Supplementary Information

1. Conditions of spectroscopic measurements

Institute of Geology, UB RAS (Syktavkar, Russia). The samples were analyzed with a high-resolution Raman spectrometer LabRam HR800 (Horiba, Jobin Yvon) using external Ar + laser (514.5 nm; 1.2 μW). The spectrometer is coupled with an Olympus BX41 optical microscope with a 50× object lens. Spectra were recorded in the 100–4000 cm^{-1} range using a spectrometer grating of 600 lines/mm. A confocal hole size is 300 μm and a slit is 100 μm. The size of analyzed region was about 5 μm. Each spectrum was the result of three accumulations with a 10 s exposure. The spectra were recorded at room temperature.

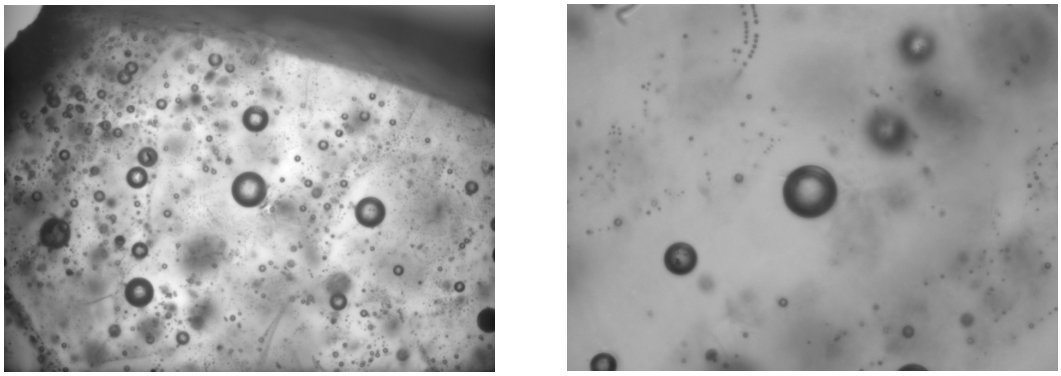
CEMES laboratory (Toulouse, France). Spectra were recorded with a Jobin Yvon Horiba Xplora spectrometer in a backscattering geometry and using a 532.1 nm (green) solid-state laser as the excitation source (~1–2 mm spot size on the sample). The acquisition was performed using an Olympus BX5 microscope equipped with a Linkam heating-freezing stage and a dark-field long-working distance (10.5 mm) ×50 objective, in the 35–5042 cm^{-1} spectral window with a grating of 1800 lines/ mm, an entrance slit of 100 or 200 μm, and a confocal hole of 100 μm; spectral resolution was ~5–10 cm^{-1} and acquisition times varied from 40 to 100 s (depending on the signal intensity). The laser power at the sample is ~1.32 μW.

Institute of Experimental Mineralogy, IEM RAS (Chernogolovka, Russia)

The first technique: Ram II module for Fourier spectrometer VERTAX 70 (Bruker) was used to record Fourier-Raman spectra with excited line 1064 nm line of infrared laser with an output power of 500 mW. The spectrometer was equipped with semi-conductive Ge detector.

Second technique: The Raman spectra were acquired using the Renishaw RM1000 microscope/spectrometer equipped with a corner attachment and the diode-pumped modular laser 532 nm. The parameters of the experiment were — laser output power 22 mW, slit 50 mm, accumulation time 100 sec. The alignment of the spectrometer was checked before run by taking spectra of high-purity monocrystalline Si.

2. Results of micro-Raman investigations of the fluid traps.



x10 ab108 -2 x50 ab108-3

Figure S1. Optic images of the bubbles in the albite traps from experiment ab108, the composition of the fluid was measured by Micro-Raman method in the bubbles in the center of images; images widths are 357 and 72 mkm.

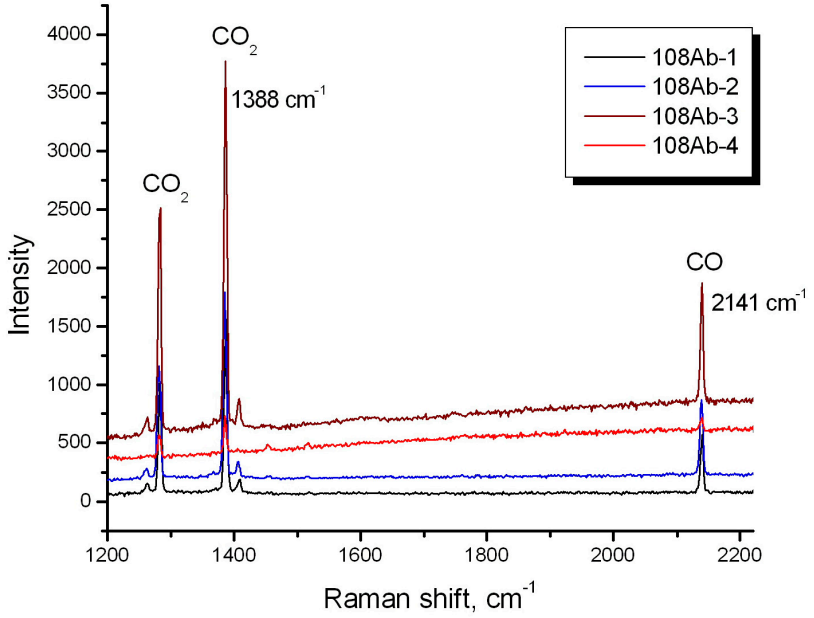
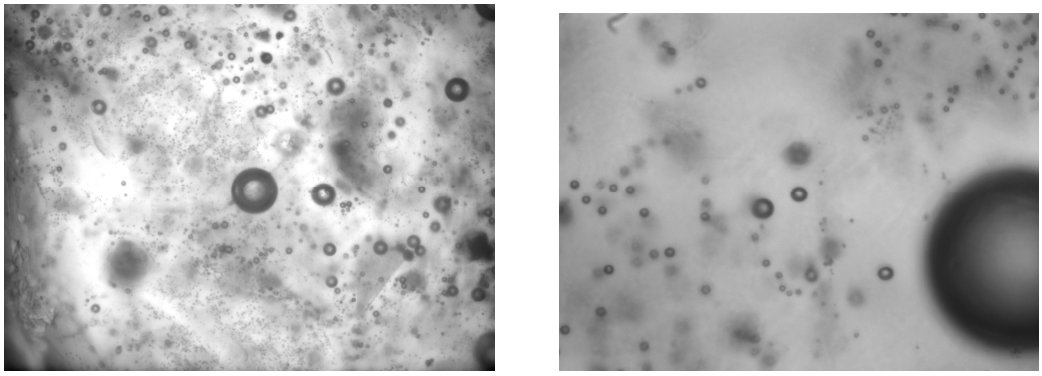


Figure S2. Raman spectra of fluid from the albite traps from experiment ab108.



x10 ab107-1 x50 ab107-3

Figure S3. Optic images of the bubbles in the albite traps from experiment ab107, the composition of the fluid was measured by Micro-Raman method in bubbles in the center of images; images widths are 357 and 72 mkm.

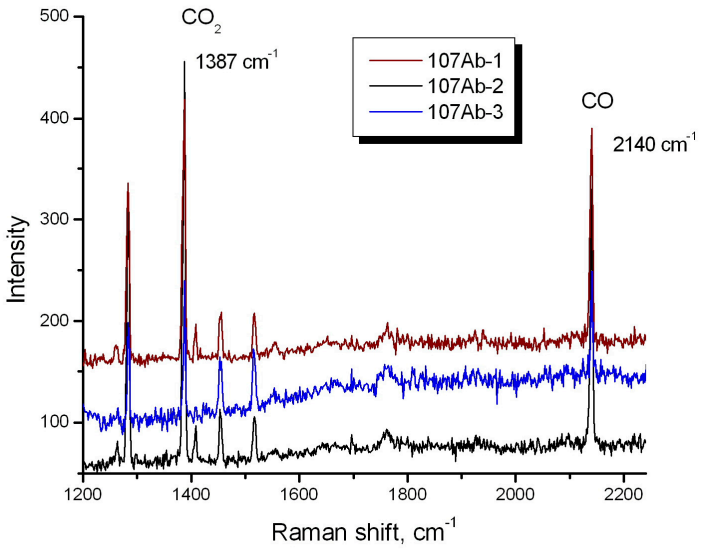
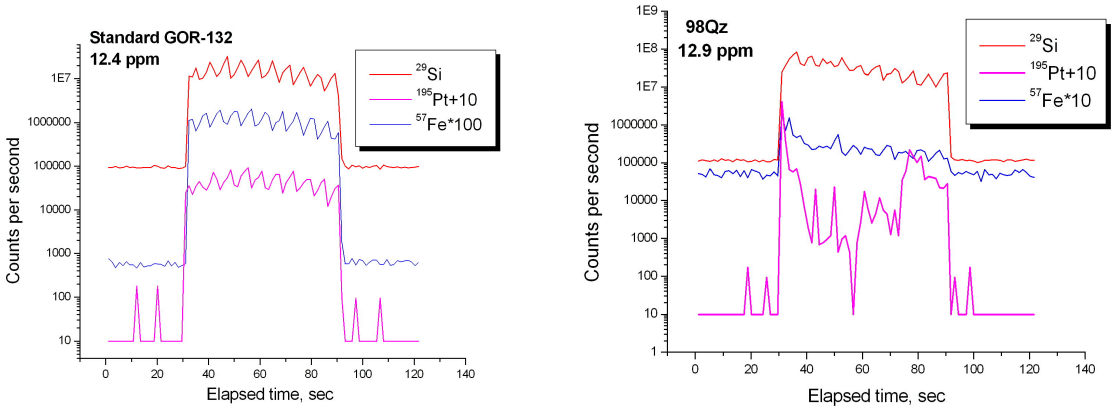


Figure S4. Raman spectra of fluid from albite traps from experiment ab107.

Table S1. Measurements of the ratio $X_{CO}/(X_{CO}+X_{CO2})$ in the fluid with .Micro-Raman method

107Ab		108Ab	
ab107-1	0.54	ab108-1	0.37
ab107-2	0.51	ab108-2	0.36
ab107-3	0.56	ab108-3	0.42
		ab108-4	0.41
Average	0.54		0.39
SD	0.03		0.03

3. Results of LA-ICP-MS analyses.



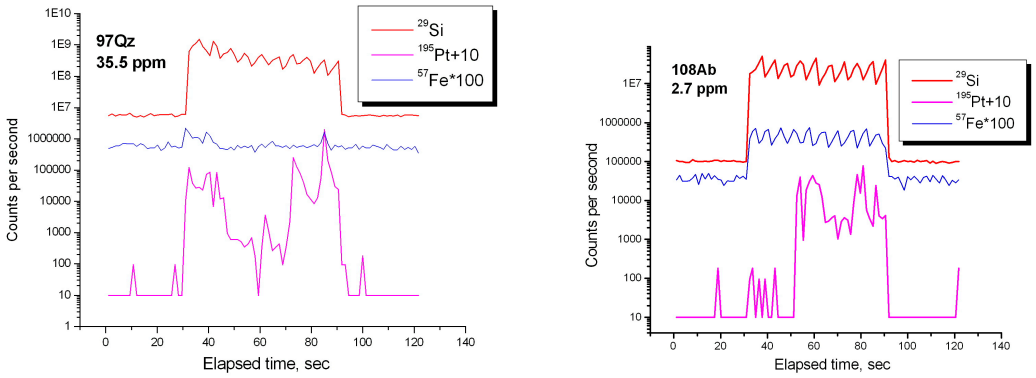


Figure S5. Examples of representative LA-ICP-MS transient signals of ^{29}Si, ^{57}Fe and ^{195}Pt for the standard GOR-132 and selected fluid traps indicated in the figure. Platinum total concentration, calculated by integration of the ablation signal normalized on ^{29}Si used as an internal standard is indicated.

Table S2. Measurements of Pt concentration by LA-ICP-MS method in the traps by points

Sample	qz98		qz97		ab86	ab107	ab108
C, ppm	17.49	11.47	34.15	17.07	0.74	0.42	2.69
	55.83	19.12	3.84	1.26	314.01	0.40	4.17
	27.13	29.82	12.11		28.34	0.08	0.92
	12.46	9.63	23.09		118.41	0.14	0.13
	8.56		12.11		65.33	0.38	4.50
Average	21.28		14.80		105.36	0.28	2.48
SD	14.97		11.30		124.68	0.16	1.93

4. Some experiments not included in the text

Table S3. Additional runs conditions and results

#	Sample	T/P °C, Kbar	Time, hour	xCO_{ini}/xCO_{eq}*		trap	Pt ET-AAS, ppm	Water content in MgC2O4
1	ab84	1000/2	4	MgC_2O_4	0.5/0.19	Ab	-	<0.3 wt.%
2	qz109	950/1	1	$MgC_2O_42H_2O$	0.5/0.21	Qz	18.6	24.3 wt.% H2O
3	qz110	950/ 2	2	$MgC_2O_42H_2O$ +$MgCO_3$	0.165/ 0.14	Qz	440	24.3 wt.% H2O
4	qz111	950/1	2	$MgC_2O_42H_2O$	0.5/0.21	Qz	357	24.3 wt.% H2O
5	qz112	950 /0.5	2	$MgC_2O_42H_2O$	0.5/0.30	Qz	87.7	24.3 wt.% H2O
6	qz113	950/ 2	2	$MgC_2O_42H_2O$	0.5/0.14	Qz	1174	24.3 wt.% H2O
7	qz114	950/ 2	2	MgC_2O_4	0.5/0.14	Qz	255.3	10.4% H2O
8	qz115	950/1	2	MgC_2O_4	0.5/0.21	Qz	37.6	10.4% H2O
9	qz116	950/0.5	2	MgC_2O_4	0.5/0.30	Qz	1.7	10.4% H2O

* fluid composition on the water free basis