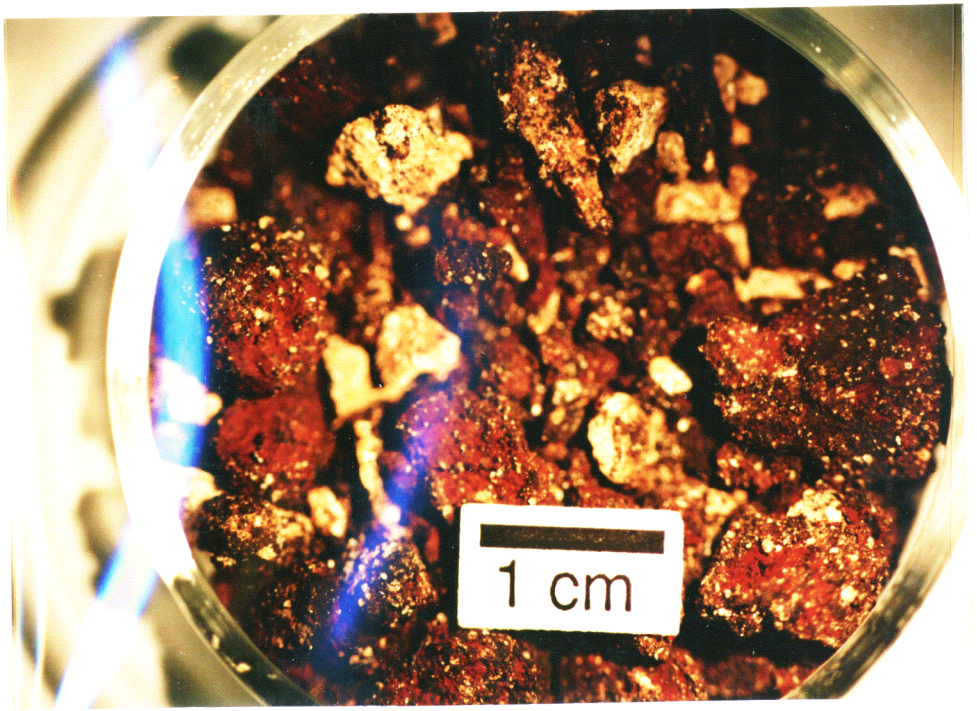

1 cm

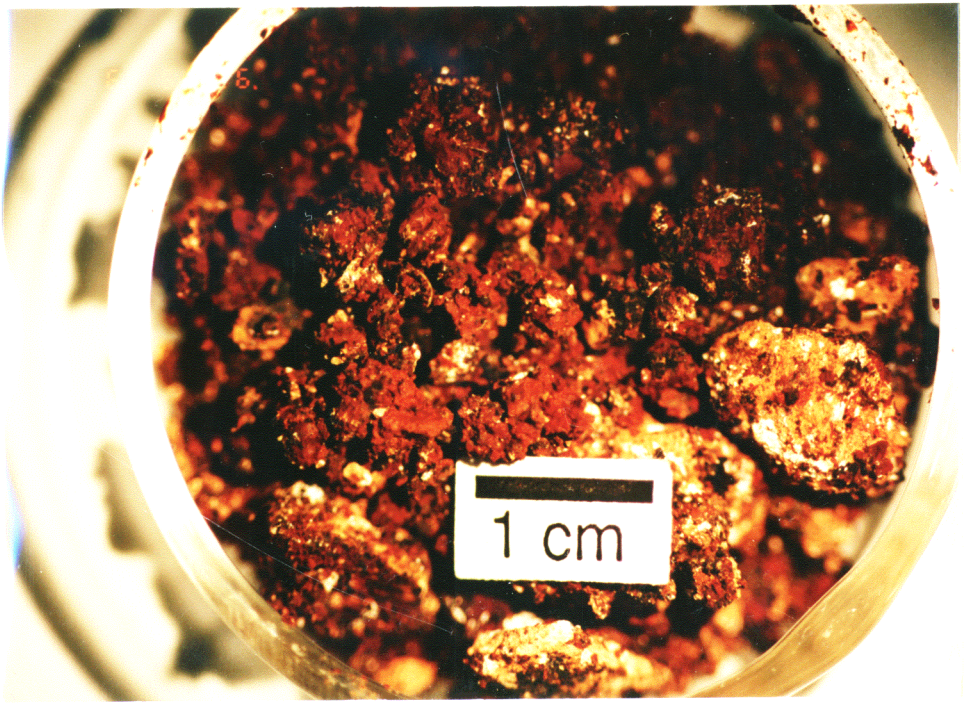
1 cm

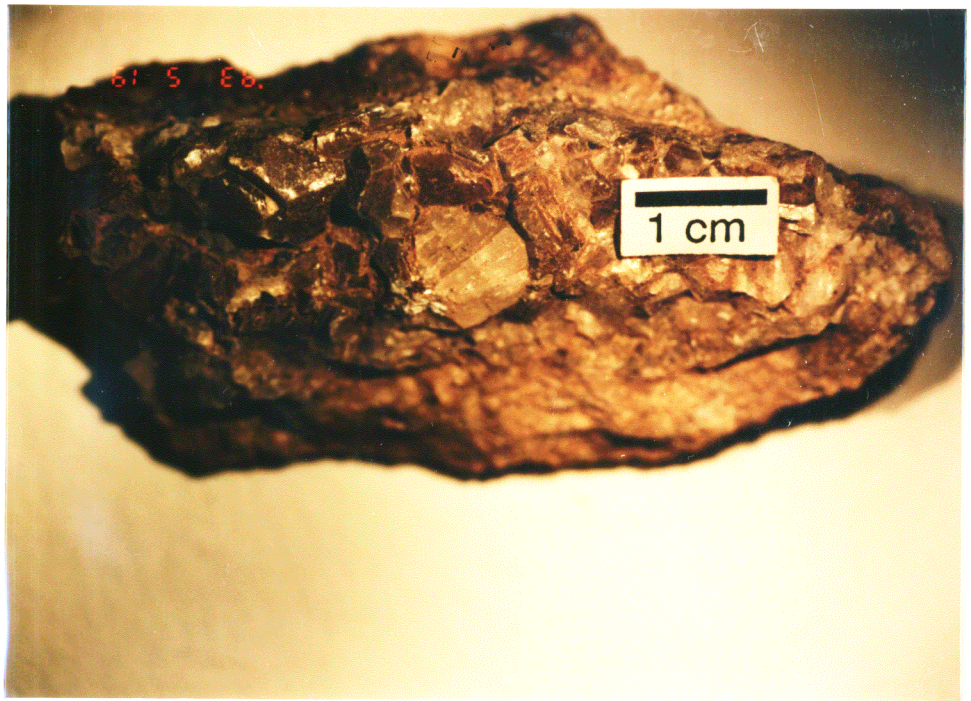
1 cm

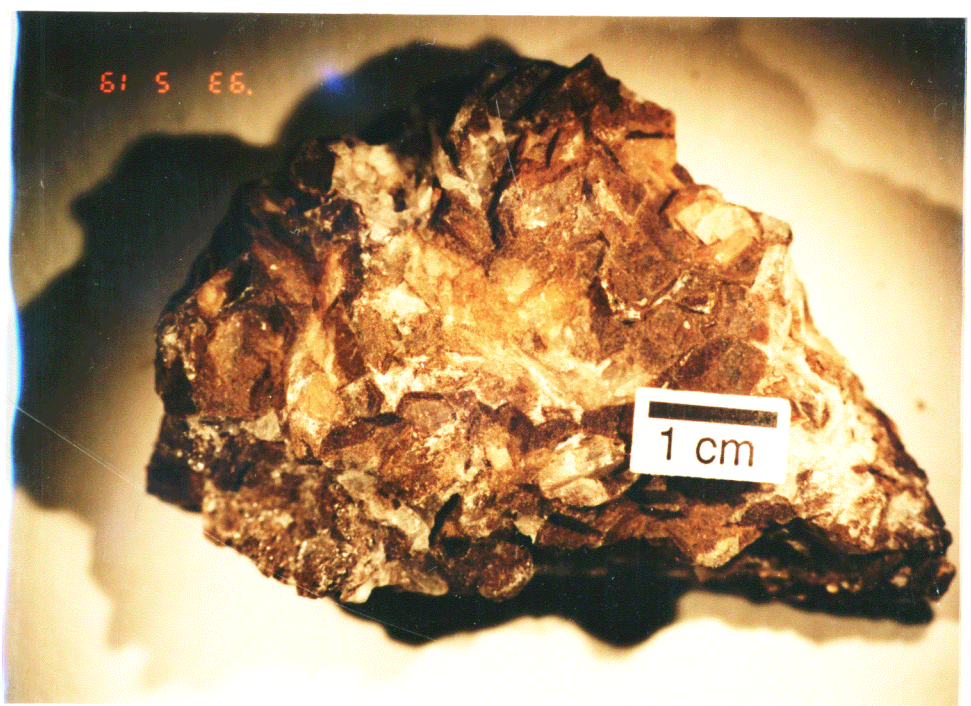

1 cm

1 cm


1 cm


1 cm


1 cm


1 cm