Sample Results Summary Sheet

Please return this form to the Curator for each allocated Sample

Sample ID: RA-QD02-0118

PI: Eizo Nakamura

Type and date of analysis performed: major element analysis (SEM-EDS, and EPMA/WDS) [May 15-16, 2011], trace element (SIMS) [Jun 10-21, 2011], and oxygen-isotope analysis (HR-SIMS) [May 17, 2011]

Elements or phases identified: major phase: low-Ca pyroxene; minor phase: olivine, plagioclase, K-feldspar, Ca-phosphate, glass; peculiar phase: Cu-sulfide

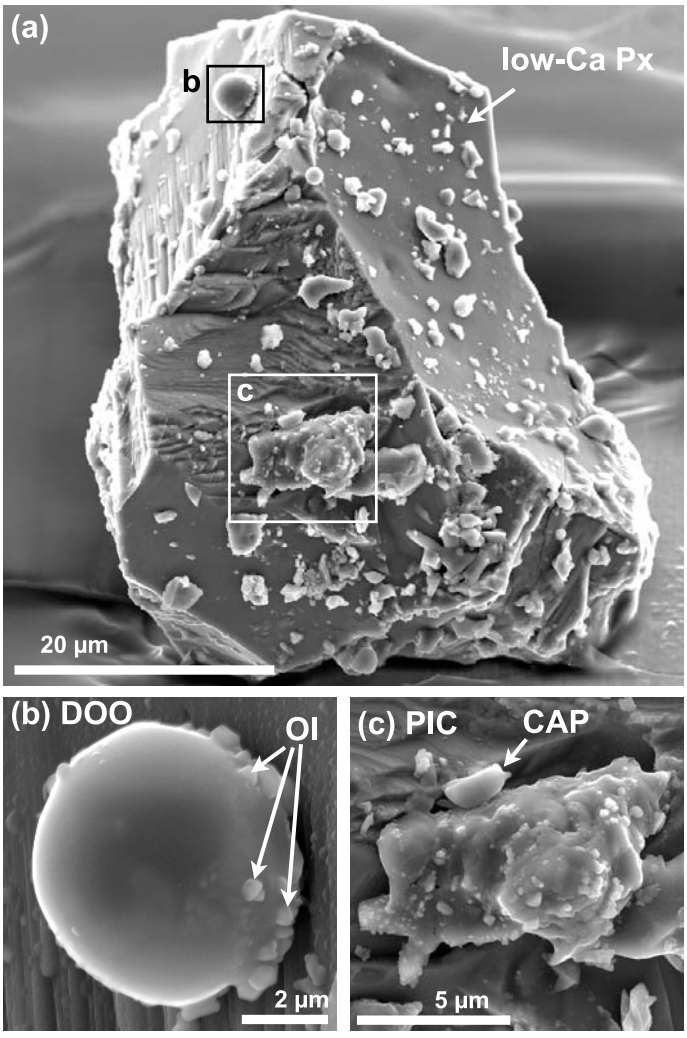
Contaminant phases identified: No

Sample handling: exposed in atmosphere, glued by glycol phthalate, coated C, sliced by FIB, and polished the FIB-sliced slab after acid-leaching, coated Au

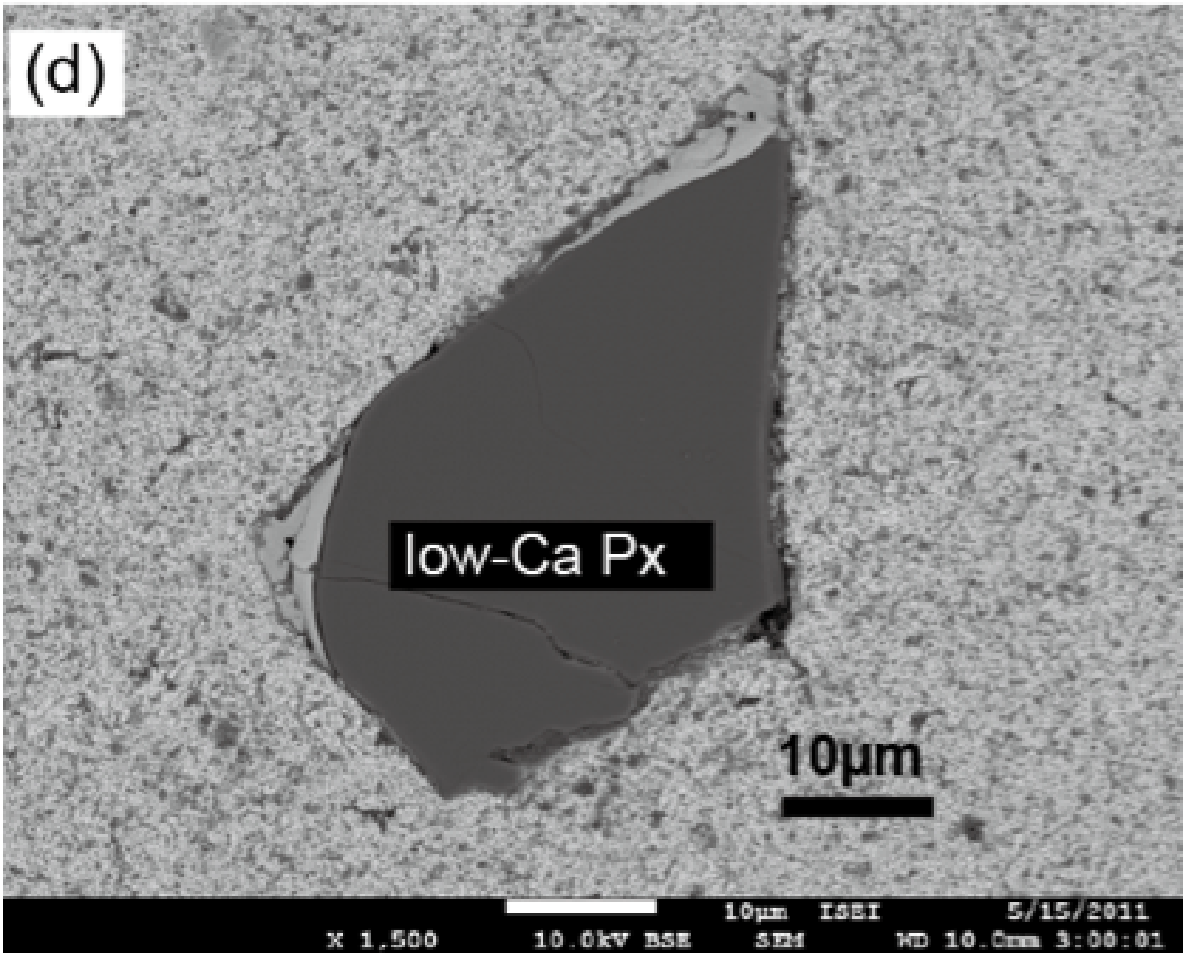
State of sample pre-analysis: atmosphere, glued, C-coated, FIB-sliced, In-mounted, polished section, Au coted

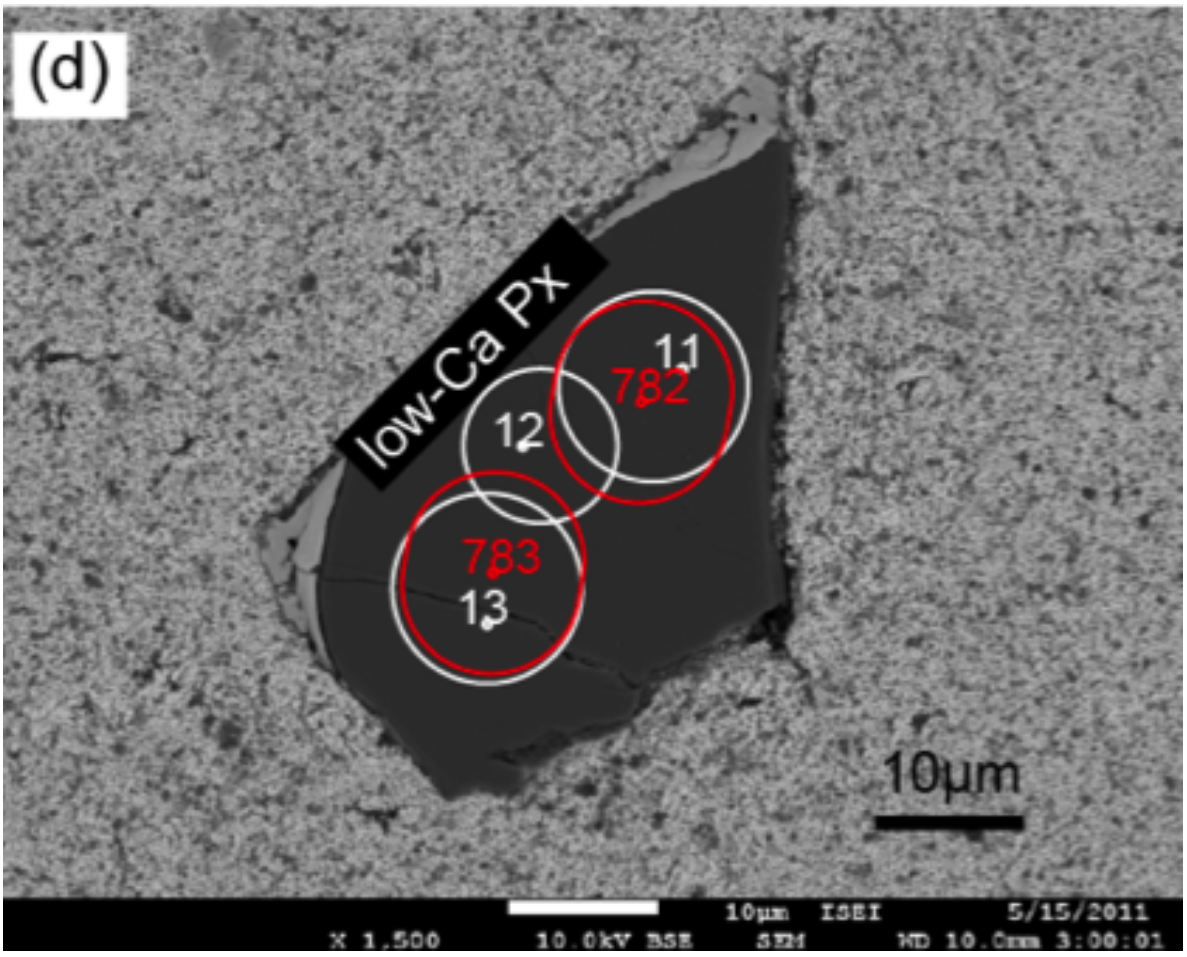
State of sample post-analysis: atmosphere, glued, C-coated, FIB-sliced, In-mounted, polished section, Au coted**,** sputtered by (spotted by) Cs- and O-beams

Analysis data Notes: This sample is a fragment (original size: 50×40 μm) of low-Ca pyroxene for which no inclusions or shock-related textures were observed (See details “grain E” in Nakamura et al., 2012).


(a)
low-Ca Px
b
c
20 µm
(b) DOO
Ol
2 µm
(c) PIC
CAP
5 µm

Target Phase	Grain D	
	low-Ca $Px_{n=5}$	
SiO_2	56.76	(0.11)
TiO_2	0.19	(0.05)
Al_2O_3	0.17	(0.09)
Cr_2O_3	0.12	(0.01)
FeO	15.14	(0.43)
NiO	-	
MnO	0.46	(0.03)
MgO	28.86	(0.41)
CaO	0.66	(0.03)
Na_2O	-	
K_2O	-	
total	102.4	
Formula	wo_1en_{76}	
Mg#	77	(0.4)
$(Fe/Mg)_{atom}$	0.29	
$(Fe/Mn)_{atom}$	32	


(d)
low-Ca Px
10μm
10μm ISEI 5/15/2011
X 1,500 10.0kV BSE SEM WD 10.0mm 3:00:01


(d)
low-Ca Px
11
782
12
783
13
10μm
10μm ISEI 5/15/2011
X 1,500 10.0kV BSE SEM WD 10.0mm 3:00:01

Target	Spot	Phase	$\delta(^{18}O/^{16}O)$	$\delta(^{17}O/^{16}O)$	$\Delta(^{17}O/^{16}O)$
Grain A	802	$Ol_{0.5}$ low-Ca $Px_{0.5}$	6.9	4.1	0.5
Grain B	694	$Ol_{0.95}$ $Pl_{0.05}$	5.2	5.2	2.5
	720	$Ol_{0.8}$ $Pl_{0.2}$	2.4	2.5	1.3
	721	$Ol_{0.8}$ $Pl_{0.2}$	4.0	4.6	2.5
	723	$Ol_{0.6}$ $Pl_{0.4}$	5.1	5.0	2.3
Grain C	755	Di	7.2	5.5	1.8
	756	Di	8.0	4.2	0.1
	765	Pl*	8.8	5.8	1.2
Grain D	782	low-Ca Px	2.9	2.6	1.1
	783	low-Ca Px	1.7	1.7	0.8

Supplemental Table 7 (continued) | Chemical compositions of the Itokawa grains determined using the Cameca ims-5f ion microprobe.

Target	Grain D		Grain D		Grain D	
Spot	11		12		13	
Phase	low-Ca Px		low-Ca Px		low-Ca Px	
SiO_2	*56.76*		*56.76*		*56.76*	
TiO_2	1,700	(62)	• • •		• • •	
Al_2O_3	2,300	(62)	• • •		• • •	
Cr_2O_3	920	(27)	• • •		• • •	
FeO	• • •		• • •		• • •	
NiO	-		• • •		• • •	
MnO	5,100	(29)	• • •		• • •	
MgO	• • •		• • •		• • •	
CaO	6,400	(120)	• • •		• • •	
Na_2O	110	(1)	• • •		• • •	
K_2O	-		• • •		• • •	
P_2O_5	-		-		• • •	
H_2O	330	(8)	• • •		• • •	
$Li^{\dagger}$	• • •		• • •		• • •	
$Li^{\ddagger}$	0.07	(0.01)	• • •		0.07	(0.01)
B	-		• • •		• • •	
F	8.9	(0.3)	12	(0.42)	• • •	
Cl	-		6.6	(0.26)	• • •	
Sr	0.10	(0.01)	• • •		-	
Y	0.34	(0.02)	• • •		0.36	(0.06)
Zr	0.32	(0.02)	• • •		-	
Nb	0.17	(0.04)	• • •		0.94	(0.22)
Ba	-		• • •		-	
La	-		• • •		-	
Ce	-		• • •		-	
Pr	-		• • •		-	
Nd	-		• • •		-	
Sm	-		• • •		-	
Eu	-		• • •		-	
Gd	-		• • •		-	
Dy	-		• • •		-	
Er	-		• • •		-	
Yb	-		• • •		-	
Lu	-		• • •		-	
Hf	-		• • •		-	